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KEY TO DATES AND PAGES

The following table, giving a key to the dates of issue and the page numbers of the BRITISH MEDICAL JOURNAL and SUPPLEMENT in the second volume for 1941, may prove convenient to readers in search of a reference.

Serial No.	Date of Issue	Journal Pages	Supplement Pages
4200 ..	July 5 ..	1 - 38	1 - 2
4201 ..	" 12 ..	39 - 74	3 - 6
4202 ..	" 19 ..	75 - 108	7 - 8
4203 ..	" 26 ..	109 - 148	9 - 14
4204 ..	Aug. 2 ..	149 - 186	15 - 18
4205 ..	" 9 ..	187 - 216	19 - 20
4206 ..	" 16 ..	217 - 254	21 - 28
4207 ..	" 23 ..	255 - 292	29 - 32
4208 ..	" 30 ..	293 - 322	33 - 38
4209 ..	Sept. 6 ..	323 - 364	39 - 44
4210 ..	" 13 ..	365 - 392	45 - 48
4211 ..	" 20 ..	393 - 428	49 - 58
4212 ..	" 27 ..	429 - 464	59 - 70
4213 ..	Oct. 4 ..	465 - 496	71 - 74
4214 ..	" 11 ..	497 - 532	75 - 76
4215 ..	" 18 ..	533 - 568	77 - 80
4216 ..	" 25 ..	569 - 600	81 - 84
4217 ..	Nov. 1 ..	601 - 640	85 - 88
4218 ..	" 8 ..	641 - 680	89 - 90
4219 ..	" 15 ..	681 - 716	91 - 94
4220 ..	" 22 ..	717 - 758	95 - 96
4221 ..	" 29 ..	759 - 794	97 - 100
4222 ..	Dec. 6 ..	795 - 836	101 - 104
4223 ..	" 13 ..	837 - 864	105 - 108
4224 ..	" 20 ..	865 - 896	109 - 112
4225 ..	" 27 ..	897 - 932	113 - 116

INDEX TO VOLUME II FOR 1941

READERS in search of a particular subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate headings—for example, Brain and Cerebral; Heart and Cardiac; Liver and Hepatic; Renal and Kidney; Cancer and Carcinoma; Child and Infant; Goitre and Thyroid. Subjects dealt with under various main headings in the JOURNAL have been set out in alphabetical order under their respective headings—for example, "Annotations," "Correspondence," "Leading Articles," "Obituary," "Reviews," etc. Original Articles are indicated by the letter (O).

A

- Abdomen, penetrating wounds of, 264
Abdominal catastrophe which did not take place (G. E. Parker), 119 (O); correspondence on, 246, 284
— symptoms after opium medication, 148
ABEL, A. Lawrence: Home Guard medical supplies from Canadian Red Cross, 250
ABRAHAM, E. P.: Chemotherapeutic agents, 922
Abscess, liver, emetine in, 357
Abscesses, pelvic, 139
Abscess: Medical unit for, 322—Red Cross work in, 425
Academy, Royal, of Medicine in Ireland: Sulphonamides and bacteria in urine, 63—Coliform bacilli in water, 63—Water deficiency, 66—Placental infarcts, 786
Accidents, road: Speed and, 359—Increase in fatal, 592
Achilles tendon, tenosynovitis of (A. A. Williams), 377; note on, 568; correspondence on, 633
Acid, gastric, control of, in peptic ulcer (W. E. Smith), 13 (O)
Acne, endocrine for, 890
— occupational, 776
Acromegaly: calcium and phosphorus metabolism, 235
Addison's disease, adrenal graft for, 392
ADNEY, Noel F.: Sulphonamides and catgut, 824
Adenitis, 166
AFRICA:
Aid for Russia, 932
Europeans in E. Africa, health of, 714
Gifts from S. Africa, 561
Health in Union of South Africa, 278
Hospitality to medical forces, 714
Miners' Pethusa Medical Bureau, 63
South African Medical Journal, July issue, 678
Standard loaf in S. Africa, 28
Sulphapyridine, experiment with, 278
Witwatersrand Mines, health in, 278
Yellow fever in, 171
Ageing, problems of, 120
Air crews, injured, rehabilitation of (R. N. Houlden), 429 (O); correspondence on, 526, 559
Air Force. See Services
AIR-RAID PRECAUTIONS:
After-care of child casualties, 207
Air-raid and child (W. E. R. Mose), 625; correspondence on, 757—(W. M. Burbury), 660
Bomb fragments, penetrating, burns from, 246, 355
Casualties: Clearance of urban, at perimeter (A. Massey and others), 130—Clinical observations on (R. T. Grant and E. B. Reeve), 293 (O), 329 (O); correspondence on, 388, 456—Arrangements for, 363—Care of child, 677
Casualty surgery in air raids, 131
Chronic sick in bombed towns, 31, 100, 146, 178, 284
Committee, National Co-ordinating, 62
Ear: Rupture of drumhead, 195
Evacuation: Sick bays for children, 36—No. of children evacuated, 426—Doctors' lists, 464—Review of book on, 512—Effects of, on city children (W. M. Burbury), 660—Medical examination of children, 678—Of children under five, 678—Pediculosis, etc., in children, 834
Fire-bomb injuries, 140
First-aid posts: No. of casualties in London region, 794
Gas. See General Index
Hospitals: Organization of city casualty hospital, 98
Lugz injuries, 239
Mobile unit, 594, 671, 751—Useful addition to equipment, 513
Noises in psychotherapy, 159, 243, 279, 354, 460
Reception areas, golden rule in, 108
Rest: For workers, 838—Centres, 930
Review of books on, 162, 201
Shelters: Central sick bay for London, 352—Colds in, 392—Health education in, 411—Report on London, 414—Leading article on, 443—in large cities, 451—Electric heaters in, 450
Trapped people, hot drinks for, 680
Year Book, 1941-2, 408

- ALARASTER, E. B.: Eye injuries in war, 417
ALBERT, M.: Massive adrenal carcinoma with pseudo-hermaphroditism, 265 (O)
Albuminuria, classification of cases of (A. Lyall), 113 (O); correspondence on, 246
ALCOCK, A. T.: Bombed child and Rorschach test, 357
Alcohol, review of books on, 200, 578
Alcoholism, folk-lore of, 850
Alderson, Major Christopher Rowland, obituary notice of, 36
— G. G. (and others): Clearance of urban air-raid casualties at night, 130
ALDRIDGE, A. G. V.: Dehydration, 206
ALEXANDER, Alfred B.: Rupture of drumhead as wartime injury, 195 (O); correspondence on, 388
Aliens: Registration of doctors, 145, 520—Employment of doctors, 530, 598
ALLEN, F. J.: Warts, 496
ALSTED, Stanley: Myositis and fibrositis, 759
ALSTON, J. M.: Leadership in medicine, 344—Haemoglobin of pregnant women, 926
Ambulance ship, motor barge as (J. Evans), 59
Amidopyrine and pernicious anaemia (L. J. Wits), 159
Amoebiasis—pulmonary complications (B. A. Dorrer and J. Friedlander), 255 (O)
Amoebic dysentery. See Dysentery
A. . . A. . . A. . . X-ray Atlas of Spleen, 546
Amputation, father's refusal to allow, 832
Amputations, avoidable disability seen in (W. R. D. Mitchell), 437 (O); correspondence on, 562
Anæmia, concentrated red cell suspensions in (G. E. O. Williams and T. B. Davie), 641 (O); annotation on, 659; correspondence on, 823, 926
— hypochromic (leading article), 90
— macrocytic, following gastro-enterostomy (N. S. Gordon and J. J. Joss), 769 (O)
— pernicious: Amidopyrine and (L. J. Wits), 159—Unusual reticulocytosis in untreated case of (W. T. Cooke), 806 (O)
— refractory (leading article), 915
Anæsthesia: Cardiac massage for impending death under (H. Bailey), 84 (O); correspondence on, 175, 243, 356, 364, 423—Convulsions under (S. F. Durran), 225—in chest surgery, 342—Chloroform ether sequence, 356
— hysterical, blood-pressure-raising reflexes in (J. V. Cable and F. H. Smirk), 874 (O)
— local: For pyloric stenosis, 66—Lung collapse after eye operation under (R. J. Joss), 86
— regional, improved method in acute abdominal surgery (N. R. James and H. W. Burge), 906 (O)
Anæsthetic vapourizers, Oxford, 204
Anastomosis, congenital arteriovenous (A. G. Watkins), 849 (O); correspondence on, 926
Anatomical nomenclature, 65, 210
Anderson, A. B.: Hyperthyroidism, 117 (O)
— Arthur: Treatment of gas casualties, 559
— David E. W. (and R. CRICKSHANK): Sulphanilic acidine for bacillary (Flexner) dysentery, 497 (O); leading article on, 514 (O)
— William: Early Treatment of War Wounds, 55
Anglo-Soviet Journal, July issue, 390
— medical co-operation, 411, 424, 590
ANVAN, W. Gilkes: Blood transfusion and syphilis, 748
Annotations:
Acne, occupational, 776
Anæsthesia in chest surgery, 342
Anglo-Russian medical co-operation, 411
Antigens, bacterial, chemical nature of, 382
Antitoxins, fifty years of, 413
Arthritis, gold in treatment of, 852
Association, British Medical: Meetings at Headquarters, 413
Atrophy, compensatory, 126
Biotin, co-enzyme R, and vitamin H, 518
Blind, welfare of, 554
Blood: Concentrated red cell suspensions, 659
— donor, fatality in, 311
— stored, preservatives for, 813
Bradycardia in juvenile rheumatism, 735
Choriomeningitis, lymphocytic, as "Influenza syndrome", 343
Committee, Voluntary Hospitals, for London, 659
Conscience, medical officers', 553
Croup, classification of, 918
Crush syndrome, recovery from, 311
Dermatitis from nail lacquer, 855
— schistosomæ, 701

- Annotations (continued):
Diabetes, experimental, 658
— prevention of, 234
Diarrhoea and vomiting, chemistry of, 206
Digitalis preparations compared, 554
Dysrhythmia and epilepsy, inheritance of, 383
Eating and digesting, 125
Educational number in abeyance, 127
Effusions, acute intraperitoneal spread of, 433
Erythroplasia, foetal, 204
Eye injuries, industrial, 284
Fever, rheumatic, and streptococcal antibodies, 517
Glossylin, 205
Glucose, intraperitoneal, 93
Halitosis, reversal of, in mammalian ear, 582
Harelip and cleft palate, inheritance of, 165
Health campaign, autumn, 622
Heart failure, calcium therapy in, 93
— traumatic lesions of, 270
Hebb, Sir John H., retirement of, 344
Heparin in cavernous sinus thrombosis, 235
Hospital, London: Bicentenary, 235
— Rotunda. Report, 272
Hyaluronidase, 699
Hypertension, renal extracts for, 22
Indices, half-yearly, 167, 272
India, anti-subversive work in, 412
Influenza virus and its immune bodies, new test for, 777
Iron, stimulant action of, 776
Jinglass as transfusion fluid, 156
Juvenile delinquency, prevention of, 56
Labour Office, International, in New World, 312
Lanatoside C (digiflavin C), 206
Laryngitis, acute, and H. influenzae, 734
Liver damage, prevention of, 815
— function in Graves' disease, 166
Lung infections, obscure, 233
Lungworms and swine influenza virus, 814
Mammary dystrophies of, 56
Magnesium and tooth formation, 92
Malaria in officers and men from overseas, 516
Marriages, consanguineous, 55
Medicine, war, week-end of, 434
Menopause, 167
Mercurial diuretics, death from, 855
Mothercraft, teaching of, 235
Nephritis, experimental, 412
Nurses' increase in salaries, 344
Nursing services. Tribute in 194—Committee on, 455
Osteo-arthritis, aetiology and treatment of, 917
Parkinsonism, surgical treatment of, 434
Pasteurization, compulsory, in Ontario, 446
Pectin as blood substitute, 709
Pentidine: antiseptic of microbial origin, 310
Phenol and its derivatives, economy in, 583
Phosphorus, radioactive, clinical studies with, 733
Picrotoxin in another aspect, 701
Pit disease, new view on, 856
Plague: Chemotherapy of, 621—in Southern India, 702
Plasma transfusion, death from, 382
Pneumonia: passing of anti-pneumococcal serum, 447
Poliomyelitis, spread of, 311
Psychology and the "hard core", 205
Pyloric stenosis, eumydria for, 453
O. American, epidemiology of, 555
Radiography, mass, and early pulmonary tuberculosis, 341
Radium therapy in wartime, 814
Raspberry-leaf extract, 412
Rheumatic children, home care for, 271
Safe period, is it safe? 23
Scientists and post-war relief, 516
Scotland, vital statistics, 413
Shelters, health education in, 411
Sight, perfect, without glasses, 352
Skin and mind, 55
Sterilization, steam, 445
Sulphanilamide: And seaweeds, 92—intraperitoneal, 204
Surgery, 445
— vascular, 93
Therapeutic Research Corporation, 815
Thirst at sea, 126
Thyroid diseases, chemistry of, 455
Thyroidectomy in diabetes insipidus, 593

Annotations (continued):

- Toddlers, aggregation of, 91
- Traffic offenders, 234
- Tuberculosis: Treated by arrest of lung movement, 271—In Wales, grim outlook, 587—Chemotherapy for, 856
- bovine, in Australia, 734
- Ulceration, streptococcal, around wounds, 553
- Urticaria, solar, 918
- U.S.S.R., health in, 445
- Vaporizers, Oxford anaesthetic, 204
- Viruses and infection through skin, 587
- Vitamin B₁ deficiency, 22
- B₂ (adernin), 166
- E, international standard for, 553
- P and capillary resistance, 517
- War: American doctor speaks on, 483—And common health, paradox, 813
- Welch toxins, physiological action of, 127
- X-ray injury again, 165
- X rays in treatment of inflammations, 700

Annual Review of Physiology, vol. 3, 407

- Anthraxis, preventive measures, 426
- Anthrax, cutaneous, arsenicals and sulphapyridine for (I. M. Davidson), 725 (O)
- Anthropologist, memoirs of, 512
- Antigens, bacterial, chemical nature of, 382
- Antiscorbutics, root vegetables as (D. M. Mathews and A. L. Bacharach), 226 (O)
- Antiseptic, intestinal, sulphanilguanidine as (leading article), 514
- Antitoxins, fifty years of, 413
- Apparatus, high-frequency, 833
- Appendicitis, acute, blood sedimentation rate in, 626
- Appendix stanzulated in congenital hernial sac in infant (T. O'Neill), 87
- APPLETON, Arthur B.: Flat-foot in Army, 355
- J. L. T.: Control of Pain in Dental Practice, 162
- Apte, Capt. S. S., death of, 929
- Aqueous and glaucoma (leading article), 515; correspondence on, 593
- ARCHIBALD, Roy McL.: Students and curriculum, 711
- Archiv für Schiffs- und Tropen-hygiene, title changed, 171
- ARMSTRONG, John: Cardiac arrest during anaesthesia, 364
- Katharine F. (and others): Handbook of First Aid and Bandaging, 513
- Army, See Services
- Artenicals and sulphapyridine for cutaneous anthrax (I. M. Davidson), 725 (O)
- Arteriosclerosis: Exercises for, 108—Of extremities, thrombosis in (E. D. Telford and H. T. Simmons), 575 (O)
- Arthritis: Review of book on, 547—Gold in treatment of, 882
- rheumatoid, stabbing heel pains in, 716, 836, 864
- Asepsis, new rules for (leading article), 698
- Asphyxia, traumatic (E. K. Gardner), 545
- Association, American Medical: President elected, 254—Medal presented, 254
- of Anaesthetists: Officers elected, 678
- British, for Advancement of Science: Scientists and post-war relief, 516
- Hospitals: Liaison committee, 344—Annual meeting, 664—Meeting of Scottish Branch, 746—Regional hospital services, 919

ASSOCIATION, BRITISH MEDICAL:

- Bristol Division: Casualty surgery in air raids, 131
- Committee, Mental Health: Report, 276; leading article on, 269; price of, 390
- Hospitals: Liaison committee, 344
- Jamaica Branch, cable from, 622
- Meetings at Headquarters, 413
- Report of special committee on industrial medical practice, 783

Association, British Medical Students, 32, 278—

- Students and curriculum, 629
- Orthopaedic: Summer meeting, 351
- Canadian Tuberculosis: Annual meeting, 23
- Central, for Mental Welfare: Report, 173
- of Clinical Pathologists: Meeting, 315
- Orethovian Medical, in Great Britain: Medical reception, 740
- Grenfell: Postcards, 716
- Industrial Medical Officers: Annual meeting, 745
- Hospital, 716—Conference in London, 819
- Mental After-Care: Report of employment department, 205
- Royal Medico-Psychological: 100th annual meeting, 172
- Sanitary, of Scotland: Annual congress, 459
- of Special Libraries and Information Bureau: Terry publications, 108
- Temperance Collegiate: Confirming the Facts, 200

Aviography, review of book on, 52

- Atrophy, compensatory, 126
- Avon, Lord, memorial to, 883
- Miles Company, New medical dept., 883
- Aviation: Doctors in, 304—Annual report on public health in N.W., 304—Serum research in, 314—Lawyer after appointed, 390—Bovine tuberculosis in, 711
- Avian: Before 1900, 61—Polymyositis serum, 711

- AVERY, Harris: Lack of calcium, 285
- Aviation, medicine and (leading article), 879
- Avitaminosis. See Vitamin
- AYTON, John M.: Anatomical nomenclature, 210

B

- Baby feeding, simplified formula for, 38
- Week, National, 28
- BACHARACH, A. L. (and D. M. MATHEWS): Root vegetables as antiscorbutics in infant feeding, 226 (O)—Vitamin E in neuromuscular disorders, 709
- Bacillus, Flexner. See Dysentery, Flexner
- BACON, Harry E.: Anus-Rectum-Sigmoid Colon: Diagnosis and Treatment, 2nd ed., 547
- Lionel J.: Trichiniasis in Birmingham, 909 (O)
- Bacteria from wounds enclosed in plaster, 268, 387
- Bacteriology: Review of book on, 51—Of air-raids wounds within 48 hours of infection (E. T. C. Spooner), 477 (O)
- diagnostic, 359
- Bacteriophage, treatment with (leading article), 409
- BADENOCH, A. G.: Colds in air-raid shelters, 392
- BAGOT, Surg. Lieut. Frederick, reported missing, 792
- BAILEY, Hamilton: Ether convulsions, 32—Cardiac massage for impending death under anaesthesia, 84 (O); correspondence on, 175, 243, 356, 423
- Baldwyn, Flying Officer Antony Fleming, reported missing, 792
- Bale, Rosa, obituary notice of, 755
- BALLON, Leslie: "Perfect sight without glasses," 562; correction, 600
- Bandagior: Looped-cap system, 339—Avoiding painful removal of adhesive bandages, 364
- BANKS, H. Stanley: Planning in fever service, 922
- Bannister, Fredo B., Dr. F. B. Pratt changes name to, 464
- Banting, Sir Frederick Grant, memorial to, 290
- Bar, medical men called to, 794
- BARACHI, Alvan L.: Treatment of tuberculosis by arrest of lung movement, 271
- BAROER, C. H.: Penetrating wounds of abdomen, 284
- H. W.: X rays in treatment of inflammations, 859
- BAROOUR, A. Buchanan: Useful addition to equipment of mobile unit, 513
- BARCROFT, Sir Joseph: Lung injuries in air raids, 239
- BARROD, J. L.: Device for washing contaminated eyes, 480—Status of ship surgeon, 496
- BARKER, Lewis F.: Psychotherapy, 200
- BARLOW, H. Cecil: Diabetic chat, 364
- K. E.: Fats and carbohydrate metabolism, 790—Diabetes and chronic nephritis, 790
- Sir Thomas: 96th birthday of, 384—R.M.B.F. Christmas gifts, 523, 830
- BARNES, E.: Appreciation of Sir F. Still, 287
- Barnett, Lieut.-Col. Kennet Bruce, obituary notice of, 425
- BARRETT, A. M.: Glandular fever, 315
- Sir James W.: Optimum size of an organization, 665—Loss of vision following haemorrhage, 711
- BARTLEY, A. H.: Tuberculosis rampant, 594
- BARTON, E. A.: A Doctor Remembers, 654
- James Kingston, obituary notice of, 755
- Samuel J., obituary notice of, 35
- Baskin, Joseph Loughed, obituary notice of, 493
- BATCHELOR, R. C. L. (and others): Oral sobismol in syphilis, 541 (O)
- BATE, M. M.: Self-fitting sling, 810
- BATENAN, G. H.: Oto-laryngologist on war service, 745
- BAYON, H. P.: Rationing and children's health, 920
- Beardshaw, Surg. Lieut. Alan Kenneth, reported missing, 106
- BEATTIE, William M.: Case of shock from burns, 388
- BEAUMONT, G. E. (and E. C. DOOS): Recent Advances in Medicine, 10th ed., 513
- BECK, Stephen (and P. R. PEACOCK): Gastro-papillomatosis due to vitamin A deficiency induced by heated fats, 81 (O)
- BECKER, Samuel William (and M. E. OBERMAYER): Modern Dermatology and Syphilology, 408—Announcement, 713
- BEOGARD, J. R. J.: Nurse anaesthetist, 108
- BEESON, Paul: Trichiniasis, 135
- Behaviour of children and adults under war conditions, 532
- Belt Memorial Fellowship for Medical Research: Meeting, 171—Election of Fellows, 171
- BELLIS, Arthur D. (and others): Handbook of First Aid and Bandaging, 513
- BELL, Josephine: Martin Croft, 696
- Julia: Consanguineous marriages, 55
- Richard: Three unusual rheumatic cases, 140
- BRLEW, R.: Kidneys and limb compression, 884
- BRNOIK, M.: Treatment of chronic hypertensive nephritis by renal extracts, 177
- Benoly, Nathaniel, obituary notice of, 673
- BENSTO-SMITH, W. F.: Flat-foot in recruits, 254
- BENTALL, A. P.: Future of medical education, 421
- Benzedrine in post-encephalitic Parkinsonism, 33
- Benzyol benzoate: Emulsion for scabies (I. F. Mackenzie), 403 (O)—Therapy, 600
- Berger, Hans, death of, 713
- BERKELEY, Sir Comyns: Midwife's illie, 562—Economy in dressings, 857—Gynaecology for Nurses and Gynaecological Nursing, 8th ed., 914
- BERNCASTLE, H. M.: Treatment of scabies, 560
- BERSTOCK, E.: Treatment of Impetigo, 423
- BERTWISTLE, A. P.: Blunt needle, 532

- BETTLEY, F. Ray: Herpes labialis' after T.A.B. and chemotherapy, 562
- BIGGER, J. W.: Sulphonamides and bacteria in urine, 63—Coliform bacilli in water, 63
- BIGIAM, Allan: Treatment for chronic psoriasis, 692 (O)
- Bile, cellular contents of, 865
- duct, common: Operative cure of complete stenosis (F. Sinclair), 229
- Bilharzia, malachite in control of (A. Mozley), 511
- Bilharzias, abbreviated treatment for, 716
- Biliary passages, review of book on, 914
- BINO, Robert: Compendium of Regional Diagnosis in Lesions of Brain and Spinal Cord, 11th ed., translation, 379
- BINNINGTON, P.: Treatment of chilblains, 716
- Biochemistry, review of books on, 17, 851
- Biology: And health, 238—Review of book on, 615
- Biotin, 518
- BIRDSALL, S. E.: Nasopharyngeal disease in mental disorder, 173
- BIRDWOOD, G. T.: First-aid treatment of injured eyes, 136
- Birkbeck, Dr. George (1776-1841), 850
- BIRKETT, A. N.: Reduction of fractures of os calcis, 719
- Birmingham, trichiniasis in (L. J. Bacon), 909 (O)
- BISKE, V.: Thirst at sea, 211
- BISSET, R. D. N.: Reaction after transfusion, 667
- Bjorksten, Max, death of, 361
- BLACK, A. N. (and others): Wounding mechanism of high-velocity missiles, 872 (O); leading article on, 881
- BLACKBURN, Guy (and W. W. KAY): Crash injury with renal failure, 475 (O), 885
- BLAIR, E. McV. (and W. J. WILSON): Tellurite-iron-rosolic acid medium selective for Flexner's bacillus, 501 (O); correspondence on, 563
- R. Bertram: Single or bilateral Böhler-Braun leg splint, 697
- BLAKELY, P. L.: Abdominal symptoms after opium, 148
- BLEASDALE, Noel C.: Symptoms after microchromic for Impetigo, 363
- Blind: Timepieces for, 254, 322, 428—Welfare of, 554—Annual report of St. Dunstan's, 627
- Blindness, transient, following blood transfusion (D. Lebane), 694
- Blisters, treatment of, 38
- BLONFIELD, J.: Early cardiac massage, 175
- BLOND, Kasper: Haemorrhoids and their Treatment, translation, 307
- Blood: Titrk cells, plasma cells, and premonocytes, 633—Concentrated red cell suspensions in anaemia (G. E. O. Williams and T. B. Davies), 641 (O); annotation on, 659; correspondence on, 823, 926
- Pectin as substitute for, 700
- donor: Fatality in, 311—Care in use of Group O card, 419
- grouping: Figures concerning, 315—In Forces, 758
- lymphocyte, fate of, 747
- pressure-raising reflexes in hysterical anaesthesia (J. V. Cable and F. H. Smirk), 874 (O)
- sedimentation rate in acute appendicitis, 626
- stored, failure of *in vitro* tests as guide to value of (P. L. Mollison and I. M. Young), 797 (O); annotation on, 813
- supply of human heart valves (W. F. Harper), 305
- transfusion: For air-raid casualties, 132—Use of, 426—Reaction after, 667—Transient blindness following (D. Lebane), 694—New plant for Scotland, 707—Unusual sequel to (G. Robinson), 728
- And syphilis, 748—Acquired immunity to reactions (J. J. Wolfe and C. E. Das Gupta), 807—In malignant diphtheria (I. Pugh and O. S. Williams), 844 (O). See also Plasma, Serum, and Transfusion
- "blue drum," or idiopathic haemotympanum, in children (J. H. O'Donnell), 86 (O)
- BLUMER, George: Editor of Practitioner's Library of Medicine and Surgery, 200
- BLYTH, William: Cysticercosis epilepsy, 492
- Board, Central Midwives: Report, 313
- Conjoint, in Scotland: Diplomas granted, 181
- Degrees and pass lists, 675
- Metropolitan Water: Consultative Committee, 390
- of Registration of Medical Auxiliaries: National Register of Medical Auxiliary Services, 3rd ed., 201—Orthoptists' section, 201
- Bodansky, Meyer, death of, 791
- BOOMAN, Frank: War conditions and mental health of child, 486
- Bolivia: Director-General of Health appointed, 322
- Bomb fragments, penetrating, burns from, 246, 355
- BONNEY, Victor: Appreciation of Dr. H. M. McCrea, 754
- Books, old medical, 19
- BORCK, Ernest (and others): Laboratory Manual of Biochemistry, 17
- BOUCHIER, P. R.: Sulphapyridine in Br. abortus infection, 285
- BOURDILLON, R. B.: Hypochlorite solutions for burns, 316
- BOURNE, Geoffrey: Administration of voluntary hospitals, 891
- Bowen, John Templeton, death of, 361
- Bowser, Hilda Crichton, obituary notice of, 180
- Boxing, review of book on, 51
- Boyd, Douglas: Medical planning, 179
- Reynold H.: Is the safe period safe? 102
- William McCall, death of, 288
- Boyle, H. Edmund G., obituary notice of, 635
- BRAOOURY, F. R.: Chemotherapeutic agents, 922

- BRADLEY, Charles: *Schizophrenia in Childhood*, 852
W. H.: *Streptococcal cross-infection*, 743
Bradycardia in juvenile rheumatism, 735
Brain: Differential diagnosis of contusion of, 66,
103—Review of book on, 379—Diagnosis of hemi-
spheric cysts in, 787
BRANN, R. T.: Treatment of impetigo, 492
—W. Russell: Lung collapse after eye opera-
tion, 177
BRANSTED, William Clarence, death of, 425
BRATTONWAT, E. Wrigley: Plannia for mental
health, 421
BRAY, George: Nail lacquer dermatitis, 927
Bread: Invalids and fortified, 27—Standard loaf in
Africa, 28—Wholemeal, 64, 244, 491—National,
Jan. 102; correspondence on, 176, 213, 319—
Potato flour for, 252—Humphrey Clinker and
white bread, 640—Nutritive value of (M. D.
Wright), 689 (O); correspondence on, 790, 888.
See also Flour
Breast-feeding, review of book on, 162
Breasts, diminution in size of, after childbirth, 254
BRENNAN, F. R.: Tetanus treated with A.T.S.,
avertin, and high-calorie diet, 50
BETKUS, Peter, J.: *Your Teeth: Their Past, Present,
and Probable Future*, 582
BRIND, William A.: Differential diagnosis of con-
tusion of brain, 66—Comed medical works, 102
—Haddock: *Medical Jurisprudence and Toxicol-
ogy*, 5th ed., 547—Air-raid shock, 712
BRINMAN, H. J.: Cardiac arrest during anaesthesia,
175, 356—Ether convulsions, 765 (O)
BRIDGE, J. C.: Industrial medicine, 745
BRIDGES, Major Arthur Brodie Hamilton, obituary
notice of, 675
—M. H. Arlenden: *Dietetics for the Clinician*,
4th ed., 771
BRIGGS, Lloyd Vernon, death of, 180
BRIGHTON: Report of M.O.H., 627
Bristol: Hospitals Fund, 315—Hospitals Commission,
521
British Encyclopedia of Medical Practice—Surveys
and Abstracts and Cumulative Supplement, 229
—Journal of Inebriety: New editor, 714
—Medical Journal: Advertising announcement,
74—Educational Number in abeyance, 127—
Surplus copies of, 568
—Pharmaceuticals, 1925: Fourth addendum, 351,
451—British equivalents for proprietary drugs, 590
—Schering, Ltd.: Announcement, 896
BROCK, A. J.: Planning for mental health, 387—
Future of mental health, 710
—R. C.: Drainage of pleura, 128
BROCKNAGEL, E. M.: *Male Spinner's Cancer*, 851
BROCKNAGEL, C. F. (and others): Clearance of
urban air-raid casualties at perimeter, 130
BROOKE, R.: Hallux valgus deformity in soldiers,
605 (O); correspondence on, 709, 789
BROSTRA, L. R.: Survey of war surgery, 273
BROWN, Dame Edith Mary, 50 years of work in
Funchai, 721
—R. H. Ernest: E.H.S. hospitals, 820
—F. R.: Cardiac arrest during anaesthesia, 175
—J. A.: Industrial medical services, 888
—J. J.: Shortage of glucose preparations, 292
BROWN, R. C. (and A. FOX-SMITH): Enuresis in
adolescents, 803 (O) (nary notice of, 529
BRUCE, Muriel: *Enuresis*, 803
Brucella abortus infection responds to sulphapyri-
dine, 285, 318, 428, 455
BRYSON, Munro, obituary notice of, 287
BUCHE, J. F.: Comparison of treatments for
scabies, 27
BUCHEAN, J.: Stabbing head pains, 864
BULL, J. L. Forman: District nurse for Home
Guard casualties, 794
BULLER, Georgina: Rehabilitation of injured, 927
Bulletin of Health Organization of League of
Nations, vol. 9, No. 3, 447
—of War Medicine: Index to vol. 1, 696
BUNYAN, John: Burns and wounds treated by
envelope method, 1 (O); leading article on, 53;
correspondence on, 135, 246, 316, 750, 836—
Streptococcal cross-infection, 743
BURNBY, W. Mary: Effects of evacuation and air
raids on children, 660
BURGE, H. W. (and N. R. JAMES): Improved
method of regional anaesthesia in acute abdominal
surgery, 906 (O)
BURGES, R. C. L'E.: Impressions of R.M.O., 816
—Medical man-power, 928
BURTON, Harry: *Who Walk Alone: Life of a
Lover*, 480
Burial rites, ancient, and modern currency, 350
Burke, Edmund Tyler, obituary notice of, 34
BURKITT, R. E.: Correction of article, 108
BURN, J. H.: Raspberry-leaf extract, 418
Burnell-Jones, H. S., obituary notice of, 596
BURNETT, J. A.: Severe reaction after sulphapyridine,
318
Burns: Envelope method (J. Bunyan), 1 (O); (J. W.
Hannay), 46 (O); coated silk fabric for (R. V.
Hudson), 7 (O); local treatment (R. S. B. Pearson
and others), 41 (O); leading article on, 53; corre-
spondence on, 65, 252, 359, 836—First aid
treatment of blisters, 35—Memorandum on, 140
—From penetrating bomb fragments, 246, 355—
"Cocktail," 362—Closed-plaster treatment of
burns of extremities (T. J. Roulston), 611 (O)—
Euglandine for, 748
—Phosphorus treatment of, 428
Burns, Delisle (and others): Wounding
mechanism of high-velocity missiles, 872 (O);
leading article on, 881
—Charles: Encephitis in children, 767 (O);
correspondence on, 890, 927
BÜRO, Oscar Kriener: Editor of *Second Yearbook
of Research and Statistical Methodology*, 899
BUTCHER, H. Jackson: Lack of calcium, 176
BURY: Annual report of M.O.H., 462
BUTLER, Elizabeth Fraser: Exposure to tetryl and
T.N.T., 630
—T. Harrison: Protecting eye-shield, 101, 418—
Fire-bomb injuries, 140—Appreciation of Mr. J. J.
Evers, 320—Unusual symptoms of migraine, 418
BUTTERS, A. G.: Traumatic rupture of pectoralis
major, 652
BUTTERWORTH, B. A.: Voluntary hospitals, 489
BUTSON, P. A.: Parasitology of scabies, 397 (O)—
Louse-borne typhus fever, 887
BYRNE, L. H. H.: Puerperal tetanus, 388
BYWATERS, E. G. L.: Crush injuries, 29—Kidney
and limb compression, 884
- C**
- CABLE, J. Verney (and F. H. SMYKE): Blood-
pressure-raising reflexes in hysterical anaesthesia,
574 (O)
CAIGER, Herbert: Eye injuries in war, 417
CAIRNS, Hugh: Head injuries in motor-cyclists, 465
(O); leading article on, 481; correspondence on,
597
Calcium, lack of, 176, 247, 285
Caldecote Hall, Nuneaton, reopened, 360
CALDER, Ruthie: *Corry London*, 201
—R. M.: Allergic shock following Schultz-
Charlton test, 198 (O)—Lung injuries in air raids,
242—Reported missing, 425
CALLAN, Alexander (and A. DUFF): "Wound
phagedena," 801 (O); correspondence on, 890
CAMPBELL, Barbara: *Good Health on War-time
Food*, 696
CALVERT, Walter: Reactions to morphine, 33
CAMERON, G. R.: Lung injuries in air raids, 239
—T. W. M.: Parasites of Man in Temperate
Climates, 339
CAMPLING, Ian: Dark adaptation and miners'
systolic blood pressure, 101 (O)
—Dame Janet (and H. M. VERNON): *National
Health Services and Preventive Methods for Im-
proving National Health*, 808
—J. Arvill: Oxygen administration, 64—Silicosis
without crystal unit of quartz, 102
—James: Diet and test, 283
—Robt. D.: Haemoglobinometry, 747
—Walter Gordon: Reduction of fractures of os
calis, 651 (O); correspondence on, 749
—William Neil, obituary notice of, 462
—Willis Cohoon, death of, 461
Camp, children's health in, 106
—labour, disease in, 483
Canada: Jam for Britain, 216—Compulsory pasteuriza-
tion in Ontario, 446—Epidemic of infantile
paralysis in Manitoba, 494—Gift to Russian Red
Cross, 678—Industrial medicine, 745; committee
on, 702—Gift to Polish Army, 76
Canada: Treatment in Canada, 36—Treatment
by hypothermia (leading article), 231—Review of
books on, 267, 851—in lower animals, 532—
Sarcoma treated with Coley's fluid, 827
—Act, local arrangements under, 378
—Campaign, British Empire: Annual report of
Yorkshire Council, 455
—cervical, epidural novocain injection in, 493
—cutaneous metastasis, 808
—of female ureters, 362
—massive adrenal, with pseudo-haemorrhoidism
(M. Albert), 265 (O)
—menstrual, sudden spread after hysterectomy
(L. J. Temple), 511
—mule-spinner's, review of book on, 851
—Pan-American League against, founded, 183
—of rectum, operability of (J. C. Goliath), 395
(O); correspondence on, 492; correction, 568
Canned food, keeping of, 714
CANNON, A. Tandy: Confusion of names, 564
Cannula, new type of, 878
CANT, W. H.: Care in use of Group O cord, 419
CAPENER, N. L.: Fracture of tibia, 351
Carbohydrate: Effect of, on protein metabolism
(leading article), 591, 709
Carcinoma: See Cancer
Cardiac: See Heart
Cardiology, radiological investigations in, 750
CARLING, E. Rock: Air-raid casualties, 132—Strept-
ococcal cross-infection, 742—Kidney and limb
compression, 884
Carotene as substitute for vitamin A (L. Nicholls
and A. Nimalasuriya), 406
CARROLL, Robert S.: *What Price Alcohol?* 878
CARSLAW, R. Workman (and J. A. SWENSTON):
Economy in treatment of impetigo and scabies,
605 (O); correspondence on, 256, 364
CATER, Dorothy L.: Treatment of scabies, 401
(O); correspondence on, 670
—F. W. P.: *Pengon Book of Food Growth,
Storing and Cooking*, 126
CARVER, A. E.: Secret remedies, loophole in new
Bill, 66—Dermatological notes, 209
CASTELL, H. G. P.: Health of T.N.T. workers,
850
Cataract, secondary, discussion of, 66
Catering, cancer, booklet on, 307
CATUR, sulphuramides and, 824
Cauda equina, tumor of, 712
CAWADIAS, P. P.: Sydenham and Royal College of
Physicians, 212—Science and world order, 592,
753—Hemaphysidiosis, 818
CAWSTON, F. Gordon: Nasal snuff, 711—Abbre-
viated treatment for bilharziasis, 716
Cellulitis, anaerobic, and gas gangrene (G. Ovis),
217 (O)
Cerebrospinal fluid in closed head injuries (J. W. A.
Turner), 569 (O)
Cervicitis, medical, 930
Certification: And notification (leading article), 555
—Alleged incorrect medical, 862
CHAIN, E.: Chemotherapy against, 922
CHAILLEN, P. (and B. MACLEAN): Puerperal tetanus,
305 (O); correspondence on, 388, 418, 492
CHAVESE, Francis Bernard, obituary notice of, 141
CHEATLE, Sir G. Lemball: Appreciation of Dr. H.
M. McCrea, 754
CHREVER, David: Mars and Aesculapian, 483
Chelmsford: Statistics, 436
Chemistry: Review of book on, 339—And para-
mity, 785
Chemoprophylaxis of rheumatic fever, 66
Chemotoxic anaphylaxis, mode of action of, 921
Chemotherapy: In acute otitis media (leading
article), 20; correspondence on, 102, 317—in
acute middle-ear disease: "masked mastoiditis,"
159 (O); correspondence on, 317—in pneumonia
474 (O)—Plague, 62 (O)—Proteol infections
(leading article), 774—For tuberculosis, 356
—local, as curative measure (R. V. Jones), 266
Chest: Anaesthesia in surgery, 342
—Series: Closed wounds of chest (J. A. Nixon),
24—Some aspects of (J. G. Suddards), 57, 94—
Pleurisy, drainage of (C. C. Brock), 125
CHICK, Harriette, Nutritive value of bread, 760
Chicken-pox: Blood picture in, 715—Infectious
after, 755
CHIESMAN, Dr.: Industrial medicine, 745
Children: And brittle nails, 568, 640—Treatment
of, 716, 794—And allied conditions (Sir T. Lewis),
837 (O); leading article on, 879
Childbirth: See Labour
Childhood, book of poems on, 69
Children: Aggregation of toddlers, 91—Feeding of,
454—Incontinence in, 496, 600, 765, 880, 92—
Air raids and (M. R. Mors), 625—War-time
rationing and health of, 820
—sick, review of book on, 480
China: Medical aid for, 64, 640—Health problems
in Hong Kong, 278—British Dispensary at Har-
low, 289—Health report for Hong Kong, 532
CHRISTIAN, A. E. (and A. LESLIE): Case of double
cyst, 803
Chloroform in the diaphoresis, 19, 364
Chloroform-ether sequence, 356
Choline, influence of, on animal metabolism (lead-
ing article), 535
CHOLNICK, L. (and L. ZECHMEISTER): *Principles
and Practice of Chromatography* translation, 479
Choriomeningitis, lymphocytic, as "infectious"
syndrome, 343
Chromatography, review of book on, 479
Chromosomes, human sex (leading article), 202
Chu, Henry B., death of, 713
Churchman, A. L., 16
CIPES, Richard L.: *Prescriptions Warnings and
Formulary for Dentists*, 52
Circulation, problems of (R. J. S. McDowall), 39
(O), 76 (O); correspondence on, 216
Citizens' review of book on, 253
Civil Defence: *Defence of the Community*, 25, 135, 208,
418, 481, 625, 818, 920—Nurses' memorandum,
148, 185, 250, 425, 626, 714—Commended, 530,
566, 817—Rest for workers, 838
CLANCY, William J.: Sulphonamides for ophthalmia
neonatorum, 749
CLARK, Alfred: Obituary notice of, 213, 249
—K. G.: *Prescriptions for Radiography*, 2nd ed.,
654; correction, 810
Clarke, Astley V. nominated sheriff for Rutland,
758
—C. Astley: Haemorrhage in sulphonamide
therapy, 19
—C. Astley: Contributions to war surgery from
U.S.S.R., 372 (O)
—T. A.: Chemotherapy in middle-ear disease,
317—Oro-baryolysis on war service, 745
CLAYTON, E. S.: Voluntary hospitals, 525
Clift palate and hard palate, influence of, 165
CLOCK, Hugh: *War-time Health and Democracy*,
547
Clement-Smith, H. D., elected Warden of Mercers'
Company, 530
CLENDEEN, Logan: *Methods of Treatment*, 7th
ed., 89; correction, 843
Clink, Humphrey, and white bread, 640
Clinic, Tavistock: 21st birthday luncheon, 557
Clostridia, identification of, 316
Clothing: Coupons for expectant mother, 152, 250,
836—Pamphlet on rationing, 428
Clubbing of fingers, unilateral (R. E. Rodgers),
495 (O)
COATES, T. S.: Treatment of phosphorus burns,
428
—Co-enzyme R, 518
Cohen, George Alexander, obituary notice of, 673
Coulains-training apparatus for impotence (J. Lecom-
te), 49 (O)
Colds in air-raid shelters, 392
COLES, Leslie: Diabetic coma in young diabetes,
137
COLEROCK, Leonard: Streptococcal cross-infection,
743
COLES, Alfred C.: Size and visibility of filterable
or virus bodies, 507 (O)
Coley's fluid, sarcoma treated with, 827
Coliform bacilli in water, 63
Collapse therapy in pulmonary tuberculosis (lead-
ing article), 444
Collapsus, attending, 166, 292

College, Epsom: Annual meeting, 28—Scholarships, 390
— Royal, of Nursing: Request for microscopes, 640
— Royal, of Obstetricians and Gynaecologists: Officers elected, 216—Fellows admitted, 216—Members admitted, 216, 675—Diploma, 675
— Royal, of Physicians of Edinburgh: Fellows elected, 714—Awards, 714—Officers, elected, 894

COLLEGE, ROYAL, OF PHYSICIANS OF LONDON:
Degrees and pass lists, 250, 675
Diplomas granted, 250, 675
Elections, 250, 675
Lectures, 39, 76, 675
Members elected, 250, 675
Sydenham and, 212

College, Royal, of Surgeons of Edinburgh: Fellows admitted, 181, 598—Election of officers, 598

COLLEGE, ROYAL, OF SURGEONS OF ENGLAND:
Announcements, 532
Appointments, 105, 288, 597, 929
Awards, 597
Calendar, 772
Diplomas granted, 105, 288, 597, 756, 929
Elections, 756—Council, 69
Lectures, 105, 638
Luncheon party, 597
Message from King, 105
President elected, 105
Recognition of hospitals, 597
Research studentship, 638
Specimens of ear, nose, and throat, 385

COLLIER, Howard E.: Industrial medical boards, 888
COLLINS, H.: Treatment of wound shock in first-aid posts, 750

COLLIS, W. R. F.: Placental infarcts, 786
Colonies, health and disease in, 833
COLT, G. H.: Envelope treatment of burns, 246—Unabsorbable suture materials, 281
Committee, Medical Planning, 31, 179, 244, 319, 666

Committee, Anglo-Soviet Medical, 411, 424, 791—Meeting, 590

— Medical Personnel Priority, 530
— Mental Health Emergency, Report, 173
— Parliamentary Medical: Meeting, 289
— Vegetable Diet, Medical Officers, 38
— Voluntary Hospitals, for London: Report, 659
Communal feeding in schools, 133, 211, 247, 282, 358, 458, 491

COMPTON, Arthur: Treatment of bacillary dysentery, 280

COMROR, Bernard L.: *Arthritis and Allied Conditions*, 2nd ed., 547

Conscientious objection, annotation on, 553

Contraception, review of books on, 379, 772

Convulsions. *Ether*, 32, 67, 103, 177, 216, 282, 890
(H. J. Brennan), 765 (O)—Under anaesthesia (S. F. Durrant), 228

COOK, James: Voluntary hospitals, 667

— W. R. Irving (and R. C. McLEAN): *Plant Science Formulas*, 852

COOKE, W. Trevor: Unusual reticulocytosis in untreated case of pernicious anaemia, 806 (O)

COOKIN, Frederick Newfield, obituary notice of, 861

— H. A. Blood transfusion and syphilis, 748

COOPER, Aubrey: Nasopharyngeal disease in mental disorder, 173

— W. I. Control of scabies, 836

COOPER, Eric: Loop-and-cap system of bandaging, 339

CORRIE, R. M.: Placental infarcts, 786

CORFIELD, W. J.: Marking of gas-contaminated clothing, 30—Treatment of scabies, 670

CORNEA, unburned, 74, 254

Coroners' inquests in London, 352

Correspondence:

Abdomen, penetrating wounds of, 284

Abcesses, pelvic, 139

Accidents, increase in fatal road, 592

Air-raid precautions: Chronic sick in bombed towns, 31, 100, 178, 284

Albuminuria, classification of cases of, 246

Amputations, recent, avoidable disability seen in, 562

Anaemia, red cell suspensions in, 823, 926

Anastomosis, congenital arteriovenous, 926

Anatomical nomenclature, 65, 210

Aqueous and glaucoma, 593

Association, British Medical Students', 32, 278—Students and curriculum, 629

Bacteria from wounds enclosed in plaster, 387

Bacteriology, diagnostic, 359

Blood donors: care in use of Group O card, 419

— lymphocytic, late of, 747

— transfusion and syphilis, 748

Brain, confusion of, differential diagnosis of, 66, 103

Bread: Nutritive value of, 790, 883—National loaf, 102, 212, 319

Correspondence (continued):

Cauda equina, suture of, 212

China, medical aid for, 64

Chloroform-ether sequence, 356

Chronic sick, 31, 100, 178

Civil defence: rest for workers, 888

Closed-plaster method, bacteriology of, 66

Colic, bilateral renal, due to sulphapyridine, 31

Commission, Medical Planning, 31, 179, 319, 666

Committee, Anglo-Soviet Medical, 424, 791

Communal feeding in schools, 211, 247, 282, 358, 458, 491

Crush injuries, 29, 139

— syndrome: Treatment of, 176—Recovery from, 388—In obstetrics, 887

Cysts, helminth, in brain, diagnosis of, 787

Da Costa's syndrome, 175

Dark-adaptation test and vitamin A deficiency, 747

Death on operating table, 282

Deficiency diseases, notification of, 212

Dental services of nation, 827

Depressive states in soldier, 209, 243, 490

Dermatitis, nail lacquer, 927

Diabetes: And chronic nephritis, 670, 790—And mercurial diuresis, 750

Diabetic coma: In young diabetics, 30, 137—Insulin and, 210

Diet and teeth, 283

Diphtheria, control of, in schools, 861, 925

— immunization: Practical results of, 669, 751; Combined active and passive, 887, 924

Dressings, economy in, 787, 857

Drumhead, rupture of, as wartime injury, 388

Dysentery, bacillary, treatment of, 280

Dyspepsia, functional, 209

Ear, nose, and throat: Organization of department in E.M.S., 594, 668—Instruments, 859

Emetine in liver abscess, 357

Encopresis in children, 890, 927

Endocrine therapy of hypertrichosis and acne, 890

Epilepsy, cysticercosis, 492

Ether convulsions, 32, 67, 103, 177, 282, 890

Eye-shields, protecting, 101, 212

Eyes, injured, first-aid treatment of, 136

Fats and carbohydrate metabolism, 709

Fever, abortus, and sulphapyridine, 455

— cerebrospinal, sulphonamides for, 595

— paratyphoid B, water-borne outbreak of, 212

— puerperal, persistent streptococci after, 476

— rheumatic, chemoprophylaxis of, 66

— yellow, diagnosis of, 247, 357

Fire-bomb injuries, 140

First aid: Lectures on, 284, 355—"To the injured," 595, 672

First-aid posts, mobile, 594, 671, 751

Flat-foot: In recruits, 137—In Army, 355

Flexibility, plea for, 528

Flour, national wheatmeal? 822

Food advice: For waiting out-patient, 633—For working-class mothers, 860

Fund, Royal Medical Benevolent: Christmas gifts, 523, 830

Gas: Marking of contaminated clothing, 30—Treatment of casualties, 559

— gangrene, sulphadiazine and sulphanilyl-guanidine against, 29

Gonorrhoea, treatment of, 68

Haemoglobin for pregnant women, 926

Haemoglobinometry, 747, 823, 859, 926

Haemolytic streptococcal infection, unusual outbreak of, 824

Haemorrhage in sulphonamide therapy, 319

Haemorrhagic disease of newborn, treatment of, 526, 594, 632

Hallux valgus in soldiers, treatment of, 709, 789

Head injuries in motor-cyclists, 592

Health policy, national, 672

Heart: Cardiac arrest during anaesthesia, 175, 243, 356, 423—Early cardiac massage, 175

Hemiorrhaphy, 824—For unilateral adenomatous enlargement, 788

Hernias, darning of, 176, 246

Herpes labialis after T.A.B. and chemotherapy, 562

— zoster, paralysis accompanying, 31

Hospital, municipal, 711, 790

— policy, 666, 828

— problem, 828

Hospitals, staffing of, 790

— voluntary, 353, 388, 419, 456, 489, 523, 558, 593, 629, 666, 892—Administration of, 891

Human ostrich, 287, 892

Hyaluronidase, 788

Hyperchlorhydria, sugar-free diet and, 247

Hypertonic sodium sulphate for wounds, 355, 419

Hypoproteinaemia, 279

Impetigo contagiosa, treatment of, 178, 247, 356, 422, 492, 526, 560

Industry: Industrial medical boards, 711, 826, 888—And lactation, 860—Industrial medical services, 888—Medical supervision of industrial workers, 889

Inflammation, mechanism of, 285

Insulin, intravenous, simple technique of, 459

Insulin: Economic dosage, 137—And diabetic coma, 210

Iron, stimulant action of, 888

Loaf, national, 102, 212, 319

Lunx collapse after eye operations, 177

Malaria in Britain, possibility of, 668, 748

Malnutrition, 283

Medical education, 524, 628, 752—Future of, 420, 458—Culture, and State aid, 421

— man-power, 140, 927—Economy of, 826

Correspondence (continued):

Medical service under new order, 244

Medicine: leadership in, 244

— physical, and orthopaedics, 178

— post-war, 665, 752, 891

— preventive, publicity for, 860, 925

Meningitis, cerebrospinal, sulphonamides in, 631

Mental defectives in Army, 280, 353, 422, 490, 630

— health: Planning for, 387, 421, 457—Future of, 710

Middle-ear disease, chemotherapy in, 317

Midwife's title, 562

Morphine, reactions to, 33

Myalgia, novocain injection in, 247

Myositis and fibrositis, 789

National War Formula, 788

Nephritis, chronic hypertensive, renal extracts for, 177

Nerve, peripheral, injuries, 286

Neurofibromatosis, familial, 492

Night vision, testing, 631, 789, 858

Night-blindness: psychological study, 858

Ophthalmia neonatorum, sulphonamides for, 749, 887

Organization, optimum size of, 665

Os calcis, operation for reduction of fractures of, 749

Osteomyelitis, treatment of, 30

Otitis media, suppurative, sulphapyridine in, 211

Oxygen administration, 64

Pain, sciatic, 825

Paralysis, post-herpetic, 139

Parkinsonism, post-encephalitic, henzedrine in, 33

Pellagra, nicotinic acid, 823

Penicillin, 386

Phagedaena, wound, 890

Physiotherapy, 140

Pituitary extract, posterior, in labour, dangers of, 102

— principles, nomenclature of, 242

Poliomyelitis, spread of, 460, 560

Pregnancy, combined intra- and extra-uterine, 927

Prostate, endoscopic resection of, 749, 860

Psychiatric problems in wartime: plea for caution, 243

Psychology, medical, 925

Psychotherapy, air-raid noises in, 243, 279, 354, 460

Pyloric stenosis, local anaesthesia in operations for, 66

Radiodermatitis, 175

Radiographs and pelvic disproportion, 708, 821

Radiography of students' chests, routine, 388

Raspberry-leaf extract, 418, 528

Rehabilitation of injured, 526, 558, 927

Relaxation, technique of, 527

Rheumatic cases, three unusual, 140

Russia, surgical instruments for, 830

Safe period, is it safe? 102

Sarcema treated with Coley's fluid, 827

Scabies: Questionable evidence of cure, 492, 561

— Treatment of, 560, 631, 669, 752

Science and world order, 592, 671, 753

Seu vy, infantile, 787

Secret remedies: loophole in new Bill, 65

Services: Selection for Army, 490—Home Guard medical supplies from Canadian Red Cross, 280

Ship surgeon: And medical personnel on transports, 32, 460—Status of, 671

Shock, air-raid, 712

— from burns, 388

— wound: Heated couch, 668—Treatment in first-aid posts, 750

Sight: Remedy for defective, 389—"Perfect sight without glasses," 459, 562, 753

Silicosis without crystal unit of quartz, 102

Snuffs: Antiseptic, 357—Nasal, 711

Soced and road casualties, 359

Splint, Thomas, 424

Sprue syndrome, 857

Staph. aureus in nasopharyngeal infections, 102

Statistics, medical, in wartime, 562

— surgical, for general surgeon, 492

Status lymphaticus and sudden death, 423

Students, medical: And curriculum, 629, 711—And help for Russia, 633

Sulphapyridine: Br. nortus infection and, 210, 285, 318, 455—Severe reaction after, 318

Sulphonamides: And sulphur, 139, 285—And catgut, 824

Surgery, wartime, speed in, 456

Suture materials, unabsorbable, 30, 280

Sydenham and Royal College of Surgeons, 212

Tacniasis, somatic, and cysticercosis epilepsy, 357

Teeth, nation's, 928

Telluric medium of Wilson and Blair selective for B. dysenteriae (Flexner), 563

Tendons, cut flexor, suture of, 138

Tenosynovitis of tendo Achillis, 633

Correspondence (continued):

- Tube *in situ* pulmonary: definition, 317
— bronchogenic, 423
Türk cells, plasma cells, and premonocytes, 633
Vaccinia as complication of vaccination, 731, 822
Vena cava: Subcutaneous ligation of, 67, 357—Treatment of, 670
Venereal disease: Control of, 359—Diagnosis of early, 652, 710
Vision, loss of, following haemorrhage, 711, 823
Vitamin E therapy in neuromuscular disorders, 709
X-rays in treatment of inflammations, 825, 859, 891

- Cortisenda, 74, 108, 148, 428, 532
Cotton-wool, sterilisation of, 445
Council, Agricultural Research: Appointments, 363
— British Social Hygiene: Annual meeting, 238
— Work of, 207
— Central for Health Education: Booklets, 392
— Children's Nutrition: "Food and the War," 174—President of Aberdeen branch, 185—Feeding children, 454—Consumption of flour, 461—Rose-hip jam, 464
— London County: Salaries in medical services, 522

COUNCIL, MEDICAL RESEARCH:

- Bulletin of War Medicine: Index to vol. 1, 696
Emergency Public Health Laboratory Service bulletins, 758
Green vegetables, 26
Invalids and fortified bread, 27
Members: Elected, 290—Appointed, 777
Pathological war collection, 740
Sulphonamide drugs, toxicity of, 149
War Memorandum, No. 6: Hospital infection, 699
Wound shock, 332
Wounds, research on, 746

Council, Medical Research, of Ireland: Annual report, 28—Awards, 197

- Mercerside Hospitals: Report, 174
— National Baby Welfare: National Baby Week, 28—Leaflet, 101

- of Mental Health: Annual report, 542
COVE-SMITH, R.: Paralysis accompanying herpes zoster, 67

- COVENTRY: Annual report of M.O.H., 626

- COWELL, E. M. (and P. H. MITCHELL): *Medical Organization and Surgical Practice in Air Raid*, 2nd ed., 162—Appreciation of Prof. A. J. Clark, 249

- COX, Alfred: Appreciation of Dr. F. G. Layton, 104—Appreciation of Dr. E. H. T. Nash, 891
— H. T.: Endoscopic resection of prostate, improved technique, 553, 850

- CRAWFORD, Fred R.: Treatment of impetigo contagiosa, 356—correction, 428

- CRABE, Robert: Türk cells, plasma cells, and premonocytes, 633

- CRAWLEY, F. E.: Isotestinal haemorrhage during sulphonamide therapy, 160; correspondence on, 339

- CRAWFORD, F. M. (and J. V. O'SULLIVAN): Radiographs and disproportion, 543 (O): leading article on, 551; correspondence on, 708, 821

- CREEK, W. Sayle: Haematuria in soldiers, 709
CREIGAN, G. T.: Ship surgeons and medical personnel on transports, 72

- CRISTIANI, Hector: Formula for baby feeding, 35
CROHA's disease with acute obstruction (C. W. Ward and D. T. Thomas), 613

- CROWN, classification of, 918

- CROWTHER, J. G.: *British Scientists of Nineteenth Century*, 810

- CRUCKSHANK, Lewis G.: Darning of hernias, 246
— Appreciation of Dr. W. Robertson, 529
— Robert and D. E. W. ANDERSON: Sulphamylguanidine for bacillary (Flexner) dysentery, 497 (O): leading article on, 514—Control of diphtheria in schools, 861—Planning in fever services, 923

- CRUISE, Sir Richard: Eye protection in warfare, 418
Crush fracture of sesamoid bone of thumb (W. H. Scobie), 912

- Injuries, 29, 139, 176—Recovery from trauma following (R. G. Henderson), 197 (O)—Recovery from 311, 358—With renal failure and recovery (G. Blackburn and W. W. Kay), 475 (O)—Effect of, on kidney, 884—"Crush syndrome" in obstetrics, 887

- CRUZ, José da Costa, death of, 361

- CUNNINGHAM, S. Lyle: Increase of tuberculosis, 632, 787

- CUNNINGHAM, A. A.: Medical man-power, 140—Planning in fever services, 923

- CUSACK, George C.: Editor of *Hospitals under Fire*, 201

- CUSACK, E.: Crush syndrome, 176
CUSHING, Harvey: Memorial to, 216—Life of Sir William Osler, 546

- CYRAX, James: Sacro-iliac strain, 847 (O)
Cysticercosis epilepsy (C. W. Ewing), 263 (O): correspondence on, 557, 695—Treated with sulphathiazole (L. J. Seraji), 695; correspondence on, 787

- Cystostomy, suprapubic, bougie for, 730
Czechoslovakia: Before 1939, 61—Message from doctors, 447—Joint conferences, 464—Review of book on Sokol, 750—Medical reception, 740—Elimination for Czech medical centres in London, 833

D

- Da Costa's syndrome, 175
DALE, Sir Henry: Appreciation of Prof. A. J. Clark, 213—Mode of action of chemotherapeutic agents, 921

- DALLDREIF, Gilbert and W. H. EDDY: *Avitaminosis*, 2nd ed., 373

- DALLYVILLE-CHAMBERS, Sir W.: Abortus fever and sulphapyridine, 455

- Dark adaptation: And miners' nystagmus (I. Campbell), 726 (O)—And vitamin A deficiency, 747

- DARLING, H. C. Rutherford: *Surgical Nursing and After-Treatment*, 7th ed., 615

- DAS GUPTA, C. E. and J. J. WOLFE: Acquired immunity to blood transfusion reactions, 807

- DUNCAN, K. E. D.: First aid for horn-rimmed spectacles, 292

- DAVIDSON, Ferrus Macandrew, obituary notice of, 613
— Lieut.-Col. Hugh Allan, obituary notice of, 637

- Ian Mackenzie: Cutaneous anthrax treated by arsenicals and sulphapyridine, 725 (O)
— L. S. P. (and others): Duodenal intubation, 865 (O)

- DAVIS, T. B. (and G. E. O. WILLIAMS): Concentrated red cell suspensions in anaemia, 641 (O): annotation on, 659; correspondence on, 823, 926

- DAVIES, H. Morrison (and others): Thoracoplasty for pulmonary tuberculosis, 501 (O)
— Ivor J.: Appreciation of Dr. W. L. Davies, 143

- MORDEN: Tuberculosis in recruits, 136
— Russell M.: Post-exanthematous vomiting, 575 (O)
— Sidney, reprints of appreciation of, 144
— Walter Ernest Llewellyn, obituary notice of, 35, 143

- DAVIS, E. D. D.: Oto-laryngology on war service, 744
— W. E.: *Contra Doctor*, 18

- DAWSON, Henry Kinz, obituary notice of, 925
DAY, George: Activity of tuberculosis, 316

- DAVIES, W. Guy: Infantile scurvy, 78
Deaths on table in general practice (I. Elam), 207: correspondence on, 252, 356, 392

- DEBICHEN, Dr.: Centralization in Norway, 61
Deficiency diseases, notification of, 215
de Labrière, Sure, Lieut.-Comm. Claud Denis Delacour, reported "missing, presumed killed," 530

- DELAFFIELD, M. E. (and E. STRAKER): Antiseptic fluids, 221 (O): correspondence on, 357

- DELUQUET, juvenile, pardon of, 56
de Marignac, Ernest, death of, 713

- DENDAL, Tordfin: Radiological investigation in cardiology, 730

- Dental services: Planning by students, 458—Of nation, 527, 923

- Dentistry, review of books on, 162, 852
Department of Scientific and Industrial Research: Index to Life Science of Food Investigation, vol. 12, No. 4, 582

- Depressive states in soldier (R. F. Tredgold), 109 (O): correspondence on, 209, 243, 316, 490

- Dermatitis from nail lacquer, 855, 927
Dermatological review of books on, 17, 408, 546

- Dermatitis, Napoleonic, 349
Dermoids, post-aural, treatment of (G. K. Harrison), 87

- DESMARIS, M. H. L.: Treatment of impetigo contagiosa, 356—Painful removal of adhesive bandages, 364

- DESOUTTER, E. R.: Avoidable disability seen in recent amputations, 562

- DEVILLER, A. C.: Art of surgery, 667
DE VRIES, Louis: *French-English Science Dictionary*, 379

- DE WAAL, H. L.: Improved method of obtaining bacteria from wounds enclosed in plaster, 268: correspondence on, 357

- Dezzo, Pládes O., death of, 713
Diabetes: Lincration scheme, 118—Prevention of, 234—And chronic nephritis, 670, 750—And (metabolic) diabetes, 730

- experimental, 658
— insipidus, thyroidectomy in, 555
Diabetic chart, 364
— coma in young diabetics, 30, 137, 210
— diet, W. difficulties in (R. D. Lawrence), 118 (O)—Note on, 290

- Diarrhoea, chemistry of, 206
DICKSON, Dalziel: Oto-laryngologist on war service, 744, 857
— John Rhodes, obituary notice of, 70

- W. A.: Treatment of scabies, 596
Diet: And teeth, 253—Of workers in heavy industries, 566—Review of book on, 696—In pregnancy, 703 See also Food

- Dietetics, review of book on, 771
Digest of War Medicine, Nos. 1 and 2, 442
DIXON, C. 206

- Digitalis preparations compared, 554
DILLING, W. J. (and S. HALLAM): *Dental Materia Medica, Pharmacology and Therapeutics*, 2nd ed., 852

- DILLON, Frederick: Air-raid noises in psychotherapy, 243, 460
— T. W. T.: Water deficiency, 665

- Dinnick, Oswald Wilson, obituary notice of, 425

- Diphtheria: Types of, 161—Medicine for bacilli, 316
— Protection against (leading article), 773—Control of, in schools, 851, 925
— Disinfectants, sulphathiazole stout for (A. M. Thomas), 687 (O)

- Diphtheria immunization, 566, 823—Tuberculosis trouble, 36—Cost of, 568—Practical results of, 669, 751—Combined active and passive (C. S. Wilson and others), 717 (O), 759 (O): leading article on, 776; correspondence on, 561, 587, 924, 932
— malignant, blood transfusion in (I. Push and O. S. Williams), 844 (O)

- Disabled: Special educational training courses for, 347—Restoration of, to employment, 434

- Disclaimers, 148, 532, 716
Disproportion, radiographs and (J. V. O'Sullivan), 543 (O): leading article on, 551; correspondence on, 708, 821

- Distiches, necrotic, death from, 855
Diverticulitis, irritation in treatment of, 532

- Divorce and temporary mental treatment, 674
DOBSON, Francis George, obituary notice of, 257

- DOCKERT, Sir Bernard: Address to British Hospital Association, 664

- Doctors: And appeal to Courts, 183—Accommodation for doctor's child, 186—Accommodation for doctor's family, 292—And industry, 363

- DODD, Harold: Voluntary hospitals, 429
DODDS, E. C. (and G. E. BEAUMONT): *Recent Advances in Medicine*, 11th ed., 513

- DOGGART, J. H.: Refraction under Service conditions, 418

- DOMAGK, Gerhard, Spanish honour for, 216
DONALD, John: Function of vocal cords, 496

- DONALDSON, Malcolm: Voluntary hospitals, 429—Publicity for preventive medicine, 922

- DONOVAN, G. E.: Chemoepithelioma of rheumatoid fever, 66

- DORNEY, B. A. (and J. FREEDLANDER): Amoebiasis—pulmonary complications, 253 (O)—Carriers of tuberculosis, 525

- DOWNIE, A. W.: Media for diphtheria bacilli, 316
— (And others): Active and passive immunization against diphtheria, 717 (O): leading article on, 773; correspondence on, 561, 587, 924, 932

- DRABBE, Horace Silva, obituary notice of, 253
Dressings, economy in (leading article), 619; correspondence on, 737, 857

- DRINKER, Cecil Kent (and J. M. YOFFEY): Lymphadenitis, *Lymphoid Tissue*, 653: correspondence on, 747

- DRIVER, A. H.: Industrial medical boards for women, 826

- Drugs and autonomic nervous system (leading article), 732

- Drummond, Hugh: Of, as wartime injury (A. B. Alexander), 195 (O): correspondence on, 353

- DRYMOND, J. C.: Planned wartime medicine, 855
DRYMOND-SMITH, E.: Treatment of scabies, 751

- Dryer, Harry, obituary notice of, 434
Ducey Augustus, death of, 713

- DUPRE, F.: Future of mental health, 836
DUFF, Alexander: Staffing of hospitals, 750—And (A. Cullum): "Wounded phaedra," 501 (O): correspondence on, 590

- D : Diagnosis of yellow fever, 357
De la Motte, L.: *Chirurgie Républicaine et Corréction des Services de la guerre*, 879

- DUFF, Sir James: Doctor Harry Tuck, reported missing, 714

- DON, Shaw Lung injuries in air raids, 250—Kidneys and limb compression, 855

- Spencer Smithson, obituary notice of, 360
Duodenal intubation (A. Fisher and others), 855 (O)
DUFF, V. (and others): *Clinical Surgery*, 615

- DUTRANS, S. F.: Convulsions under anaesthesia, 223

- Dust infection in wards, 496

- DUTHIE, O. M.: Eye injuries in war, 417
DYKE, S. C.: *Medical Officer*, 316; correspondence, 522

- Dysentery, amoebic: Effective treatment (Sir P. Manson-Bahr), 255 (O): correspondence on, 257
— Surgical complications of, 261 (O)
— bacillary, treatment of, 230

- Flexner: Sulphapyridine in (W. G. Massafra), 159—Sulphamylguanidine for (D. E. W. Anderson and R. Cruckshank), 497 (O): leading article on, 514—Medium for isolating bacilli (W. J. Wilson and E. M. M. V. Blair), 501 (O): correspondence on, 563

- Dysentery, incidence in military hospital (O. H. Hutchison), 73 (O): correspondence on, 262—Review of, in Army (C. A. Hards-Hewell), 473 (O)

- Dysrhythmia, cerebral, inheritance of, 732
Dystrophies of macula, 76

E

- Ears: "Bleed drum" (J. H. O'Donnell), 86 (O)
— Chemotherapy in acute middle-ear disease (C. A. Hutchison), 159 (O): correspondence on, 317—Rupture of drumhead as wartime injury (A. F. Alexander), 195 (O): correspondence on, 385—Reversal of barbiturates, 852

- nose and throat: Specimens in R.C.S., 315—Organization of department in E.M.S. (V. E. Neuge), 519; correspondence on, 594, 663

- Instruments, 859—Review of book on, 594
Easton, Capt. Robert Thomson, obituary notice of, 257

- EASTWOOD, Cyril G.: Congested hands and brittle nails, 640

- EASTMAN, Lord: Microscope wanted, 392
ECCLES, W. McAdam: Anniversary colleague, 297—Foster, 319

- EDDY, Walter H. (and G. DALLDREIF): *Avitaminosis*, 2nd ed., 373

Edinburgh Medical Journal, special education No., 463

EDLSTON, G. B.: Congested hands and brittle nails, 348

Edmunds, Charles Wallis, death of, 351

Education, medical: Future of (I. A. Ryle), 323

(O), (D. McDonald), 327 (O); leading article on, 359; correspondence on, 420, 421, 458, 525, 625

Clinical teaching (A. Loewenstein), 778

Educational Number in abeyance, 127

EDWARDS, D. G. M.: Activity of tuberculosis, 358

— F. Ronald (and others): Thoracoplasty for pulmonary tuberculosis, 901 (O)

— J. T. Rice: Ether convulsions, 103

— T. P.: Sulphonamides for cerebrospinal fever, 595

Effusions, acute intraocular, spread of, 482

Effrs: Reasoning of, 36—Food value of, 529

Eire: Manufacture of anaesthetics, 428—Reports of Dublin Maternity Hospitals published, 640—Report of Health Department, 707

ELAM, John: Deaths on table in general practice, 207; correspondence on, 282, 356, 392

Electric heaters in surface shelters, 450

Electro-encephalography, advances in (leading article), 655

ELLINGWORTH, Friedrich: *Biologie Fundamentals of Radiation Therapy*, translation, 582

Embolism, pulmonary, and venous thrombosis (leading article), 123

Emergency. See War

Emetine in liver abscess, 357

Emphysema, interstitial subcutaneous, complicating pulmonary tuberculosis (G. Hurrell), 16

Employment exchanges, special examinations for, 598

Encephalitis complicating pneumonia, 706

— post-vaccinal, 107

Encephalomyelitis, equine (leading article), 163

— in pink disease (C. P. Lapage), 728

Encephitis in children (C. Burns), 767 (O); correspondence on, 890, 927

Endocrine therapy for hypertrichosis and acne, 890

Endocrinology, review of book on, 877

Enuresis. See Incontinence

Envelope method of treating burns (J. Bunyan), 1

(O); (R. V. Hudson), 7 (O); (R. S. B. Pearson and others), 41 (O); (J. W. Hannay), 46 (O); leading article on, 53; correspondence on, 135, 244, 316, 750, 836

EPIDEMIOLOGICAL NOTES

Cerebrospinal fever, 73, 147, 164, 321, 362, 391, 495, 531, 599, 757

Diphtheria, 184, 715, 835

Dysentery, 37, 73, 107, 215, 253, 291, 321, 362, 431, 426, 495, 531, 599, 639, 679, 715, 793, 835, 863, 895, 931

Enteric fever, 37, 73, 107, 184, 215

Meningitis tuberculous, 426

Paratyphoid fever, 253, 291, 321, 362, 391, 426, 463, 757, 863

Pneumonia, 695

Polyomyelitis, 253, 291, 321, 362, 391, 426, 463, 495, 531, 567, 599, 639, 679, 715, 793

Scabies, 679

Statistics, 599, 639, 757, 863, 931

Trichiniasis, 37

Typhoid fever, 253, 321, 362, 391, 463, 757, 863

Whooping-cough, 107

EPIDEMIOLOGY. Infe nous diseases and vital statistics, 37, 73, 107, 147, 184, 215, 253, 291, 321, 362, 427, 463, 495, 531, 567, 599, 639, 679, 715, 757, 793, 835, 863, 895, 931—Review of book on, 121

Endemophytosis interdigitalis, iodine ointment for (B. G. Shapiro), 877

Idiocy: Inheritance of 183—Review of book on, 614

— cysticercosis (C. W. Ewins), 263 (O); correspondence on, 357, 492—Treated with sulphathiazole (L. J. Seval), 693; correspondence on, 757

Infundibulum, femoral, slipped upper, 351

Infusum, 364

Intestinal, recurrent, 392, 496

Intropothesis, foetal, 204

Ints: I. J. S. Mental defective in Army, 187

(O), leading article on, 203; correspondence on, 200, 351, 422, 490, 630

Interspersed, G. H. Man: *The Mechanical Misfit*, 851

Inter convulsions, 32, 67, 103, 177, 216, 282, 890; (H. J. Brennan), 765 (O)

Ith: See Abyssinia

Iutamide in treatment of burns, 748

Iutamide for pyloric stenosis, 453

Ivans, C. Loyall (editor): *Starling's Principles of Human Physiology*, 5th ed., 335—Honour conferred on, 361

— Geoffrey: Voluntary hospitals, 420

— Griffith: National loaf, 212

— J. M.: Fatig at ambulance ship, 59

— John Jamieson, obituary notice of, 320

— W. D.: Dental preparations compared, 554

Ivi: Frank C. Voluntary hospitals, 593

Ivett: Surg Comm Archibald Robert, death of, 16

Ivns: A. Cameron (and others): Herpes labialis

and sulphathiazole and T.A.B., 298 (O); correspondence on, 357, 492

Ivns: W. Cysticercosis epilepsy, 253 (O); correspondence on, 357, 492

Ivns: W. Cysticercosis epilepsy, 253 (O); correspondence on, 357, 492

Ivns: W. Cysticercosis epilepsy, 253 (O); correspondence on, 357, 492

Ivns: W. Cysticercosis epilepsy, 253 (O); correspondence on, 357, 492

Eye: Dystrophies of macula, 56—Unburned cornea, 74, 254—Gas decontamination of, 106—First-aid treatment of injured, 136—Industrial injuries, 384

— Injuries in war, 417—Aqueous and glaucoma (leading article), 515—Exhibition of appliances, 557

— operation under local anaesthesia, lung collapse after (R. Lane), 86; correspondence on, 177

Eye-shields, protecting, 101, 212, 418

Eyes, contaminated, device for washing, 480

F

Face wounds, treatment of, 313

Factories Act: New regulations, 896

— nurses in, 183

Factory war casualties, 834

Faculty of Radiologists: Pass list, 862

— Royal of Physicians and Surgeons of Glasgow: Fellows admitted, 105, 565—Officers elected, 714

Faeces, incontinence of, in children (C. Burns), 767 (O)

Fagerland, Lars Wilhelm, death of, 180

FAIRFIELD, Letitia: Communal feeding in schools, 211, 359

FAIRLEY, Comm.: Lung injuries in air raids, 240

Faith healing, review of book on, 335

FALKNER, N.: Placental infarcts, 785

Family allowances, pamphlet on, 254

Faokhauser, Ernst, death of, 144

FARDON, A. H.: Chloroform-ether sequence, 356

Fat and carbohydrate metabolism, 591, 709

FAULENEP, H. A.: Factory war casualties, 834

Fear: Coined medical words, 38

FEARON, W. R.: Water deficiency, 664

Federation of American Societies for Experimental Biology: Quarterly publication, 739

— Medical Women's: Medical administration in four European countries, 61—Analysis of pain, 522

FELIX, A.: Louse-borne typhus fever, 887

FENTON, H. F.: Nasopharyngeal disease in mental disorder, 173

Ferguson, Hugh Camobell, obituary notice of, 287

FERGUSON, J.: Classification of cases of albuminuria, 246

FERNANDEZ, Z. P.: Tuberculosis in recruits, 245

Fever, abortus, and sulphapyridine, 210, 285, 318, 428, 455

— cerebrospinal, sulphonamides for, 595

— glandular, 315

— paratyphoid B. water-borne outbreak of, 212

— puerperal, persistent streptococci after, 176

— Q. epidemiology of American, 587

— rheumatic: Chemoprophylaxis of, 66—And streptococcal antibodies, 517

— sand-fly, and benign lymphocytic meningitis (A. S. Pearson), 303 (O)

— scarlet: Complications of, 616—Observations on, 686

— service, planning in, 922

— typhus, louse-borne: Memorandum on, 794, 817—Discussion on, 886

— yellow: In Africa, 171—Diagnosis of, 247, 357—Review of book on, 441

Fever, See also Epidemiological Notes

Fibrositis: Aod myositis, 789—Isotonic glucose solution for (M. B. Ray), 850

FLOER, A. (and others): Duodenal intubation, 865 (O)

FIELD, Mary (and others): *Cine-Biology*, 615

FIELDRIG, Michael: *Parenthood: Design or Accident?* 4th ed., 379

Films: Malaria, illustrated by, 707, 836—In health education, 800, 830

FINDLAY, G. M.: Yellow fever in Africa, 171—Louse-borne typhus fever, 886—Mode of action of chemotherapeutic agents, 921

Finger-nails, ragged, 74

Finger-tips, cracked, treatment of, 186

Fingers, unilateral clubbing of (R. E. Rodgers), 439 (O)

FINLAY, Carlos E.: *Carlos Finlay and Yellow Fever*, 441

Fire protection, review of book on, 408

Fire-bomb injuries, 140

FIRMAN-EDWARDS, L.: Cirrhosis of liver and perforated gastric ulcers in infant of six months, 440

First aid: Review of books on, 268, 480, 513—Lectures on, 284, 355—"To injured," 595, 672, 716

First-aid posts, mobile, 594, 671, 751—Treatment of wound shock in, 750

FISHER, Arthur M.: *Heart Failure*, 2nd ed., 654

FISHER, J. W.: *Psychology and Mental Disorders for Nurses*, 18

— R. A.: Blood groups, 315—*Statistical Methods for Research Workers*, 8th ed., 878

FITZGERALD, Gibbon: Placental infarcts, 785

— G. M.: Air-raid casualties, 132

Flat-foot in recruits, 137, 254, 355

FLEMING, Alexander: Penicillin, 386—Mode of action of chemotherapeutic agents, 921

— G. W.: Communal feeding in schools, 282, 453

FLITCHER, C. M.: Economic insulin dosage, 137

FLETT, R. L.: Juxta-ocular thrombosis after tonsillitis, 223 (O)

Flexibility, plea for, 528

FLOOD, J. C.: Water deficiency, 665

Flour: Criticisms from Chebiche, 62—Vitamins in, 170—Fortification of, 426—Consumption of, 461—National wheatmeal, 822, 834. See also Bread

Forster, Oufil, obituary notice of, 634

Folk-lore of alcoholism, 850

Food: Preparation and cooking of green vegetables, 26—Invalids and fortified bread, 27—Eggs, 36, 529—Eating and digesting, 126—Midday meal as educational subject, 133—Edinburgh inquiry, 174

— "Health dinner," 186—Roughage, in, 186

Potato flour, 252—Fruit crop, 252—Use of rosehips, 253, 464, 496—Review of books on, 337, 696, 772—Distribution of oranges, 426—Advice for working-class women, 633, 860—Government's policy, 676—Addition of calcium to, 673

— Free distribution of fruit juices and cod-liver oil to children, 794

— education, conference on, 714

— Ministry: *Canteen Catering*, 307

— poisoning on board ship, 330

— rationing: Egg rationing, 36—Extra meat for nephrotics, 216—Tuberculous and, 253—Invalids' special rations, 565—And children's health, 920

Forbes, Duncan, obituary notice of, 248

— R.: X rays in treatment of inflammations, 891

— Thomas J. L., obituary notice of, 360

FORD, R. Kelson: Voluntary hospitals, 666

FORD-SMITH, A. (and R. C. BROWN): Enuresis in adolescents, 803 (O)

FORDHAM, Michael: Selection for Army, 490

Fordyce, William, obituary notice of, 754

Foreign bodies: Electric probe for location of metallic, in tissues, 616—Human ostrich, 827, 892

FORGAN, Robert: Control of venereal diseases, 539

FORGE, G. Baynton: Intermittent polyuria, 758—Immunization against diphtheria, 932

Forrester, Alexander William, obituary notice of, 461

Forsyth, Surg. Comm. Archibald Newlands, reported missing, 425

— Charles, E. P., obituary notice of, 461

Foundation, Rockefeller: Grant, 545

— Wellcome: Director elected, 640

Fox, Evelyn: Behaviour of children and adults under war conditions, 532

Fracture Clinics "C," 290

— treatment, 252—In Scotland, 106

Fragarine: Inhibitor of uterine action (Sk. B. Whitehouse), 370 (O); annotation on, 412; correspondence on, 418, 528

Fraoce: Psittacosis and scabies in Paris, 746

FRANKEL, E.: Simple technique of intravenous infusion, 459

FRANKLAND, A. W.: Mumps meningo-encephalitis, 48 (O)

FRANKLIN, Alfred White: Treatment of haemorrhagic disease of newborn, 594

FRUCHIGER, E. (and W. Hofmann): *Die Nervenkrankheiten des Kindes*, 582

Freud fellowships, 69

Friedenwald, Julius, death of, 288

FRIEDLANDER, J. (and B. A. DOPMER): Amoebiasis—pulmonary complications, 255 (O)—Carriers of tuberculosis, 525

FRIEDMAN, Reuben: *Scabies—Civil and Military*, 85—*Emperor's Itch*, 349

Frost-bite (Sir T. Lewis), 869 (O); leading article on, 879

FULTON, F. (and others): Active and passive immunization against diphtheria, 759 (O); leading article on, 773; correspondence on, 861, 887, 924, 932

— Thomas Roland, obituary notice of, 494

Fund, Bristol Hospitals, 315

— Duke of Gloucester's Red Cross and St. John, notes on, 290, 390

— Hospital Saturday: Annual meeting, 494

— King Edward's Hospital: Annual meeting, 173

— London Ambulance Benevolent, 530

— Medical War Relief: First year's work, 738

— Royal Medical Benevolent: M.O.H. and, 216; Christmas gifts, 523, 830

— Samaritan: Report, 762

FURLONG, Ronald: Arthrography in congenital dislocation of hip, 351

G

GAINSBOROUGH, R.: Epistaxis, 364

GALE, J. N.: Sugar-free diet and hyperchlorhydria, 247

Gall-stones, review of book on, 407

GALPIN, P. A.: Communal feeding in schools, 491

GARDNER, R. S.: Hallux valgus in soldiers, 710

GARDNER, A.: Status of ship surgeon, 671, 932

— A. D.: Bacteria from wounds enclosed in plaster, 387

— Eric: Head injuries in motor-cyclists, 592

— Eric K

Gastro-papillomatosis due to vitamin A deficiency (S. Beck and P. R. Peacock), 81 (O)

GAUSSEN, H. S.: Functional dyspepsia, 209

Germany: Health insurance in 1941—Mobilization of Jews and nurses, 108, 734, 834; Tenth licenced withdrawn, 108—Blood donor centre in Berlin, 185—Venereal disease, 10, 254—Naval academy moved, 291—Outbreak of rabies, 714—Drugs restricted, 714—Anti-tobacco campaign, 758—Wounded to care for silkworms, 779—Blood donors wanted, 779—Payments for third and subsequent children, 895

GENIE, Henry, obituary notice of, 596

GIBSON, J. T. S.: Sulphonamides and sulphur, 255

—L.: Flat-foot in recruits, 137

—Thomas, obituary notice of, 248

GILBERT, Barton: Persistent lactation, 305 (O)

GILCHRIST, Mary L.: Medical aid for China, 640

GIRD, Hester, obituary notice of, 424

GILLESPIE, R. D.: To visit U.S.A., 554

GILMOUR, John Rutherford, obituary notice of, 831

GISSANE, William: Reduction of fractures of os calcis, 749

GIVEN, D. H. C.: Nation's teeth, 928

GLASSER, Medical Journal, obituary notice of, 494

GLATIER, Dr. Austria before 1938, 61

GLAUCOMA, aqueous and (leading article), 515; correspondence on, 593

GLAZEBROOK, A. J.: Bradycardia in juvenile rheumatism, 735

GLEN, Alan M.: Temporary vascular occlusion ending fatally in uraemia, 875

GLIDDER, A. G.: Vaccines: Active and passive immunization against diphtheria, 717 (O); leading article on, 773; correspondence on, 561, 587, 924, 932

GLOVER, J. A.: Rationing and children's health, 920

—Lewis, G. M., M.O.H. and R.M.B.F., 216

Gloves, rubber, leucodermia from (leading article), 243

Glucose: Intraperitoneal, 93—Shortage of, 292—Cerulic acid, for, 464, 600

—saline, intramuscular drip, 616

—solution, isotonic, for fibrositis (N. B. Ray), 850

Glycosuria: Tests for, 292—to recruits, 316

GUN-HUGHES, F.: Treatment of scabies and scalds, 10

GODDING, E. W.: Testing night vision, 632, 789

GODWIN, George: *Press or Physician?* 338

Gold in treatment of arthritis, 882

GOLDSLATT, M. W.: Industrial medicine, 745

GOLDSTEIN, Max Aaron, death of, 791

GOLIGHER, J. C.: Operability of cancer of rectum, 393 (O); correspondence on, 492; correction, 563

Gonorrhea, treatment of, 68

GOON, M.: Da Costa's syndrome, 175

Goodall, Alexander, obituary notice of, 595

—Archd., L.: Red-cell suspensions in anaemia, 926

GOODENOUGH, W. M.: Post-war hospital policy, 626

GOODHART, Gordon W.: Voluntary hospitals, 558

GOODMAN, Roger Neville, obituary notice of, 142

GO DWIN, L. G.: Chemotherapeutic agents, 922

GOPELON, M. H.: Vaccinia as complication of vaccination, 822

—Neil, S. and J. Jara: Macrocytic anaemia following gastro-enterostomy, 769 (O)

—Roderick A.: Apparatus for administration of pentothal sodium solutions, 18

GORDON-TAYLOR, G.: Arrives in America, 702

GRAHAM, George: Lack of calcium, 176

—S.: Tuberculosis in recruits, 136

GRANT, R. T. (and E. B. REAVIS): Clinical observations on air-raid casualties, 293 (O), 329 (O); correspondence on, 388, 456—Observations required in wound shock cases, 332 (O)

GRANTHAM-HILL, C.: Mobile first-aid posts, 594

GRASS, edible protein from, 678

GRAVES, F. G.: Nasopharyngeal disease in mental disorder, 172

Grave's disease, liver function in, 166

GRAY, J. S.: obituary notice of, 248

GRAVES, I. N.: Cambridge plant for drying serum, 315

Greenberg, Capt. Samuel Bernard, obituary notice of, 462

GREENE, Arthur: Unburned cornea, 254

GREENES, R. Alfick: Ordema of macula, 418

GREGORY, Arnold: Chronic sick in bombed towns, 284

GREIG, G. M.: Appreciation of Dr. R. Thim, 596

Government of Dr. T. C. Hunter, 830

GREIFHEIMER, Esther M.: *Physiology and Anatomy*, 4th ed., 230

Greenfield, Sir Wilfred, stamp commemorating work of, 932

Griffith, J. P. Crozer, death of, 288

Grimes, J. P. Gore, obituary notice of, 248

GROGAN, Arthur: *Physiology of Endocrinology*, 877

Growth and diabetogenic action of anterior pituitary preparations (F. G. Young), 879 (O); leading article on, 916

GRUNDY, F.: Planning in fever service, 923

GUEST, Arthur: New type of cannula, 878

GUTHRIE, W. G.: Hyperventilation tetany in tropical climates, 138

GUNN, William: Control of diphtheria in schools, 861—Planning in fever service, 924

GUTHRIE, Douglas: Oto-laryngologist on war service, 744

—Thomas: Humphrey Clinker and white bread, 640

Gynaecology, review of books on, 615, 914

Gyrodys: Seborrhoea and B vitamins, 124

HADFIELD, C. F.: Trichlorethylene as anaesthetic, 103

—G.: Long injuries in air raids, 239

—H.: Laryngitis, 734

Haemorrhage, intestinal, as complication of sulphonamide therapy (F. E. Crawley), 160; correspondence on, 319

—loss of vision following, 711, 823

Haemorrhagic disease of newborn (A. F. S. Macpherson), 433 (O); correspondence on, 526, 594, 632

Haemorrhoids, review of book on, 307

HAGUE, D. V.: Planning of fever service, 924

HAIDANE, J. B. S.: *Science in Peace and War*, 696

HALFORD, A. C. F.: Dysmenorrhoea, 108—Envelope method for burns and wounds, 750

Halitosis, reversal of, in mammalian ear, 882

HALL, Muriel Barton: Encephalitis in children, 890

—S. Barton: Psychiatric problems in wartime, plea for caution, 243

—Simcoe I.: *Diseases of Nose, Throat and Ear*, 2nd ed., 877

HALLAM, Samuel (and W. J. DILLING): *Dental Materia Medica, Pharmacology and Therapeutics*, 2nd ed., 852

Hallux valgus deformity in soldiers (R. Brooks), 605 (O); correspondence on, 709, 789

HAMILTON, Robert, obituary notice of, 529

—William, obituary notice of, 143

Hammond, Frank Clench, death of, 461

HANDLEY, W. Sampson: Hemiprostectomy for unilateral adenomatous enlargement, 681 (O); correspondence on, 783, 824

Hands, chronic congestive condition of, 568, 640, 794

HANNA, William, obituary notice of, 142

HANNA, John W.: Envelope irrigation for burns, 46 (O); leading article on, 53; correspondence on, 85, 246, 316, 730, 836

HARDCASTLE, D. N.: Air-raid noises in psychotherapy, 243

HARDY, David: "Perfect sight without glasses," 459

HARDY, R.: Thirst at sea, 256

Harelip and cleft palate, inheritance of, 165

HARRIS, J. Henry: Timorous for blind person, 322—Testing night vision, 347; correspondence on, 631—Shamming night-blindness, 737, 759, 853

HARPER, Kenneth: Hospital problem, 829

—W. F.: Blood supply of human heart valves, 105

HARRIS, Henry: Planning for mental health, 356—Technique of relaxation, 527

—J.: National loaf, 102, 319—Lack of calcium, 255

HARRISON, G. A.: Serum for transfusion, 315

—G. Kent: Post-anal dermatitis, 87

HARROW, Benjamin (and others): *Laboratory Manual of Biochemistry*, 17

HART, E. S.: Stabbing heel pains in rheumatoid arthritis, 836

HARTSILVER, J.: Treatment of incontinence in children over four, 496

HASTINGS, Somerville: Organization of E.N.T. dept. in R.M.S., 494

HAWKING, Frank: Solphadiazine and sulphanilic acid against gas gangrene, 29—Local application of sulphanilamide, 685 (O)—Mode of action of chemotherapeutic agents, 921

HAY, K. M.: Novocain injection in myalgia, 247

HAYCROFT, J. J. Henry: Sued in wartime surgery, 456

HAYDON, Frank, obituary notice of, 288

HAYWARD, Nancy: Clostridia, 316

Head injuries: In motor-cyclists (H. Cairns), 465 (O); leading article on, 481; correspondence on, 525

—Cerebrospinal fluid in (J. W. A. Turner), 55 (O)

Heald, Alfred F.: obituary notice of, 894

Health: Of nation and medical services, 636; leading article on, 657—National policy, 672—Parliamentary debate on, 756—War production and (leading article), 775—Review of books on, 803

—dinner, minerals and vitamins in, 186

—education: Maternal, 392—Autumn campaign, 622

—Ministry: E.M.S. Instructions, Part I, 892—Appointments, 147, 171, 344—Report, 193, 598

—in wartime, review of books on, 442, 696

Hearing, decrease in, 429

Heart: Massage for impending death under anaesthesia (H. Bailey), 84 (O); correspondence on, 175, 245, 356, 364, 423—Traumatic lesions of, 270—Review of books on, 337, 512, 614, 654

—failure: Calcium therapy in, 93—Review of book on, 654

—valves, human, blood supply of (W. F. Harper), 303

HEATHFIELD, K. W. G.: Post-herpetic paralysis, 139

HECKROD, Frank: Migraine, 418

Heck, Philip, stabbing in rheumatoid arthritis, 716, 836, 869

HELLER, F. F.: Recurrent erysipelas, 496

Hemiprostectomy for unilateral adenomatous enlargement (W. S. Handley), 681 (O); correspondence on, 788, 824

HENDERSON, Robert G.: Recovery from trauma following crush injury, 197 (O), 383

—Thomson: Aqueous and glaucoma, 593

HENRICHSEN, Aston, death of, 529

HENTSCHEL, C. C.: Future of medical education, 458

Hernia in cavernous sinus thrombosis, 735

HERZ, E. M.: Industrial medical boards for women, 711

HEZD, Henry: Mental defective in Army, 422

Hermaphrodites: Massive adnexal carcinoma with pseudo-hermaphroditism (M. Albert), 265 (O)—Historical approach, 816

Hermias, darning of, 176, 246

HERON, Lieut.-Col. Davis, obituary notice of, 182

Herpes labialis after subpyridine and T.A.B. (C. E. van Rooyen and others), 595 (O); correspondence on, 562

—zoster: Paralysis accompanying, 31, 67, 139—Pain of, 35

HESON, N.: Lack of calcium, 247

HEWES, C. Langdon: Trichlorethylene as anaesthetic, 103—Carotid arrest during anaesthesia, 356

—Evelyn E.: *Textbook of Histology for Medical Students*, 2nd ed., 441

—F. F.: Yellow fever in Africa, 172

HEYWARD, Severin Andrews, death of, 713

High-velocity missile, wound mechanism of (A. N. Black and others), 872 (O); leading article on, 881

HIGHFIELD-JONES, G.: Immunization against diphtheria, 837

HILL, A. V.: To remain M.P., 185

—Charles: *Yeast, Health, and War*, 242

—R. C. J.: Electric probe for location of metallic foreign bodies in tissues, 616

HILTON, J. (and C. N. SWANSTON): Clinical manifestations of tetryl and trinitrobenzene, 509 (O); correspondence on, 593, 630

HINOS-HOWITT, C. A.: Review of dyspepsia in Army, 473 (O)

Hip dislocation, congenital, ankyrolysis in, 351

HIRST: New test for influenza viruses and their immune bodies, 777

HISTOLOGY, review of book on, 441

HOLDMAN, Johannes Wilhelm, death of, 180

HOLLAND, A. D.: Sulphonamides and sulphur, 119

HOLLAND, John C.: Malaria (falciparum) treated by malaria ending in (H. MacCormack), 645 (O)

HODGSON, John C.: "First aid to upland," 595

HODSON, V. S.: Emence in liver abscess, 357

HOLMES, J. J.: Discharge of posterior primary cancer in labour, 102

HOGG, J. C.: Nasopharyngeal disease in mental disorder, 173

HOLLANDS, F. G.: Deaths on table, 232

HOLMES, William H.: *Bacteriology and Bacteriology*, 307

Holmes, Gustav, death of, 713

Home Guard: See Services

Homestead scheme for mothers and children, 820

Honours, birthday, 23, 72

HOOPER, Lord: Medical aid for China, 64—Appointed personal adviser to Minister of Food, 148—Rest for civil defence workers, 883

HORMONES, Compensatory atrophy, 127

HORN, J. S. (and S. I. LEVY): Leucocytosis of stomach with ulceration, 530

HORNER, Mary Campbell, obituary notice of, 233

HOWITT, Charles: X-ray therapy in peptic ulcer, 10

HOSKIN, J. G. Fayer: Lectures on first aid, 355

Hospital: Intention of wounds (W. McKusick and others), 375 (O); M.R.C. memorandum on, 692—Dust infection in wards, 456—Provident schemes (leading article), 558—Domestic staff, 592—New rules for asepsis, 669—Cross-infection in R.M.S. services, 919

—administrators, co-ordination of, 705

—American, in England, 315

—Birmingham Accident, note on, 174

—city casualty, organization of, 53

—contributory, 174

—City of York Clinic, 17

—London: Bicentenary, 238

—Chest: Recopen, 135—Note on, 745

—Middlesex: Gift, 103—Annual report, 352—Vice-president elected, 913

—municipal, 711, 750

—General, York: Opening of first half, 746

—Padreski, Edinburgh, epidemic of, 623

—policy, 666, 828—Government (leading article), 552—Post-war, 563, 625, 819—in Scotland, 593, 627, 821

—problem, 828

—Records: Report, 272

—Royal Sussex, Brighton: Demerol treatment, 290

—St. Columba's, for advanced cases, 143

—of St. John of Jerusalem: Promotions and appointments, 74

—St. John of Jerusalem, Jerusalem: Report, 179

—St. Mark's, Records, 267

—St. Thomas's: Memorial to massesses killed in air raids, 566—Report of Samaritan Fund, 722

—services: Future organization in Scotland, 745

—for Sick Children, Great Ormond Street: Annual report, 625

Hospital: Reorganization of (Sir F. Manning), 60

—Air raids, 98—Book on bombing of, 201—Said difficulties, 404—Public Assistance institutions as, 678—Yearbook, 729—Staffing of, 790—in post-war world, 819—Emergency x-ray service, 820

—Day, 365

—Appeal, 173—New session of medical schools, 345—Medical students at, 673—War-time needs of, 820—Survey of, 854

—Metropolitan, Council: Report, 174

—voluntary, 353, 358, 419, 456, 499, 523, 553, 593, 629, 666, 892—A. Association of, 591

HOWLAND, J. E.: Rehabilitation of injured air crews, 429 (O); correspondence on, 526, 593

HOWARTH, O. J. R.: Science and world order, 671

HOWITT, H. G.: Exposure to tetryl and T.N.T., 671

- HUBBACK, E. M.: Family allowances, 254—*Discussion Groups for Citizens*, 268
HUDSON, Rupert Vaughan: Coated silk fabric for wounds and burns, 7 (O); leading article on, 53; correspondence on, 135, 246, 316, 750, 836
Huey, David, obituary notice of, 360, 425
HUGGOTT, A. St. G.: Rationing and children's health, 921—Chemotherapeutic agents, 922
Human ostrich, 827, 892
HUMBY, Graham: Two-minute suprapubic cystotomy, 730
HUME, Edward H.: *Chinese Way in Medicine*, 17
Hunter, Thomas Charles, obituary notice of, 830
HUNWICK, R. F. (and J. UNOAR): Experimental immunization with influenza virus, 7 (O)
HURRAN, W. J.: Thirst at sea, 528
HURRELL, George: Interstitial subcutaneous emphysema complicating pulmonary tuberculosis, 16
HURST, Sir Arthur: Air-raid noises in psychotherapy, 354—*Medical Diseases of War*, 2nd ed., 408—Sprue syndrome, 857
Hussey, James, obituary notice of, 144
HUTCHINSON, C. A.: Chemotherapy in acute middle-ear disease ("masked mastoiditis"), 159; correspondence on, 317—Oto-laryngologist on war service, 745
HUTCHINSON, James H.: Dyspepsia incidence in military hospital, 78 (O); correspondence on, 209—Sir Robert: "To match the men," 623
Hyaluronidase, 699, 788
Hydrocele, giant, successfully treated by sclerosing method (W. L. James), 693
Hygiene, review of book on, 654
Hyperchlorhydria, sugar-free diet and, 247
Hypertension, renal extracts for, 22, 177
Hyperthyroidism: Basal metabolism and clinical signs (A. B. Anderson), 117 (O)
Hypertonic sodium sulphate for wounds, 355, 419
Hypertrophic, endocrines for, 890
Hypophenated term, 464
Hypoplasia, congenital bilateral renal (J. E. Murray and R. A. Sandison), 471 (O)
Hypoproteinaemia and avitaminosis-K in man (R. Kark and A. W. Souter), 190 (O); correspondence on, 279
Hypothermia, treatment by (leading article), 231
Hysterectomy, sudden spread of melanotic carcinoma after (L. J. Temple), 511

I

- Impetigo: Economy in treatment of (R. W. Carslaw and J. A. Swenarton), 225 (O); correspondence on, 356, 364—Liq. ferri perchlor. fortis for, 640—contagiosa: Treatment of, 178, 247, 356, 422, 428, 492, 526, 560—Symptoms after microchrome for, 363
Impotence, coitus-training apparatus for (J. Loewenstein), 49 (O)

INCOME TAX:

- Air-raid shelter, construction of, 864
Allowances: Personal, 364—Assessment and, 464—For 1941-2, 716
Assistant: Keep of, 292—Remuneration as, 464
Books, expenditure on, 532
Bureau, local war committee, 680
Civil earnings, reduction in, 186
Dominion income tax relief, 185
Employment: Change of, 185—By self and wife: housekeeper, 216
E.M.S.: Appointment, 600; whole-time, 292—Billeting allowance, 680
General practice and appointments, 836
Hospital, honorarium from, 680
Income arising abroad, 680
Interest, payment of, 363
Life assurance relief—restriction, 680
Locumtenent, board and lodging of, 640
Motor car: Additional, 74—Appointment, 185—Used for official purposes, 364—Two cars maintained, obsolescence, 864
Partnership: Change in, cash basis, 292—Division of, 680—Liability, 932
Practice: Fall in income, 148, 185—Sale of: instalment payments, 254—Second year of, 896
Property, assessment of, 292
Purchase of good will by instalments, 716
R.A.M.C., practitioner in, 568
Removal to another practice, 864
Rent: Deduction for nominal, 254—Continuation of liability for, 364
Repairing lease, 864
Salary, deductions from, 496
Schedule E: basis of assessment, 568
Travelling expenses, 254

- Incontinence: In children over 4, treatment of, 496, 600—Of faeces in children (C. Burns), 765 (O); correspondence on, 890, 927—In adolescents (R. C. Browne and A. Ford-Smith), 803 (O)
Indices, half-yearly, 167, 272

INDIA:

- Cinchona in, 16
Council, National Defence: Appointment, 216
Health conditions in Northern India, 628
Medical school for women, first, 777
Plague in, 702
Punjab Health Dept.: Report, 628
Sind: Annual report on public health, 876
Tuberculosis in, 361, 412
United Provinces: Report of Director of Public Health, 628

- Industrial medical services: In Great Britain (D. Stewart), 762 (O); leading article on, 775; correspondence on, 888—Report of B.M.A. committee, 783
Industry: Doctors and, 363—Foot clinics, 489—Industrial medical boards for women, 711, 826, 888—Aims of industrial medicine, 745—War production and health (leading article), 775—And lactation, 860
Infants, placental, 786
Infectious diseases in war (leading article), 341
Infirmary, Leeds General: New teaching departments, 906
—Royal, of Edinburgh: Oxygen installation, 578
Inflammation: Mechanism of, 285—X rays in treatment of, 700, 825, 859, 891
Influenza: Experimental immunization with virus (J. Ungar and R. F. Hunwick), 12 (O)—Outbreak, 134—Viruses and their immune bodies, new test for, 777
—swine, virus, lungworms and, 814
Infusion, intravenous, simple technique of, 459
Ingram, Percy Cecil Parker, appointed Deputy-Lieutenant for County of Monmouth, 932
JAMES, James (and others): Duodenal intubation, 865 (O)
Inquests, coroners', in London, 352
Institute, Henry Lester, Shanghai: Annual report, 476
—Lister: Report, 170
—National, for Blind: Annual report, 554
—Queen's, of District Nursing: Report, 557—Gifts, 932
Institution, British Standards, expansion of, 896
—Royal: Elections, 185—Planned wartime nutrition, 885
Insulin: Economic dosage, 137—And diabetic coma, 210
Insurance, National Health: New Bill, 106, 145—Statistics, 214—Payments to practitioners, 252—War bonus, 834—Spa treatment? 896
Intubation, duodenal (A. Fidler and others), 865 (O)
Intussusception due to Meckel's diverticulum, 595
Invasion. See War
Iodine ointment for epidermophytosis interdigital (B. G. Shapiro), 877
Ireland: Tuberculosis inquiry in Belfast, 28—Medical examination of workers from, 894. See also Eire
Iridocyclitis after varicella, 755
Iron, stimulant action of, 776, 888
IRWIN, W. K.: Hemiprostectomy for unilateral adenomatous enlargement, 788
ISAACS, Susan: *Cambridge Evacuation Survey*, 512
Isinglass as transfusion fluid, 166
Isserlin, Max, death of, 713
Italy: Professorships of industrial hygiene, 185

J

- JACOBS, A. L.: Increase of tuberculosis, 708, 892
JACOBSON, F. W.: Health insurance in Germany, 61
JACOBY, F. (and others): Toxicity of sulphonamide drugs to cells *in vitro*, 149 (O)
Jaconet and rationing, 254
JAGGER, F. F. C.: Treatment of impetigo, 560
Jamaica, venereal diseases in, 146
JAMES, N. R. (and H. W. BURGE): Improved method of regional anaesthesia in acute abdominal surgery, 906 (O)
—T. G. I.: Wound phagedaena, 890
—W. L.: Giant hydrocele successfully treated by sclerosing method, 693
JAMISON, W. B.: Publicity for preventive medicine, 860
JAPA, Jozef (and N. S. GORDON): Macrocytic anaemia following gastro-enterostomy, 769 (O)
Jaundice, review of book on, 695
Jaw wounds, treatment of, 313
JAY, John W. W.: Treatment of impetigo, 526
JESSOP, W. J. E.: Water deficiency, 664
Joan of Arc, sanity of, 417
JOHNSTON, Thomas: Scottish hospital services, 746
JOKL, Ernst: *Medical Aspects of Doxhug*, 51
JOLLY, W. A., death of, 361
JONES, A. Thelwall: Occupational acne, 776
—David, J.: Water-borne outbreak of paratyphoid B, 212
—F. Wood: Mana and money, 350
—R. Vernon: Local chemotherapy as curative measure, 266
JORDAN, Rose: Radiographs of tuberculosis workers, 568
JUPE, M. H.: Radiodermatitis, 175—X rays in treatment of inflammations, 859
JURASZ, A. T.: Polib Medical Faculty at Edinburgh, 706—Post-war hospitals, 819
Jurisprudence, medical, review of book on, 547

K

- Kapka, F., death of, 791
KARK, Robert (and A. W. SOUTER): Hypoproteinaemia and avitaminosis-K in man, 190 (O); correspondence on, 279
KAY, Kinsley: Industrial hygiene in Canada, 745
—W. W. (and G. BLACKBURN): Crush injury with renal failure, 475 (O)—Haemoglobin of pregnant women, 926
KAYNE, G. Gregory: Tuberculosis in recruits, 65—Early bronchogenic tuberculosis, 154 (O), 423

- Kelly, Adam Brown, obituary notice of, 33
—D. Brown: Rupture of drumhead as wartime injury, 388
—Sir Robert, appointment, 254
KEMP, N.: Clothing coupons for expected child, 836
Kennedy, Col. Edward Galwey, death of, 929
KEOGH, Charles: *First Aid for Fighting Men*, 268
KERR, James: Aggregation of toddlers, 137—Obituary notice of, 563
—J. M. Munro: Radiographs and pelvic disproportion, 708
—Peter Murray, obituary notice of, 832
KEYS, Thomas E. (and F. A. WILLIUS): *Cardiac Classics*, 614
KUAN, N. U.: Benzedrine in post-encephalitic Parkinsonism, 33
Kidney: Renal extracts for hypertension, 22, 177—Bilateral renal colic due to sulphapyridine, 31—Renal complications of sulphapyridine (H. G. Letcher), 336—Congenital bilateral renal hypoplasia (J. E. Murray and R. A. Sandison), 471 (O)—Crush injury with renal failure and recovery, 475 (O)—Limb compression and, 884
KUMMER, W. J. T.: Nasopharyngeal disease in mental disorder, 173—Voluntary hospitals, 388
King: Honorary Physicians appointed, 36, 361, 462, 714, 929—Hono 181, 792, 862—Speech to
KING, E. S. J.
—Harold: Chemistry and pharmacy, 785
KING-TURNER, G. E.: Nation's dental services, 827
KIRK, T. H.: Unusual outbreak of haemolytic streptococcal infection, 824
KIRKHAM, I. H.: Depressed fracture of sternum, 614
KITCHING, R. L.: Wound shock, heated couch, 665
KITZ, F. J.: Treatment of haemorrhagic disease of newborn, 632
Klein, Heinrich, death of, 791
Kocher, Albert, death of, 529
KORCENIEWSKY, V. (and others): Effects of vitamins B and C on senile patients, 835 (O)
KOST, Emanuel: Bilateral renal colic due to sulphapyridine, 31
KOVACS, Richard: *Physical Therapy for Nurses*, 2nd ed., 513
KRACKER, Roy R.: *Textbook of Clinical Pathology*, 2nd ed., 379
KREMER, Edward (and G. URDANO): *History of Pharmacy*, 223
KRUEGER, A. P.: Treatment with bacteriophage, 409
Kurz, Ken, death of, 713

L

- Laboratories, Commonwealth Serum, work of, 314
Labour: Review of books on, 88, 582—Dangers of posterior pituitary extract in, 102—Thrombosis of sagittal sinus following (J. P. Martin), 537 (O)
Labour Office, International: In New World, 312
LACE, Mary V.: *Massage and Medical Gymnastics*, 2nd ed., 122
Lactation: Leading article on, 54—Persistent (B. Gilbert), 305 (O)—Industry and, 860
LAFORQUE, René: *Relativity of Reality* (translation), 267
LAIOLAW, Stuart (and D. MACFARLANE): Increase of tuberculosis in Glasgow, 436 (O); correspondence on, 525, 559, 669
Laird, Charles William, obituary notice of, 34
—W. J.: Pelvic abscesses, 139
LAMPARD, M. E.: Malnutrition, 283
Lanatoside C (digilandin C), 206
LANCKEHAU, N. I.: Physiotherapy, 140
LANE, Roger: Lung collapse after eye operation under local anaesthesia, 86; correspondence on, 177
Langdale, Henry, obituary notice of, 249
LANGOON, C. W.: Voluntary hospitals, 892
LANGOON-BROWN, Sir Walter: Biology and health, 238
LANGLEY, C. E.: Combined intra- and extra-uterine pregnancy, 927
LAPAGE, C. Paret: Encephalomyelitis in pink disease, 728
Laryngitis, acute, and *H. influenzae*, 734
Laryngoscope, improved, 914
Lasnet, A. obituary notice of, 143
LAURENT, L. J. M.: Planning in fever service, 923
LAW, Frank: Cancer of eyelid, 418
LAWRENCE, A. S. C.: *Scientific Photographer*, 267
—R. D.: War difficulties in diabetic diets, 118 (O)—Fat and carbohydrate metabolism, 591—Diabetes and mercapyl diuretics, 750
Layton, Frank George, obituary notice of, 104
—T. B.: *Staph. aureus* in nasopharyngeal infections, 102
LAZARUS-BARLOW, P.: Persistent streptococci after puerperal fever, 176—(and G. M. NORMAN): Poisoning with sodium nitroprusside, 407

Leading Articles:

- Anaemia, hypochromic, 90
—refractory, 915
Aqueous and glaucoma, 515
Army, selection for, 410
Asepsis, new rules for, 698
Bacteriophage, treatment with, 409
Burns, treatment of, 53
Carbohydrate, effect of, on protein metabolism, 164
Certification and notification, 853

Leading Articles (continued):

- Choline, influence of, on animal metabolism, 555
Chromosomes, human set, 202
Diabetogenic activity and growth, 916
Diphtheria, protection against, 773
Dressings, economy in, 619
Electro-encephalography, advances in, 655
Drugs and autonomic nervous system, 732
Encephalomyelitis, equine, 163
Gas injuries to lungs, 550
Head injuries in motor-cyclists, 481
Health: in Parliament, 657—War 'production and health, 773
Hospital policy, Government's, 552
—provident schemes, 584
Hypothermia, treatment of, 231
Infectious diseases in war, 341
Lactation, 54
Leucoderma from rubber gloves, 232
Medical education, future of, 340
Medicine and aviation, 879
Mental defects in Army, 203
—health, future of, 269
Milk (Special Designations) Regulations, 1941, 916
National War Formulary, 656
Night-blindness, 620
Otitis media, acute, chemotherapy in, 20
Pharmacy and Medicines Bill, 90
Poliomyelitis, route of infection, in, 811
Prescription, printing the, 554
Protozoal infections, chemotherapy of, 774
Radiology and obstetrics, 551
Rehabilitation of injured, 812
Sciatic pain, 695
Seborrhoea and B vitamins, 124
Shelter and civilian winter, 443
Shock, traumatic—Past, present, and future, 380
Skin, responses of, to cold, 879
Society, Nutrition, 516
Soya bean, 269
Strabismic syndrome, 730
Statistics, medical, in wartime, 481
Sulphonamides as intestinal antiseptic, 514
Sulphonamides and nervous system, 303
Thyroid gland, interrelations of, 309
Tuberculosis, human, anatomical studies on, 585
—pulmonary, collapse therapy in, 444
Venous thrombosis and pulmonary embolism, 123
Vitamin E therapy in neuromuscular disorders, 238
War neuroses, 21
—production and health, 775
Water supplies, domestic, in war, 381
Wounds, disruptive, from high-velocity projectiles, 881

League of Nations: Nactodes Division moved to Washington, 254

LEAKE, W. N.: *National War Formulary*, 755
LEAMANN, William G., jun.: *Management of Cardiac Patient*, 512

Lecture, Blair-Bell Memorial, 703
Lectures, Hamidian, published, 267

—Thomas Vizard, 818
Lectures, Chadwick Public, 455

—Holme, 795, 837, 869
—Lumleian, 254

—Oliver-Sharpey, 39, 76
LEIGHT, R. B.: Combined intra- and extra-uterine pregnancy, 805 (O); correspondence on, 927

LE FANU, G. E. H.: Diagnosis of yellow fever, 247
LEGGAT, G. (and others): Thoracoplasty for pulmonary tuberculosis, 901 (O)

Leggatt, Surg. Lieut. Archibald Thomas, obituary notice of, 106

LEIGHTON, D.: Transient blindness following glaucoma transfection, 694

Leiomyoma of stomach with ulceration (S. I. Levy and J. S. Horn), 580

LEIPER, R. T.: Diagnosis of helminth cysts in brain, 787

LENOX, William Gordon: *Science and Seizures*, 614
Lennox, Review of book on, 450—In British West Indies, 930

LESSLIE, Abigail (and A. E. CHISHOLM): Case of double tubal gestation, 51

LETICHER, H. G.: Renal complications of sulphapyridine, 336

Leucoderma from rubber gloves (leading article), 232

LEVITT, Walter M.: X rays in treatment of inflammations, 859

LEVY, S. I. (and J. S. HORN): Leiomyoma of stomach with ulceration, 580

LEWIS, Philip: *Orthopaedic Surgery for Nurses*, 3rd ed., 162

Lewis, Bradford, death of, 361

—Dean De Witt, death of, 832

—E. (and others): Local treatment of burns, 41 (O); leading article on, 536; correspondence on, 135, 246, 316, 750, 876

—J. Stephen: Differential diagnosis and confusion of brain, 103

—Sir Thomas: Normal and injurious effects of cold on skin and underlying tissues, 795 (O), 837 (O), 859 (O); leading article on, 879

LEY, Duncan G.: *Condominal feeding in schools*, 247

LEYTON, Nevil: Questionable evidence of cure of scabies, 561

Linnell, Alfred, obituary notice of, 831

—W. H.: Chemotherapeutic agents, 922
LINTSEAD, H. N.: Volume commemorating centenary of Pharmaceutical Society, 615

LISTON, R. Prosper: Post-war medicine, 752
Littler, R. M., obituary notice of, 673

Liver: Function in Graves's disease, 166—Cirrhosis of liver and perforated gastric ulcer in infant of six months (L. Firman-Edwards), 440

—damage, prevention of, 815
—extract, economy in, 315

LLOYD, Maj.-Gen. Sir Owen Edward Pennellath, obituary notice of, 181

—T. W.: *On the Aetiology of Achromic Family Jaundice*, 695

Loaf, *See* Bread
LOCKETT, Sidney: Benzyl benzoate therapy, 600

Loosefoot system, instruction in injuries of, 242
LOGG, L. C.: Chemotherapy in middle-ear disease, 318

LOEWENTHIN, Arnold: Clinical teaching, 778
—J.: Coitus-training apparatus for impotence, 49 (O)

LOMINSKI, Iwo: Tellurite medium, 563

LONDON:

Coroner's inquests, 352
Local indices compared with New York (P. Stocks), 66

Review of book, 201
Shelter sick-bay, 352

Voluntary Hospitals Committee, Report, 659

LOPEZ-GARCIA, L. J.: Suture of cut flexor tendons, 138

Lozinger, Surg. Lieut. Duncan, reported missing, 106
Louchbridge, John Caron, obituary notice of, 755

Louse-borne typhus fever, 794, 817, 856
LOVE, R. J. McNeill: Unabsorbable suture materials, 30

Low, W. Alexander: Improved edition of three-way stopcock, 122

Low, Joy Cronin: Bacteriology of closed-plaster method, 66

LOWY, Julius: Czechoslovakia before 1939, 61
LUCK, James Murray: Editor of *Annual Review of Biochemistry*, 881

LUN, E. A.: Envelope treatment for burns, 126
LUNDAHL, Hypochromic anaemia, 90

Luna: Collapse of liver operation under local anaesthesia (R. Lane), 56; correspondence on, 177

—Obstetric pulmonary infections, 233—Injuries in air raids, 279—Pulmonary amoebiasis (B. A. Dornier and J. Friedlander), 253 (O)—Gas injuries to leading article, 250

—cartilage, pathology, physical signs, and x-ray appearances in (R. R. Trull), 601 (O)

Lungworms and raine influenza virus, 814
LYALL, Alexander: Classification of cases of albuminuria, 113 (O); correspondence on, 246

LYLE, Samuel, obituary notice of, 258
Lymphatic system, review of book on, 653

LYTH, J. C.: Envelope treatment for burns 135—Hydrolonitide, 758

M

MACALISTER, Charles J.: Appreciation of Dr F B Chavasse, 141

McARTNEY, J. E.: Planning in fever service, 923
McCLEMENS, S.: Familial neurofibromatosis, 492

McCLEMENS, Henry: Myositis fungoides treated by malaria, terminating in Hodgkin's disease, 645 (O)

McCOMBS, Hugh Moreland, obituary notice of, 754
McDONALD, Ian A. J.: Future of medical education, 420

McCURRIE, H. J.: Subcutaneous fissure of veins, 67—Economy of medical man-power, 826

McCURRIE, E. A.: Extension foot-piece and support for use with Thomas leg splint, 442

McDONALD, Donald: Future of medical education, 327 (O); leading article on, 340; correspondence on, 420, 421, 458, 525, 628, 753

McDONALD, Peter: Hypertonic sodium sulphate, 419
McDOWALL, R. J. S.: Problems of eucalyptus, 29

—(O); correspondence on, 216—*Biological Introduction to Psychology*, 121; correspondence on, 212—Medical education, 524

McFARLANE, Duncan (and S. LAIDLAW): Increase of tuberculosis in Glasgow, 437 (O); correspondence on, 525, 599, 669

McFARLANE, William Douglas, obituary notice of, 712

McGREGOR, Sir Alexander: War and common health, 813

McHESSE, Elizabeth (and C. E. TONER): *Effective Hygiene*, 654

McILWAIN, H.: Chemotherapeutic agents, 922
McINDOE, A. H.: Disclamer, 148

McINTOSH, R. R.: Improved laryngoscope, 914
MACKAY, Helen M. M.: Emyrids for pyloric stenosis, 453—Rationing and children's health, 920

—Ian F.: "Cocktail" burn, 363
—James Davidson, obituary notice of, 851

MACKENZIE, K. C.: Suture of cut flexor tendons, 138

MACKENZIE, I. E.: Benzyl benzoate emulsion for scabies, 405 (O)—Questionable evidence of cure of scabies, 461—Possibility of malaria in Britain, 668

—Melville D.: Louse-borne typhus fever, 856
McKEOWN, R. J.: Appreciation of Mr. C. A. S. Ridout, 320

McKEOWN, F. P.: Yellow fever in Africa, 172
McKESOCK, W. (and others): Reduction of hospital infection of wounds, 375 (O)

McKWOOD, J. C.: Air-raid noises in psychotherapy, 279

McLAUGHLIN, J. T.: Chloroform in 'eighties, 19

McLAUGHLIN, C. R.: Treatment of varicose veins, 670

—F. L. (and W. M. MILLAR): Air-raid noises in psychotherapy, 153 (O); correspondence on, 243, 279, 354, 460

McLEOD, Bruce (and P. CHALLEN): Puerperal eclampsia, 302 (O); correspondence on, 343, 415, 492

McLEAN, R. C. (and W. R. I. COOK): *Plant Science Formulas*, 852

MacLeod, Rodrick, gift to, 678
MacLeod's Physiology, in *Modern Medicine*, 6th ed., 207

McINTOCK, Grace: Function of vocal cords, 600
McMENAMEN, Lieut.-Col. John Gerald, death of, 566

McMURRAY, W. H.: Care in use of Group O card, 419

McMICHAEL, J.: Kidneys and limb compression, 884—Crush syndrome "in obstetrics, 887"

—Joan K.: Assassination of toddlers, 253—Hartm in Soviet Union, 442

McNALLY, P. A.: Sulphonamides and bacteria in urine, 63

MacPhee, John Joseph, death of, 425
McNEILSON, A. S.: Hypochromic anaemia, 279

—Treatment of haemorrhagic disease of newborn, 413 (O); correspondence on, 526, 594, 632

McPHERSON, C. D.: Planning in fever service, 924
McSWINEY, M.: Treatment of impetigo contagiosa, 247

McWhitter, Squadron Ldr. James Russell, obituary notice of, 618

McWILLIAM, E. U.: Corneal hands, triline nails and dental sepsis, 794

Macula, dystrophies of, 36

Madin, K. E.: Ether convulsions, 899
Maigne, review of book on, 479

Magnesium and tooth formation, 92
MAGNET, A. P.: Insulin and diabetic coma, 210

Mahor, Flight Lieut. Denis William, obituary notice of, 106

MANROT, Rodney: *Technique of Gastric Operations*, 378

MAR, W.: Index of New Remedies, 89

Malachite in control of bilharzia (A. Morley), 51; Malattia: In officers and men from overseas, 416—

Accidental transmission of, 567—Treatment of mycosis fungoides ending in Hodgkin's disease (H. MacCormack), 645 (O)—Possibility of, in Britain, 668—744—Illustrated by cinematograph film "70", 836

—congenital case of, 733
—parasites in fresh blood films (C. A. van Rooyen), 8

MALIKIN, A. S.: Medical students and help for Russia, 623

Mallory, Frank Burr, death of, 532
Malnutrition, 253

MALPAS, Douglas Dent, obituary notice of, 71
Main, review of book on, 851

Mans and money, 359
Mansour-Bahr, David Hugh, obituary notice of, 390

—Sir Philip: Amoebic dysentery, 255 (O)
MARSH, Robert R.: *Journal of Oxford*, 512

MARXOWICZ, Tadacz: Diabetes and chronic nephritis, 670

Marks, Hugh, obituary notice of, 143
MARSH, Neil G.: Editorial medical boards for women, 826

Marriage, review of book on, 547
Marriages, consequences, 55

MARSHALL, A. G.: Sulphonamide locally in infections, 84

—J. N.: Chloroform in the 'eighties, 361
—John B.: Questionable evidence of cure of scabies, 561

MARTINSON, Karl: *Studies on Etiology of Gastroenteritis*, 47

MARTIN, J. Gordon: Thrombosis in superior mesenteric vein following childbirth, 537 (O)

—N. A.: Food advice for working-class mothers, 860

Marindale's Extra Pharmacopoeia, vol. I, 2nd ed., 551

MARTIN, Francis Charles, obituary notice of, 712
MARSHALL, W. Gordon: Sulphonamide in bacillary dysentery (Fetter), 199

MASON, James Johnston: Mental defects in Army, 280, 490

Massey: Review of book on, 122—Early cardiac, 177

Massages, charters: Scale of salaries, 639
MASSEY, A. (and others): Clearance of urban air-raid casualties at perimeter, 150

Mastoiditis, "masked", 159
MATAS, Rudolph: Vascular surgery, 93

Macdon, Rodrick Murdoch, obituary notice of, 249

MATTHEWS, D. M. (and A. L. BUCHANAN): Root vegetables as antiscorbutic in infant feeding, 211 (O)

MAURICE, Timothy: Treatment of scabies, 631
Maxillo-facial wounds, treatment of, 313

MAXWELL, James: Carriers of tuberculosis, 65—Active pulmonary tuberculosis, 317

—Capt. Robert Montgomery, death of, 181
MAYER, G. Sufferer: Darning of hernias, 176

MAYER, Frank: Death from plasma transfusion, 35

Measles, releases in, 679
Medal, Fitzroy, 659

—Kober, 363
—Lister, 555

—Mendel, 290
—Paracetamol, gold, 495

—Polar (stroma), 600

- MEDAWAR, P. B. (and others): Toxicity of sulphonamide drugs to cells *in vitro*, 149 (O)
- Medical Annual, 1941, 161
- boards, industrial, for women, 826
- certification, 464
- colleague, paying for medical attendance on, 186
- curriculum, students and, 629, 711
- Directory: Announcements, 74, 254
- education, future of: Teacher's view (J. A. Ryle), 323 (O); Student's view (D. McDonald), 327 (O); leading article on, 340; correspondence on, 420, 421, 458, 525, 628, 753
- man-power, 140—Allocation of, 426—Economy of, 826, 927
- problem, review of book on, 547
- service under new order, 244
- words, coined, 38, 108
- Medicine: Review of books on, 17, 161, 200, 229, 513, 581, 695, 729—Leadership in, 244—Article on medicine in England, 291—Morch of, 581—Post-war, 665, 752—And aviation (leading article), 879
- post-war? 891
- preventive, publicity for, 860, 925
- war, week-end of, 484
- Medico-Legal: Temporary mental treatment and divorce, 674—Untrue medical certificates, 758—Father's dilemma, 832
- MEIGHAN, John S.: Anatomical nomenclature, 68
- MEIKLEJOHN, Arnold P.: Nicotinic acid and pellagra, 823
- MELLANBY, Sir Edward: Appreciation of Prof. A. J. Clark, 213
- Kenneth: Transmission of scabies, 405 (O); correspondence on, 560, 631, 669
- MELLOTTE, J. H.: Air-raid noises in psychotherapy, 354
- Mellows, Flying Officer Harold Sidney, death of, 792
- MENAGE, H. E.: death of, 713
- Meningitis, benign lymphocytic, sand-fly fever and (C. S. Pearson), 303 (O)
- cerebrospinal, sulphonamides in, 631
- Influenza, case of, 877
- Meningo-encephalitis, mumps (A. W. Frankland), 48 (O)
- MENNELL, James: Orthopaedic medicine and orthopaedics, 178
- Mennie, Lieut. Richard, obituary notice of, 462
- Menopause: Annotation on, 167—Review of book on, 878
- Mental defective in Army (F. J. S. Esher), 187 (O); leading article on, 203; correspondence on, 280, 353, 422, 490, 630
- disorder: Review of book on, 18—Nasopharyngeal disease in, 172
- health: Work among children, 35—Future of (leading article), 269—Planning for, 276, 386, 421, 457—Of child, war conditions and (F. Bodman), 486—In wartime, 542—Future of (K. Stephen), 589; correspondence on, 710, 836
- Health, October issue, 896
- treatment, temporary, and divorce, 674
- welfare: Reports on, 173—"Hard core" of unemployment, 205
- MENZIES, Sir Frederick: Chronic sick in bombed towns, 31, 178—Regionalization of hospital and health services, 60—Voluntary hospitals, 353, 524—Hospital policy, 666
- Mercurial diuretics, death from, 855
- Mercurochrome, symptoms following, 363
- Mersalyl diuresis, diabetes and, 750
- Metabolism, protein, effect of carbohydrate on (leading article), 164
- MICHAELIS, L.: Sciatic pain, 825
- MICKS, R. H.: Water deficiency, 664
- Microscopes: Wanted, 392—Request for, 640
- MIOLENORE, Merrell P.: *Nursing Couple*, 162
- Midwife's title, 562
- Midwives, gas and oxygen by, 183
- Migraine: review of book on, 614
- MILLS, A. A. (and others): Reduction of hospital infection of wounds, 375 (O)—Streptococcal cross-infection, 742
- Milk: Present situation, 72—Winter supply, 145—Regulation for, 252—Tuberculosis and rationing of, 253—Condition of, in school, 290—Pasteurizing plant, 290—Dried separated powder, 322—Compulsory pasteurization in Ontario, 446
- national dried, directions on cartons, 363
- (Special Designations) Regulations, 1941 (leading article), 916
- Mill, Thomas, obituary notice of, 596
- MILLAR, W. M. (and F. L. McLAUGHLIN): Air-raid noises in psychotherapy, 158 (O); correspondence on, 243, 279, 354, 460
- MILLARO, C. Killick: Practical results of diphtheria immunization, 751
- MILLER, Sinclair: Poliomylitis, 316, 322
- MILLS, A. J. E.: Haemoglobinometry, 823
- Mind: Skin and, 55, 186—Review of book on, 615
- Miners: Medical certificates for, 426—Medical examination of, 530—Return to work of unfit, 678, 894
- myocardium, dark adaptation and (I. Campbell), 726 (O)
- Phthisis Medical Bureau: Report, 63
- MIRIZZI, Pablo L.: *Fisiopatologia del Hepato-Colédo: Coloniografía Operatoria*, 914
- Mitchell, Albert Graeme, death of, 288
- W. R. D.: Treatment of osteomyelitis, 30—Avoidable disability seen in recent amputations, 437 (O); correspondence on, 562
- MITCHELL-HIGGS, F.: Final examinations for London M.B. B.S., 615
- MITCHNER, P. H. (and W. H. C. ROMANIS): *Science and Practice of Surgery*, 7th ed., 121—(And E. M. COWELL): *Medical Organization and Surgical Practice in Air Raids*, 2nd ed., 162
- Mobile unit: useful addition to equipment, 513
- MOFFAT, H. A.: Dust infection in wards, 496
- MOIR, Chassar: Radiology and pelvic disproportion, 821
- MOLLISON, P. L. (and I. M. YOUNG): Failure of *in vitro* tests as guide to value of stored blood, 797 (O); annotation on, 813
- W. M.: E.N.T. instruments, 859
- MONS, W. E. R.: Raspberry-leaf extract, 528—Air raid and child, 625; correspondence on, 787
- MOON, Lieut. Anthony James, presumed killed, 181
- R. O.: Review of *Cardiac Closures*, 614
- MOORE, H. D.: Diminution in size of breast after childbirth, 254
- Capt. William David, death of, 792
- More, Col. Lancelot Paxton, obituary notice of, 289
- Morgan, William Parry, obituary notice of, 71, 142, 287
- MORLAND, Andrew: Medical unit for Ethiopia, 322
- Morphine reactions to, 33
- Morris, Col. Arthur Hugh, obituary notice of, 289
- Morris-Jones, Sir Henry, appointed chairman of Welsh Parliamentary Party, 932
- MORROW, Major Martin McAuley, death of, 756
- MOSE, Francis Henry (Robin), obituary notice of, 928
- Mothercraft, teaching of, 235
- Mothers, expectant, clothing coupons for, 182, 290, 836
- Motor car: Traffic offenders, 234
- Motor-cyclists, head injuries in (H. Cairns), 465 (O); leading article on, 481
- MOTTRAM, J. C.: Wholeness bread, 244
- MOWAT, W. J. (and R. A. C. RIGBY): Case of x-ray dermatitis, 770
- MOVES, R. E.: Treatment of scabies, 752
- M-ZLEY, Alan: Malachite in control of bilharzia, 511
- MULVANY, Desmond K. (and others): *Handbook of First Aid and Bandaging*, 513
- MUMFORD, P. B.: Scabies—questionable evidence of cure, 492
- Mumps encephalitis, 557
- mumps-encephalitis (A. W. Frankland), 48 (O)
- MUNRO, Sir David: *It Passed too Quickly: Autobiography*, 913
- MURDIE, William, obituary notice of, 788
- MURPHY, J. F.: Test for urease activity, 932
- MURRAY, I. Elliot (and R. A. SANDISON): *Congenital bilateral renal hypoplasia*, 471 (O)
- MURRAY, M. G. (and others): Oral sobismol in syphilis, 541 (O)
- MURCI, N.: Sulphonamide E.O.S., 503 (O); correspondence on, 595, 631
- Myalgia, novocain injection in, 247
- Mycosis fungoides treated by malaria, terminating in Hodgkin's disease (H. MacCormac), 645 (O)
- MYERS, Bernard: Irrigation in treatment of diverticulosis, 532
- Myocarditis, acute interstitial, 370
- Myositis and fibrositis, 789
- Myxoedema, cases of, 924
- N
- Nail lacquer, dermatitis from, 855, 927
- Nails, brittle, and chilblains, 568, 640, 794
- Names, confusion of, 864
- Napoleon's dermatosis, 349
- Narcolepsy (H. A. Palmer), 478
- Nash, Edwin H. T., obituary notice of, 893
- Nasopharyngeal disease in mental disorders, 172
- infections, *Streptococcus* in, 102
- National Service Bill, 929
- War Formulary, 662; leading article on, 656; correspondence on, 788
- Needle, blunt, 532
- NEAUS, V. E.: E.N.T. department in E.M.S., 519; correspondence on, 594, 668—Otolaryngologist on war service, 744
- NELSON, A. R.: Paper salyase, 794
- NELSON, Havetock: Coliform bacilli in water, 63
- Joseph, obituary notice of, 360
- Nephritis, chronic: Hypertensive, renal extracts for, 177—Diabetes and, 670, 790
- experimental, 412
- Nerve, peripheral, injuries, 286
- Nervous diseases of cattle, review of book on, 582
- system: Sulphonamides and (leading article), 308—Review of book on diseases of, 339
- autonomic, drugs and, (leading article), 732
- Nesbitt, Surg. Comm. Robert Wallace, obituary notice of, 462
- Neuritis, diabetic, 540
- Neurofibromatosis, four brothers with (A. Garland), 120; correspondence on, 492
- Neuromuscular disorders, vitamin E in (leading article), 618; correspondence on, 709
- Neuroses, war: leading article on, 21—Survey of 100 cases of (I. D. Sutherland), 365 (O)
- Neurosis or psychosis? 316
- Neurosurgical unit for Glasgow and West of Scotland, 489
- Neurovascular disorders, 496
- Neville-Jones, Major Roland, obituary notice of, 638
- New Zealand: Hospital control—burden of cost, 385
- Death penalty and flogging abolished, 530
- Newborn, haemorrhagic disease of (A. J. S. Macpherson), 433 (O); correspondence on, 526, 594
- NEWMAN, K. O.: *Mind, Sex, and War*, 615
- NEWSHOLME, Sir Arthur: Appreciation of Dr. D. Forbes, 248
- Newspaper's inquiry, 560, 680
- NICHOLL, J. W. McK.: Human ostrich, 827
- NICHOLLS, Lucius (and A. NIMALASURIA): Carotene as substitute for vitamin A, 406
- Nicol, B. M.: Distribution of gastric and duodenal ulcers in British Isles, 780
- Nicotin tablets, 654
- Nicotinic acid and pellagra, 823
- Night vision, testing (N. B. Harman), 347; correspondence on, 631, 789, 858
- Night blindness: Psycho-physiological study (E. Wittkower and others), 571 (O), 607 (O); leading article on, 620; correspondence on, 747, 858—Shamming (N. B. Harman), 737
- NIMALASURIA, Ananda (and L. NICHOLLS): Carotene as substitute for vitamin A, 406
- NISART, N. W.: Slipped upper femoral epiphysis, 351
- NIVEN, R. B. (and others): Local treatment of burns, 41 (O); leading article on, 53; correspondence on, 135, 246, 316, 750, 836
- NIXON, J. A.: Closed wounds of chest, and physician's place in chest team, 24—Paralysis accompanying herpes zoster, 31
- W. C. W.: Food advice for waiting outpatients, 633—Diet in pregnancy, 703
- NOBBS, Athelstane: Ship surgeons and doctors on military transports, 460
- NOON, Charles: Four cases of pneumococcal peritonitis, 724 (O)
- NORRURY, Lionel E. C.: *Carcinoma of Rectum*, 267
- NORMAN, G. M. (and P. LAZARUS-BARLOW): Poisoning with sodium nitroprusside, 407
- NOZWORTHY, M. D.: Anaesthesia in chest surgery, 342
- Notes, Letters, Answers, etc.,
- Abyssinia: Medical unit for, 322—Red Cross work in, 428
- Addison's disease, adrenal graft for, 392
- Air-raid precautions: Golden rule in reception areas, 108—Colds in shelters, 392—Evacuation scheme, 464—Hot drinks for trapped people, 680
- Anaesthetists, nurse, 108
- Arteriosclerosis, exercises for, 108
- Association, Grenfell, 716
- International Hospital, 716
- Baby feeding, simplified formula for, 38
- Bandages, adhesive: avoiding painful removal, 364
- Behaviour of children and adults under war conditions, 532
- Benzyl benzoate therapy, 600
- Bilharziasis, abbreviated treatment for, 716
- Blind, timepiece for, 254, 322, 428
- Blood grouping in Forces, 758
- Bread, white, Humphrey Clinker and, 640
- Breasts, diminution in size of, after childbirth, 254
- British Medical Journal: Advertising announcement, 74—Surplus copies of, 568
- Burn "cocktail," 363
- Burns and blisters, treatment of, 38
- phosphorus, treatment of, 428
- Cancer in lower animals, 532
- Certification business, 600
- Chilblains, treatment of, 568, 640, 716, 794
- China, medical aid for, 640
- Chloroform in the 'eighties, 364
- Circulation, problems of, 216
- Clothing coupons for expected child, 836
- Coined medical words, 38, 108
- Colds in air-raid shelters, 392
- Colleague, attending, 292
- Cornea, unburned, 74, 254
- Corrigenda, 74, 108, 148, 428, 532, 568, 600
- Deaths on table, 392
- Diabetic chart, 364
- Diphtheria immunization, 932—Cost of, 568
- Disclaimer, 148, 532, 716
- Diverticulosis, irrigation in treatment of, 532
- Doctor's child, accommodation for, 186
- family, accommodation for, 292
- Dust infection in wards, 496
- Dysmenorrhoea, 108
- Erysipelas, recurrent, 392, 496
- Ether convulsions, 216
- Fever, abortion, and sulphapyridine, 428
- Finger-nails, ragged, 74
- Finger-tips, cracked, treatment of, 186
- First aid to injured, 716
- Flat-foot in recruits, 254
- Fund, Royal Medical Benevolent, M.O.H. and, 216
- Glucose: Shortage of, 292—Certificates for, 464, 600
- Glycosuria, tests for, 292
- Hands, chronic congestive condition of, 568, 640, 716, 794
- "Health dinner," minerals and vitamins in, 186
- education material, 392
- Heart: Cardiac arrest during anaesthesia, 364
- Heel pains, stablains, in rheumatoid arthritis, 716, 836, 864
- Herpes zoster, pains of, 38
- Horn-rimmed spectacles, first aid for, 292
- Hospital, St. Columba's, for Advanced Cases, 148
- Hyphenated term, 464
- Impetigo: Symptoms after mercuriochrome, 361
- Treatment of, 364—Liq. ferri perchlor. fortis for, 640

Notes, Letters, Answers, etc. (continued).

Income tax, 74, 145, 185, 216, 254, 292, 363, 464.
396, 532, 568, 600, 640, 680, 716, 836, 864.
896, 932. For details see General Index.
Incontinence in children over 4, treatment of,
496, 600.

Malaria illustrated by cinematograph film, 836.
Medical certification, 464.

— Directory —

Mental health, future of, 836.
Microscopes: Wanted, 392—Request for, 640.
Nails, brittle, and chilblains, 665, 640, 794.
Names, confusion in, 864.
Needle, blunt, 522.
Neurovascular disorders, 496.
Newspaper's liability, 568, 680.
Nurse anaesthetists, 108.
Nursing, recruiting for, 148.
Oedema, obstinate, 74.
Orchitis, abdominal symptoms after, 148.
Paper salivae, 794.
Polymyositis, crum, convalescent, 322.
Polyuria, intermittent, 358.
Pruritus, generalized, 33.
"Relaxation," 428.
Rose-hips: Jams from, 464—For vitamin syrup,
496.
Rouheaf in food, 186.
Scabies, 864—Treatment of, 788, 836, 896.
Service: District nurse for Home Guard casualties,
680, 794.
Ship surgeon, status of, 496, 932.
Sight, perfect, without glasses, 464.
Skin condition, persistent, after x rays for pruritus
anli, 716.
— and mind, 186.
Smokers' and tachycardia, 650—Anti-tobacco
campaign, 896; in Germany, 753.
Specialists attending collisions, 186.
Stairs for microscopical work, 364.
Stamps, postage: sum as term carrier, 836.
Strabismic, case of idiopathic, to, 568.
Students seeking midwifery cases, 836.
Tuberculosis, 568.
Tuberculosis workers, radiographs of, 568.
Ulcers, cornical, cured by sulphapyridine, 292.
Urease activity, test for, 932.
Utricularia, 108.
Veins, varicose, ligation of, 392.
Vocal cords, function of, 496, 600.
— resonance and tremors, 680.
Wart, outbreak in school, 392, 496.
Wound healing, systemic factors in, 364.
X-ray therapy in peptic ulcer, 864.

NOVA ET VETERA:

Alcoholism, folk-lore of, 850.
Blackbeard, Dr. George (1776-1841), 850.
Books: old medical, 19.
Chloroform in "chilblains," 19.
Joan of Arc, 417.
Napoleon's dermatosis, 349.
Tuberculosis, pulmonary, folk-lore of, 417.

Novocain injection: In myalgia, 247—In cervical
cancer, 493.

NUNAN, W.: "Relaxation," 428.

Nurse anaesthetists, 108.

— district, for Home Guard casualties, 680, 794.

Nurses, wartime: Medical supervision, 107—
Provision of, 930.

Nerves: Increase in salaries, 344—Scheme for training,
352—Employment order, 423—Committees on
salaries of, 677, 756, 930.

Nursing: Recruitment for, 148—Review of books on,
162, 247, 582, 615, 771, 914—Tribute to
service, 384—Committee on, 455.

— and Midwifery, Division of, 183.

NUSSEY, A. M.: Encephalitis in children, 927.
Nutrition: Planned wartime, 888. See also Food.

NUTT, A. B.: Eye injuries in war, 417.

O

OAKLEY, Wilfrid: Diabetic coma in young diabetics,
31—Diabetes and metabolic diuresis, 750.
O'Shea, Maudslayi E. (and S. W. BRIDGES):
Modern Dermatology and Syphilology, 408.

Obituary:

Aikens, Major Christopher Rowland, 36.
Apte, Capt. S. S., 929.
Baldwin, Flying Officer Antony Fleming, 792.
Bale, Ross, 728.
Barnett, Lieut.-Col. Kenneth Bruce, 425.
Barton, James Kingston, 755.
— Samuel J., 35.
Baskin, Joseph Loughhead, 493.
Benoly, Nathaniel, 673.
Bibber, Hans, 7.
Bjorksten, Max, 361.
Bodinsky, Meyer, 791.
Bonnell, Major Hugh Emrys, 73.
Bowen, John Templeton, 361.
Bower, Hilda Crichlow, 180.
Boyd, William MacCall, 285.
Boyle, H. Edmund G., 638.
Brained, William Clarence, 425.
Bridges, Major Arthur Brodie Hamilton, 673.
Briggs, Lloyd Vernon, 180.
Bruce, Matthew, 529.
Byron, Munro, 287.
Burke, Edmund Tryler, 34.
Burnell-Jones, H., 496.
Campbell, William Neil, 462.
— Willis Cohoon, 461.
Chavasse, Francis Bernard, 141.
Chu, Henry B., 713.
Clark, Alfred Joseph, 213, 249.
Cohen, George Alexander, 673.
Cookson, Frederick Nesfield, 861.
Cristiani, Hector, 144.
Cruz, José da Costa, 361.
Davidson, Fernand Macandrew, 673.
— Lieut.-Col. Hugh Allan, 638.
Davies, Walter Ernest Llewellyn, 35, 143.
Dawson, Henry Kint, 923.
de Mariac, Ernest, 713.
D'ozzo, Plafes O., 713.
D'Eon, John Rhodes, 70.
Dinnick, Oswald Tilton, 425.
Dixon, Francis George, 287.
Drabble, Horace Silva, 238.
Dyer, Harry, 144.
Dwyer, August, 713.
Durn, Spencer Smithson, 360.
Easton, Capt. Robert Thomson, 144.
Edmonds, Charles Wallis, 361.
Evans, John James, 320.
Ewart, Surg. Comm. Archibald Robert, 106.
Fasterland, Lars Wilhelm, 150.
Fankhauser, Ernst, 144.
Ferguson, Hugh Campbell, 287.
Foerster, Otfold, 648.
Forbes, Duncan, 334.
Foster, Thomas J. L., 361.
Fordyce, William, 754.
Forrester, Alexander William, 461.
Friedrich, Charles E. P., 461.
Friedewald, Julius, 288.
Fulton, Thomas Ronald, 494.
Gavis, Henry, 599.
Gibson, Thomas, 248.
Gifford, Hastings, 424.
Gilmour, John Rutherford, 831.
Goldstein, Max Aaron, 791.
Goodall, Alexander, 595.
Goodman, Roger Neville, 142.
Gray, J. S., 48.
Greenberg, Capt. Samuel Bernard, 462.
Griffith, J. P. Crozer, 238.
Grimes, J. P. Gore, 248.
Hamilton, Robert, 529.
— William, 143.
Hammond, Frank Clinch, 461.
Hanna, William, 142.
Hayden, Frank, 258.
Heald, Alfred F., 594.
Hennrichsen, Arton, 529.
Heron, Lieut.-Col. Davis, 182.
Heyerdahl, Severin Andreas, 713.
Hinde, Capt. Ernest John Frank, 833.
Hilman, Johannes Wilhelm, 150.
Hilman, Gunn, 713.
Horne, Mary Campbell, 288.
Hurt, David, 360, 425.
Hunter, Thomas Charles, 830.
Hussey, James, 144.
Hussey, Max, 713.
Jolly, W. A., 41.
Kapka, F., 791.
Ke'w, Adam Brown, 33.
Kennedy, Col. Edward Galewy, 929.
Kerr, James, 563.
— Peter Murray, 532.
Klein, Heinrich, 791.
Kocher, Albert, 529.
Kure, Ken, 713.
Laird, Charles William, 34.
Lancdale, Henry, 249.
Lassett, A., 143.
Layton, Frank George, 104.
Leavate, Surg. Lieut. Archibald Thomas, 106.
Lewis, Bransford, 361.
— Dean De Witt, 832.
Linnell, Alfred, 831.
Littler, R. M., 673.
Lloyd, Major-Gen. Sir Owen Edward Penne-
father, 181.
Loch-head, John Carson, 755.
Lyde, Samuel, 288.
McCrea, Hugh Moreland, 734.
MacFarlane, William Douglas, 712.
Mackay, James Davidson, 861.
McNevin, Lieut.-Col. John Gerald, 566.
MacPhee, John Joseph, 425.
McWhirter, Robert James Russell, 638.
Mabon, Flight Lieut. Denis William, 106.
Mallory, Frank Burr, 832.
Malpas, Douglas Dent, 71.
Manson-Bahr, David Hugh, 390.
Marks, Hugh, 143.
Marley, Francis Charles, 712.
Matheson, Robert Murdoch, 249.
Maxwell, Capt. Robert Montagu, 181.
Mellows, Flying Officer Harold Sidney, 792.
Menage, H. E., 713.
Mennie, Lint, Richard, 462.
Mill, Thomas, 596.
Mitchell, Albert Graeme, 288.
Moore, Lieut. Robert James, 181.
Moore, Capt. William David, 792.
More, Col. Lancelot Paxton, 289.
Morris, William Parry, 71, 142, 237.
Morris, Col. Arthur Hugh, 239.
Morrow, Major Martin McAuley, 756.
Moss, Francis Henry (Robin), 923.
— George, 488.

Obituary (continued):

Campbell, William Neil, 462.
— Willis Cohoon, 461.
Chavasse, Francis Bernard, 141.
Chu, Henry B., 713.
Clark, Alfred Joseph, 213, 249.
Cohen, George Alexander, 673.
Cookson, Frederick Nesfield, 861.
Cristiani, Hector, 144.
Cruz, José da Costa, 361.
Davidson, Fernand Macandrew, 673.
— Lieut.-Col. Hugh Allan, 638.
Davies, Walter Ernest Llewellyn, 35, 143.
Dawson, Henry Kint, 923.
de Mariac, Ernest, 713.
D'ozzo, Plafes O., 713.
D'Eon, John Rhodes, 70.
Dinnick, Oswald Tilton, 425.
Dixon, Francis George, 287.
Drabble, Horace Silva, 238.
Dyer, Harry, 144.
Dwyer, August, 713.
Durn, Spencer Smithson, 360.
Easton, Capt. Robert Thomson, 144.
Edmonds, Charles Wallis, 361.
Evans, John James, 320.
Ewart, Surg. Comm. Archibald Robert, 106.
Fasterland, Lars Wilhelm, 150.
Fankhauser, Ernst, 144.
Ferguson, Hugh Campbell, 287.
Foerster, Otfold, 648.
Forbes, Duncan, 334.
Foster, Thomas J. L., 361.
Fordyce, William, 754.
Forrester, Alexander William, 461.
Friedrich, Charles E. P., 461.
Friedewald, Julius, 288.
Fulton, Thomas Ronald, 494.
Gavis, Henry, 599.
Gibson, Thomas, 248.
Gifford, Hastings, 424.
Gilmour, John Rutherford, 831.
Goldstein, Max Aaron, 791.
Goodall, Alexander, 595.
Goodman, Roger Neville, 142.
Gray, J. S., 48.
Greenberg, Capt. Samuel Bernard, 462.
Griffith, J. P. Crozer, 238.
Grimes, J. P. Gore, 248.
Hamilton, Robert, 529.
— William, 143.
Hammond, Frank Clinch, 461.
Hanna, William, 142.
Hayden, Frank, 258.
Heald, Alfred F., 594.
Hennrichsen, Arton, 529.
Heron, Lieut.-Col. Davis, 182.
Heyerdahl, Severin Andreas, 713.
Hinde, Capt. Ernest John Frank, 833.
Hilman, Johannes Wilhelm, 150.
Hilman, Gunn, 713.
Horne, Mary Campbell, 288.
Hurt, David, 360, 425.
Hunter, Thomas Charles, 830.
Hussey, James, 144.
Hussey, Max, 713.
Jolly, W. A., 41.
Kapka, F., 791.
Ke'w, Adam Brown, 33.
Kennedy, Col. Edward Galewy, 929.
Kerr, James, 563.
— Peter Murray, 532.
Klein, Heinrich, 791.
Kocher, Albert, 529.
Kure, Ken, 713.
Laird, Charles William, 34.
Lancdale, Henry, 249.
Lassett, A., 143.
Layton, Frank George, 104.
Leavate, Surg. Lieut. Archibald Thomas, 106.
Lewis, Bransford, 361.
— Dean De Witt, 832.
Linnell, Alfred, 831.
Littler, R. M., 673.
Lloyd, Major-Gen. Sir Owen Edward Penne-
father, 181.
Loch-head, John Carson, 755.
Lyde, Samuel, 288.
McCrea, Hugh Moreland, 734.
MacFarlane, William Douglas, 712.
Mackay, James Davidson, 861.
McNevin, Lieut.-Col. John Gerald, 566.
MacPhee, John Joseph, 425.
McWhirter, Robert James Russell, 638.
Mabon, Flight Lieut. Denis William, 106.
Mallory, Frank Burr, 832.
Malpas, Douglas Dent, 71.
Manson-Bahr, David Hugh, 390.
Marks, Hugh, 143.
Marley, Francis Charles, 712.
Matheson, Robert Murdoch, 249.
Maxwell, Capt. Robert Montagu, 181.
Mellows, Flying Officer Harold Sidney, 792.
Menage, H. E., 713.
Mennie, Lint, Richard, 462.
Mill, Thomas, 596.
Mitchell, Albert Graeme, 288.
Moore, Lieut. Robert James, 181.
Moore, Capt. William David, 792.
More, Col. Lancelot Paxton, 289.
Morris, William Parry, 71, 142, 237.
Morris, Col. Arthur Hugh, 239.
Morrow, Major Martin McAuley, 756.
Moss, Francis Henry (Robin), 923.
— George, 488.

Obituary (continued):

Nash, Edwin H. T., 393.
Nelson, Joseph, 360.
Nesbitt, Surg. Lieut. Robert Wallace, 462.
Neville-Jones, Mervin Roland, 673.
O'Meara, John Morgan, 287.
Orr, David, 634.
Parker, William, 755.
Parkinson, Capt. R. H. F., 929.
Pearson, Albert G. W., 351.
Peters, William James, 181.
Pickett, Surg. Capt. Edward Butler, 423.
Pike, Major-Gen. Sir William Wance, 152.
Prothero, Surg. Lieut. David Austin, 249.
Rabbi, Capt. Bazley, 929.
Redfern, John Joseph, 673.
Rice-Oxley, Sir Alfred, 256.
Ridout, Charles Archibald Scott, 320.
Roberts, Charles Leonard Digby, 529.
— Sir James Reid, 56.
Robertson, Alexander, 596.
— William, 461, 529.
Robinson, Alfred Skirrow, 673.
— Arthur, 181.
Robson, Squadron Leader David Alan Hope, 106.
Ronald, John Giffian, 673, 713.
Rose, Aeneas, 421.
Reuse, James, 144.
Rowlands, David Richard, 461.
Radolf, Robert, 918.
Russell, William Kerr, 593.
Sanchez, Anzel C., 713.
Scherer, Hans, 144.
Schiller, Paul Ferdinand, 425.
Schroeder, Paul, 713.
Shaw, Henry Keith, 713.
Shefford, Surg. Lieut. Arthur Charles, 597.
Shree, Bertram, 360.
Sinz, Wilfrid MacDonald, 143.
Singer, B. A., 424.
Sloan, Major-Gen. Sir MacFarlane, 462.
Smith, John Anderson, 287.
Spencer, Herbert Eustace, 139.
Spillmann, Louis, 717.
Spink, John Thomas, 288.
Stanley, Douglas, 141.
Still, Sir Frederick, 69, 237.
Sunder, Enrique, 15.
Swales, Jacob, 361.
Taylor, Benjamin Robert Archer, 493.
— David Robertson, 832.
— Matthew Logan, 494.
Thin, Robert, 491, 496.
Thomas, Charles Edward, 635.
Tidy, Stuart Alexander, 713.
Turtel, Godfrey de Ben, 928.
Twynham, George Edward, 71.
Verdon-Roe, Spencer, 233.
Voss, Walter, 529.
Waldman, Anton, 529.
Ward, John Alfred, 31.
Warner, Col. Arthur Henry, 361.
Wear, Alernon Edward Lake, 861.
Weir, Capt. Stewart Irvine, 361.
Welsh, Robert Anthony, 892.
West, Henry Owen, 830.
Westphal, Alexander, 144.
Wetherby-Miles, William Archibald, 712.
Wick, Barnard, 144.
Widd, Robert Briggs, 564.
Wilcox, Sir William Henry, 103, 180.
Williams, Lieut. Col. Charles Edward, 239.
Wilson, Thomas Henry, 861.
Wolfe, Claude Thomas, 713.
Wood, Guy Edward Mills, 423.
— Col. Leonard, 597.
Woodruff, Thomas A., 481.
Worrest, Lieut.-Col. Henry George Luther, 533.
Zappert, Julius, 180.

Obituary: Radiology and (and/or article), 551—
Review of book on, 71—"Crash syndrome"
in, 837.

Occlusion, temporary vascular, ending fatally in
ischemia (A. M. Glen), 878 (O).

OCCUM, D.: Perfect sight without glasses, 464.

O'DONNELL, J. H.: "Blue down" or idiopathic
hæmorrhage in children, 85 (O).

O'DWYER, D.: Burns and wounds treated by ent-
vope method, 836.

Oedema, obstinate, 74.

Onion, non-grass, base for, 92.

OLDFIELD, J.-B.: Rubra in food, 186.

OLDHAM, J.: Subcutaneous fissure of varicose
vein, 52.

Olecranon, treatment of, 351.

O'Meara, John Morgan, obituary notice of, 287.

O'NEILL, T.: Appendix strangulated in congenital
hernia in infant, 87.

Operating table, deaths on, in general practice (J.
Elam), 207; correspondence on, 232, 356, 392.

Ophthalmic neoplasms, subconjunctival for, 730.
837.

Optic, abdominal symptoms after, 143.

Oster, Sir William: Biography of, 546—Memorial to, 835
Ostelin capsules, high-potency, 654
Osteo-arthritis, aetiology and treatment of, 917
Osteomyelitis, treatment of, 30
O'SULLIVAN, J. V. (and F. M. CRAWSHAW): Radiographs and disproporation, 543 (O); leading article on, 551; correspondence on, 708, 821
Otitis media, acute, chemotherapy in (leading article), 20; correspondence on, 102
—suppurative, sulphapyridine in, 211
Oto-laryngologist on war service, 744
Oxygen: Administration, 64—Installation in hospital, 578
OWEN-JONES, R.: Puerperal sepsis, 388

P

PACKER, Maurice E. J.: Treatment of impetigo, 364—Mobile first-aid posts, 671—Hot drinks for trapped people, 680
PAGE, C. Max: Surgical principles in divisional medical units, 168
Pain: Analysis of, 522—Sciatic (leading article), 698; correspondence on, 789, 825
PALMER, H. A.: Narcocypsis, 478
—Rupert: First aid to injured, 672
Panama Republic: Medical president elected, 184
Pancreatitis, acute, 315
PANKHURST, J. H. F.: Abortus fever and sulphapyridine, 318
Paper salvage, 794
Para-aminobenzoic acid, note on, 314
Paracelsus, 400th anniversary of death of, 185
Paraffin, liquid: Defence Regulation, 390, 494—Restrictions in Scotland, 864
Paralysis accompanying herpes zoster, 31, 67, 139
Parasitology, human, review of book on, 339
PARISH, H. J. (and others): Active and passive immunization against diphtheria, 717 (O); leading article on, 773; correspondence on, 861, 887, 924, 932
PARKER, Geoffrey E.: Abdominal catastrophe which did not take place, 119 (O); correspondence on, 246, 284—Burns from penetrating bomb fragments, 355
—William, obituary notice of, 755
Parkinson, Capt. R. H. F., death of, 929
Parkinsonism, post-encephalitic, benzedrine in, 33
—surgical treatment of, 484

Parliament, Medical Notes in:
Air-raid precautions: No. of evacuated children, 426—Care of child casualties, 677—Medical examination of evacuated children, 678—Pediculosis in evacuated children, 834—Rest and feeding centres, 930
Aliens: Registration of doctors, 146—Employment of doctors, 530, 598
American doctors for Britain, 214
Anthraxosis, 426
Apparatus, high-frequency, 833
Blood transfusion, 426
Camps, children's health in, 106
—labour, disease in, 833
Cancer treatment in Lincolnshire, 36
Certificates, medical, 930
Certification, alleged incorrect medical, 862
Children, feeding of, in wartime, 676
China: British dispensary at Hankow, 289
Colonies, health and disease in, 833
Committee, Medical Personnel Priority, 530
—Parliamentary Medical: Meeting, 289
Diet of workers in heavy industries, 566
Diphtheria immunization, 566, 833—And tuberculous trouble, 36
Doctors and appeal to Courts, 183
Eggs: Rationing of, 36—Food value of, 529
Employment exchanges, special examinations for, 598
Encephalitis, post-vaccinal, 107
Factories, nurses in, 183
Flour, white, fortification of, 426
Food: Potato flour for bread, 252—Fruit crop, 252—Use of rose-pits, 253—Government's policy, 676—Adding calcium, 678—Keeping of canned foods, 834—National wheatmeal bread, 834
—rationing: Invalids and, 253—Invalids' special rations, 565
Food-poisoning on board ship, 530
Fracture and orthopaedic treatment in Scotland, 106
—treatment, 252
Gas: Decontamination of eyes, 106—Mustard gas, 566
Grass, edible protein from, 678
Health Ministry: Division of Nursing and Midwifery, 183—Report of work of, 183
—of nation and medical services, 636
Hospital: Domestic staffs, 598
—policy, post-war, 565—Scotland's, 598
Hospitals, London, women students at, 678
Insurance, National Health: New Bill, 106, 145—Statistics, 214—Payments to practitioners, 252—War bonus, 834
Ireland, examination of workers from, 894
King's Speech, debate on, 756
Leprosy in British West Indies, 930
Medical personnel, allocation of, 426
Mental health work among children, 35
Midwives, gas and oxygen by, 183
Milk: Situation, 72—Winter supply, 145—Registration for, 252—Of schools, 290

Parliament, Medical Notes in (continued):
Miners: Medical certificates for, 426—Medical examination of, 530—Return to work of unfit miners, 678, 894
National Service Bill, 929
Nurses, wartime: Medical supervision, 107—Provision of, 930
Nurses' salaries, committees on, 677, 756, 930
Oranges, distribution of, 426
Pension appeal tribunals, 146
Pensions Ministry: Medical problems, 251
Pharmacy and Medicines Bill, 35, 71, 182, 214, 250
Potato flour for bread, 252
Public Assistance institutions as hospitals, 678
Purchase Tax and diagnostic reagents, 756
Red Cross brassards, 183
Registrar-Generals' report, 677
Rehabilitation of disabled persons, 566
School meals and milk services, 676; in Scotland, 677
Scotland: Fracture and orthopaedic treatment in, 106—Health services, 251—Food and nutrition in, 252—Orthopaedic treatment in, 565—Post-war hospital policy, 598—Increase in tuberculosis, 677—School meals, 677—Increase in infant mortality, 677, 894—Maternity accommodation, 894
Services: Women doctors in, 183—Unfit soldier, 183—Re-examination, 183—H.G. medical officers, 253, 565, 792—Medical history of recruits, 289—Grant for wives during pregnancy, 290—Defective hearing in Army, 529—Psychiatry in Army, 598—Tuberculous soldiers from S. Africa, 598—Medical services of dependants, 598—First-aid equipment of H.G., 598—No. invalided out of, 678—Anti-cataract vaccine in R.A.F., 678—Courses for R.A.M.C. officers, 834
Shock, compensation for, 833
Sick bays, 36
—senile and chronic, 146
Sill-o-sis, 426—Report on, 183
Small-pox: No deaths under 5 in three years, 678
Tuberculosis: In wartime, 252—Statistics, 289—Inquiry into increase of, 530, 598—Increase in Scotland, 677—Incidence among young women, 834
Vaccination: Deaths under five, 678
Venereal disease in Jamaica, 146
Wales: Death rate among young women, 678
War: London sectors of E.H.S., 35—Care of wounded in invasion, 106—Medical services in invasion, 183—American doctors in E.M.S., 792
Women, conscription of, 862
Work, rest, and diet, Mr. Churchill on, 214
PARNES, J.: Remedy for defective sight, 389
PARSONS, Sir John: Eye protection in warfare, 418
—Leonard G.: Chronic sick, 100
PATCH, C. Lodge: Planning for mental health, 457
PATERSON, Donald: Sick Children: Diagnosis and Treatment, 4th ed., 480—Infantile scurvy, 787
PATEY, D. H.: Kidneys and limb compression, 884
Pathology, review of book on, 379
PATRICK, James: New director for insertion of Smith-Petersen nails, 549
PATTERSON, J. W.: Cardiac arrest during anaesthesia, 175
PAYNE, Reginald T.: Scope of operation in varicose veins, 533 (O); correspondence on, 670
—W. W.: Rationing and children's health, 920
PEACOCK, P. R. (and S. BECK): Gastro-papillomatosis due to vitamin A deficiency induced by heated fats, 81 (O)
PEARCE, Evelyn: Instruments, Appliances, and Theatre Technique, 809
—T. Vibert: Somatic tænia and cysticercosis epilepsy, 357
PEARSE, Innes H.: Aggregation of toddlers, 138—Homestead scheme for mothers and children, 820
PEARSON, A. S.: Sand-fly fever and benign lymphocytic meningitis, 303 (O)
—Albert G. W., obituary notice of, 34
—Hubert: Notification of deficiency diseases, 212
—R. S. Bruce (and others): Local treatment of burns, 41 (O); leading article on, 53; correspondence on, 135, 246, 316, 750, 836
Pectin as blood substitute, 700
Pectoralis major, traumatic rupture of (A. G. Butters), 652
PEDDIE, Charles: Treatment of incontinence in children over four, 600
PEGGE, George: Medical psychology, 925
PELLAGRA, nicotinic acid and, 823
PELOUZE, P. S.: Office Urology, 729
Penicillin, William James, obituary notice of, 791
Penicillin: Antiseptic of microbic origin, 310; correspondence on, 386
Pension appeal tribunals, 146
Pensions Ministry: Estimates, 251—Appointment, 344—Conference on orthopaedic surgeons attached to hospitals, 566
PENTON, C. (and others): Effects of vitamins B and C on senile patients, 839 (O)
Pentothal sodium solutions, apparatus for administration of, 18
Peritonitis, pneumococcal, 4 cases of (C. Noon), 724 (O)
PETERKIN, G. A. Grant: Treatment of impetigo, 422
PETRIE, A. A. W.: Nasopharyngeal disease in mental disorder, 173—Reconstruction in psychiatry, 741
Phagedaena, wound (A. Callan and A. Duff), 801 (O); correspondence on, 890

Pharmaceutical Journal, centenary of, 148
Pharmacy: Review of book on, 229—And chemistry, 785
—and Medicines Bill, 35, 71, 182, 214, 250—Loop-hole in, 65—Leading article on, 90
Phenol and its derivatives, economy in, 588
PHILLIPS, A. (and K. W. STUART): Sulphonamide for corneal ulcer, 336
PHILLIPS, P.: Air-raid casualties, 132
PHILLIPS, A. Seymour: "Perfect sight without glasses," 459, 703
Phosphorus burn, treatment of, 428
—radioactive, clinical studies with, 733
Photography, review of book on, 267
Physical medicine and orthopaedics, 178
—therapy, review of book on, 513
Physiology, review of books on, 201, 230, 338, 337, 407
Physiotherapy, 140
PICKEN, L. E. R.: Serum for transfusion, 315
Pickthorn, Surg. Capt. Edward Butler, obituary notice of, 425
PICKWORTH, F. A.: Nasopharyngeal disease mental disorder, 173
Picrotoxin in another aspect, 701
PICTON, Lionel Jas.: Industry and lactation, 860
Pike, Maj.-Gen. Sir William Watson, obituary notice of, 182
PINEY, A.: Status lymphaticus and sudden death, 423—Post-war medicine, 752—Sternal Puncture, 913
Pink disease: Encephalomyelitis in (C. P. Lapare), 728—New view on, 856
PIRES, T.: Hypertonic sodium sulphate for wound, 355
Pituitary extract, storage of, 835
—posterior, dangers of, in labour, 102
—preparations, anterior, growth and diabetogenic action of (F. G. Young), 897 (O); leading article on, 916
—Principles, nomenclature of, 242
Placental infarcts, 786
Plague: Chemotherapy of, 621—In Southern India, 702
Plant science, review of book on, 852
Plasma transfusion, death from, 382
Plaster casts: Removal of, 772—Pamphlet on, 896
—closed, method: Bacteriology of, 66—Obtainable bacteriological specimens from wounds, 268, 38
—For burns of extremities (T. J. Rouleston), 61 (O)
PLESCH, J.: Haemoglobinometry, 859
Pleura, drainage of (R. C. Brock), 128
PLEWES, L. W.: Suture of cut flexor tendons, 138
PLIMMER, Violet G.: Food Values in War-Time, 337
PLUMMER, N.: Passing of anti-pneumococcal serum, 447
Pneumonia: Passing of anti-pneumococcal serum, 447—Chemotherapy and, 474
Pneumothorax, artificial, effusions in, 736
Poland: Jews in, 117—Typhus in Warsaw, 290—Message from doctors, 447—Joint conference, 46
—Plans for fighting post-war epidemics, 614
Opening of Polish hospital in Edinburgh, 628
Polish Medical Faculty in Edinburgh, 706; degrees, 181, 929—Gift to Army, 714—Typhus in, 714—Trachoma in, 816
Poliovirus, 316—Spread of, 311, 460, 560—Convalescent serum, 322—Electricity and, 485—Route of infection in (leading article), 811
—acute anterior: outbreak in Manitoba, 494
Polyuria, intermittent, 758
POPENOE, Paul: Modern Marriage: Handbook for Men, 547
Practitioner's Library, Supplement, 200
Pratt, Freda B., changes name, 464
Pregnancy: By artificial insemination, 391—Diet in, 703—Haemoglobin of pregnant women, 926
—combined intra- and extra-uterine (R. B. Leech), 805; correspondence on, 927
—double tubal, case of (A. E. Chisholm and A. Lesslie), 51
Preparations, Food Appliances:
Bacteriological specimens from wounds treated by closed-plaster method, improved method of obtaining, 268
Bandaging, eye and mastoid: looped-cap system, 339
Cannula, new type of, 878
Cystotomy, suprapubic, bougie for, 730
Electric heaters in surface shelters, 480
Eyes, contaminated, device for washing, 480
Foreign bodies in tissues, electric probe for location of, 616
Glucose saline, intramuscular drip, 616
Laryngoscope, improved, 914
Mobile unit, useful addition to equipment of, 513
Nicorbin tablets, 654
Organkine, 89
Ostelin capsules, high-potency, 654
Pentothal sodium solutions, apparatus for administration of, 18
Plaster casts, removal of, 772
Prostate, endoscopic resection of: improved technique, 583
Rotenone lotion for scabies, 201
Siccolum, 772
Sling, self-fitting, 810
Smith-Petersen nails, new director for inser of, 549
Speculum, useful, 696
Splint, Bühler-Braun leg, single or bilateral.
—Thomas, extension foot-piece and sum for use with, 442

Preparations and Appliances (continued):

- Storpecock, three-way, improved, 122
Transfusion panther, 230
Urethra, ruptured, metal guides for rubber catheters for use in retraining, 543
Venn-keeler, easily made, 720

Prescribing: Wartime, 602—Pruning the prescription (leading article), 554

Prescription writing: review of book on, 52

Price, C. W. R., Removal of plaster casts, 772
— Frederick W., Editor of *Textbook of Practice Medicine*, 6th ed., 729

Priddy, K. H., Air-raid casualties, 133
Przygor, Scton: Water deficiency, 664

Pyrie: Abacera, 259
— Guanin Victoria Jubilee, 148
— Jessie Macgregor, 185
— Nobel, 191 to be awarded, 704
— Payton, 38
— Reichen, 52
— Van Meter, 672

Probe, electric: for locating metallic foreign bodies in tissues, 616

Prothor: review of book on, 547

Prostate: Endoscopic resection of, improved technique, 553; correspondence on, 549, 550—Hampstead Hospital, endoscopic adenomyectomy enlargement (W. S. Handley), 651 (O), correspondence on, 788, 824

Prothero, Surg. Lieut. David Arthur obtains notice of, 249

Prunus, generalized: 38
— 191, persistent skin condition after x rays for, 716

Pseudo-hermaphroditism: massive adrenal carcinoma with (M. Albert) 265 (O)

Psittacosis outbreak: 208

Psoriasis, chronic: treatment for (A. Bisham), 692 (O)

Psychiatric problem in wartime: plea for caution, 243

Psychiatry: In Army, 498—Reconstruction in, 741
Psychology: Review of books on, 18, 121—And the "hard core," 205
— medical, 922

Psychoneurosis: differential diagnosis of confusion of brain and 103

Psychotherapy: Air-raid noises (in F. L. McLaughlin and W. M. Miller), 158 (O); correspondence on, 243, 279, 354, 469—Review of book on, 200

Pugh, Idwal and O. S. Williams: Blood transfusion in malignant diphtheria, 544 (O)

Purchase Tax: Drugs taxed, 38, 663—A.R.P. eye-shields exempt, 731—And diagnostic reagents, 756

Purvis, Victor: Eye injuries in war, 417

Pyer, David: British Medical Students Association 32

Phloek stomas: Local anaesthesia in operations for, 66—Eumidia for, 453

Q

Q fever: American, epidemiology of, 557

Quinine dextrose: 59

Quinn, J. S., Placental infarct, 756

Qvist, George: Anaerobic cellulitis and gas gangrene, 217 (O)

R

Rabbi, Capt. Bazley: death of, 929

RACE, R. R., Blood groups, 315

Radiation therapy: review of book on, 582

Radiodermatitis: 175—Annotation on, 163

Radiographs: And disposition (J. V. O'Sullivan), 543 (O); leading article on, 551; correspondence on, 708, 821. See also X rays

Radiography: mass, and early pulmonary tuberculosis, 343; correspondence on, 423

Radiology: routine, of students' chests, 388

Radiology to help of obstetrics (leading article), 551; correspondence on, 708

Radium: Address of National Commission, 428—Precautions, 673—Treatment in wartime, 815—In Spain, 864

RAMSEY, Hugh: Increase in tuberculosis, 559

RANDALL, Mabel L., Obituary notice of Dr. R. Bale, 755

RUNDLE, Minnie: Training for Childbirth from a Mother's Point of View, 2nd ed., 553

Raspberry-leaf extract: 370, 412, 418, 528

RATCLIFFE, T. A., New view on pink disease, 856

RAY, Matthew B., Isotonic glucose solution for fistulas, 850

Rectal injections of sea-water for thirst at sea: 126

Rectum, operability of cancer of (C. G. Goldner), 539 (O); correspondence on 492, correction, 465

Red cells. See Blood

Reed, John Joseph: obituary notice of, 673

Reid, E. B. and R. T. GRANT: Clinical observations on air-raid casualties, 293 (O), 329 (O); correspondence on, 358, 456

Reichart-General for Eire: Quarterly returns, 863
— for England and Wales: Quarterly returns, 639, 757—Report, 677
— for Northern Ireland: Quarterly returns, 931
— for Scotland: 1939 report, 412—Quarterly returns, 930, 931

Rehabilitation: Centre for, 174—Of injured air crew (R. N. Houlding), 429 (O); correspondence on, 526, 559—Of disabled persons, 566—Of injured (leading article), 812; correspondence on, 927—Services, 857

REID, W. J. S., Mental defective in Army, 353

Relativity: review of book on, 267

"Relaxation," 428—Technique of, 577

Remedies, new: *Index* (W. Main), 89

RENDLE-SHORE, Coralie: Operation for retroverted uterus, 649 (O)

RENUCK, J., Medical service under new order, 244

Retinoblastoma: unusual, in untreated case of pernicious anaemia (W. T. Cooke), 806 (O)

Reviews of Books:

Air Raids: Medical Organization and Surgical Practice in (P. H. Mitchiner and E. M. Cowell), 2nd ed., 162

Alcohol: What Price? (R. S. Carroll), 678

Allies of Life (Church Missionary Society), 772

Anus-Rectum-Sigmoid Colon: Diagnosis and Treatment (H. E. Bacon), 2nd ed., 547

Arthritis and Allied Conditions (B. I. Comroe), 2nd ed., 547

Astrolatry: Art of ("Gemini"), 52

Autism: (W. H. Eddy and G. Dailford), 2nd ed., 378

Babies Without Tears (E. Sumnerkill), 65

Bacterial and Rickettsial Infections: Acute and Chronic (W. H. Holmes), 307

Bacteriology: General (D. B. Swingle), 51

Biochemistry: Annual Review of (edited by J. M. Luck), vols. 9 and 10, 851

— Laboratory Manual of (B. Harrow and others), 17

Boydell: Medical Aspects of (E. J. J. 51

Brain and Spinal Cord: Compendium of Regional Diagnosis in Lesions of (R. Bunn), translation, 379

British Scientists of the Nineteenth Century (J. G. Crowther), 810

Bulletin of Health: Organization of League of Nations, vol. 9, No. 3, 547

— of War Medicine: Index to vol. 1, 696

British Evacuation Survey (edited by S. Isaacs), 512

Cancer: New Series (E. M. Brockbank), 851

Carcinoma of Rectum (E. C. Norbury), 267

Carcinoma of Cervix: F. A. Williams and T. E. Keys, 614

Patients: Management of (W. G. Leman, jun.), 512

Cardiology: Importance of Radiological Investigation in (T. Denston), 730

Carry on, London: (R. Calder), 201

Catarrh: Cauterization, 307

Cattle: Die Nervenkrankheiten des Rindes (E. Frauchiger and W. Hofmann), 552

Chemistry: Physiological, Laboratory Manual of (D. W. Wilson), 4th ed., 339

Childbirth: from a Mother's Point of View, Training for (M. Randall), 2nd ed., 532

Childhood and Other Poems (Sir G. F. SUID), 89

Children: Sick: Diagnosis and Treatment (D. Paterson), 4th ed., 480

Chinese Way in Medicine (E. H. Home), 17

Chromatography: Principles and Practice of (J. Zechmeister and L. Cholodny), translation, 479

Cine-Biology (J. V. Duffin and others), 615

Complications: In Search of: Autobiography of Doctor (E. de Savitsch), 52

Confirming the Facts: Manual of Scientific Temperance Teaching for Use of Teachers and Students, 209

Contra Doctor (W. E. Davis), 15

Contraction: Its Theory, History, and Practice (M. Stipes), 5th ed., 772

Croft, Martin (J. Bell), 696

Dental Materia Medica: Pharmacology and Therapeutics (W. J. Dilling and S. Hallam), 2nd ed., 85

Dermatologic Therapy in General Practice (M. B. Sulzberger and J. Wolf), 17

Dermatology: Essentials of (N. Tobias), 546

— and Syphilology: Modern (S. W. Becker and M. E. Obermayer), 408

Diet in Sinus Infections and Colds (E. V. Ullmann), 2nd ed., 696

Dietetics for the Clinician (M. A. Bridges), 4th ed., 771

Discussion Groups for Citizens (E. M. Habback), 41

Doctor Reminders (A. Barton), 654

Effective Living (C. E. Turner and E. McHose), 654

E.M.S. Instructions, Part I, 89

Endocrinology: Essentials of (A. Grollman), 877

Extra Pharmacopoeia (Marandale), vol. 1, 2nd ed., 581

Fighting Fit (C. A. Webster), 379

Finlay, Carlos, and Yellow Fever (C. E. Finlay), 441

Fire Protection and A.R.P. Year-Book, 1941-42, 408

First Aid and Bandaging: Handbook of (A. D. Bellis and others), 513

— for Fighting Men (C. Keogh), 265

Food Investigation: Index to Literature of, vol. 12, No. 4, 582; vol. 13, No. 1, 772

Values in War-Time (V. G. Plimmer), 337

War-time: Good Health and (B. Callow), 696

French-English Science Dictionary for Students in Agricultural, Biological, and Physical Sciences (L. de Vries), 379

Reviews of Books (continued):

Gallstones: Studies on Etiology of (K. Mäntzen), 407

Gastric Operations: Technique of (R. Mainard), 378

Gynaecology: for Nurses and Gynaecological Nursing (Sir C. Berkeley), 8th ed., 914

— Textbook of (W. Shaw), 3rd ed., 615

Hæmorrhoids and their Treatment: Varicose Syndrome of Rectum (K. Biondi), translation, 378

Health Reo to of U.S.S.R. (I. A. Parnov), 530

Heart Failure (A. M. Fibber), 2nd ed., 654

Histology for Medical Students: Textbook of (E. E. Haver), 2nd ed., 441

Hospitals Under Fire: But the Lamp Still Burns (edited by G. C. Curme), 201

— Year Book, 1941, 729

Instruments: Appliances, and Theatre Technique (E. Pearce), 609

It Passed too Quickly: Autobiography (Sir D. Munro), 913

Jardine: Acetolone Family, Autobiography of (T. W. Lloyd), 695

Jerusalem at Oxford (R. R. Maren), 512

Jurispudience: Medical, and Toxicology, Handbook of (W. A. Brand), 8th ed., 547

Lepor: Who Walk Alone (P. Burzess), 450

Life: Change of (Dams M. Schaffel), new ed., 578

London M.B., B.S. Final Examinations (F. Mitchell-Higgs), 615

Lymphatics: Lymph, and Lymphoid Tissue (C. K. Drinker and J. M. Yodanis), 633

MacLeod's Physiology in Modern Medicine: 5th ed., 201

Magic and Experimental Science: History of (L. Thorndike), vols. 5 and 6, 479

Man: The Mechanical Man (G. H. Easbrooks), 551

Marriage: Modern: Handbook for Men (P. Popenoe), 547

Massage and Medical Gynaecology (M. V. Lare), 2nd ed., 121

Medical Annual, 1941, 161

— Diseases of War (Sir A. Harris), 2nd ed., 408

— Practice: British Encyclopedia of: Surveys and Abstracts; Cumulative Supplement, 229

Medicine and Human Welfare (H. E. Sizer), 695

— and Mackind (A. Sornby), 851

— March of, 531

Recent Advances in (G. E. Burmeston and E. C. Dodds), 10th ed., 513

Surgery: Practitioner's Library of (edited by G. E. Hunter), 208

Textbook of Practice of (F. W. Price), 6th ed., 729

— versus Invasion (G. B. Shirshaw and C. Trokel), 695

Mind, Sex, and War (K. O. Newman), 615

National Health Service and Preventive Methods for Improving National Health (J. Campbell and H. M. Vernon), 803

Registrar of Medical Auxiliary Services: 201

Nervous System: Diseases of, Described for Practitioners and Students (F. M. R. Walshe), 2nd ed., 339

New Remedies: Index of (W. Main), 89

Nose, Throat and Ear: Diseases of (J. S. Hall), 2nd ed., 877

Nurses: Industrial, Handbook for (M. M. West), 771

— Medical Handbook for (J. Stewart), 5th ed., 552

Nursing Couple (M. P. Middlemore), 162

— Surgical, and After-Treatment (H. C. R. Darling), 7th ed., 615

Obstetrics: Williams's (H. J. Stander), 8th ed., 771

Ophthalmic Nursing (M. Whitings), 3rd ed., 547

Pain: Sir William: Life of (H. Goshaw), 546

Pain: Dental Practice, Control of (U. L. T. Appleton), 162

Parasites of Man in Temperate Climates (T. W. M. Cameron), 339

Parenthood: Descent or Accident? (M. Fieldman), 441 ed., 578

Pathology: Clinical, Textbook of (R. R. Knack), 2nd ed., 379

Pharmacy: History of (E. Kretzschmar and G. Urdan), 229

Photographer: Scientific (A. S. C. Lawrence), 257

Physiology: Therapy for Nurses (R. Kovacs), 2nd ed., 513

Physiology and Anatomy (E. M. Grunheimer), 4th ed., 230

— Annual Review of (edited by J. M. Luck and V. E. Hall), vol. 3, 207

Textbook of (W. D. Zoethout and W. W. Tethel), 7th ed., 544

Physiology: Fisiopatologia del Hepato-Colo-cano: Colangiografia Operativa (G. L. Miran), 914

Plague on Us (G. Smith), 121

Plant Science: Formulae (R. C. McLean and W. R. I. Cook), 852

Positivism in Radiography (K. C. Clark), 2nd ed., 544; correction, 10

Prescription Writing and Formulary for Dentists (R. L. Cipes), 52

Priest or the Vicar? (G. Goshaw), 378

Psychology: Biological Introduction to (R. J. S. McDowall), 121

Reviews of Books (continued):

- Psychology and Mental Disorders for Nurses (J. W. Fisher), 18
- Psychotherapy (L. F. Barker), 200
- Radiation Therapy, Biologie Fundamentals of (F. Ellinger), translation, 582
- Relativity of Reality (R. Laforque), translation, 267
- Research and Statistical Methodology, Second Yearbook of (edited by O. K. Buros), 809
- Scabies—Civil and Military (R. Friedman), 88
- Schizophrenia in Childhood (C. Bradley), 852
- Science in Peace and War (J. B. S. Haldane), 696
- Seizures and New Light on Epilepsy and Migraine (W. G. Lennox), 614
- Short History of, to Nineteenth Century (C. Singer), 306
- Scientific Attitude (C. H. Waddington), 441
- Sex Problems and Youth (T. F. Tucker), 52
- Silicosis, X-Ray Atlas of (A. J. Amor), 546
- Society, Cardiff Medical: Proceedings, 914
- Pharmaceutical, of Great Britain: Centenary volume (H. N. Linstead), 615
- Sokol: Czechoslovak National Gymnastic Organization (F. A. Toufar), 730
- Stammering (K. Ward), 122
- Starling's Principles of Human Physiology, 8th ed., 338
- Statistical Methods for Research Workers (R. A. Fisher), 8th ed., 878
- Sternal Puncture (A. Piney), 913
- Sulfanilamide and Related Compounds in General Practice (W. W. Spink), 913
- Surgery of the Heart (E. S. J. King), 337
- Ophthalmic, Principles and Practice of (E. B. Spaeth), 2nd ed., 810
- Orthopaedic, for Nurses, Including Nursing Care (P. Lewin), 3rd ed., 162
- plastic: Chirurgie Réparatrice et Correctrice des Téguments et des Formes (L. Dufourmentel), 809
- Science and Practice of (W. H. C. Romanis and P. H. Mitchiner), 7th ed., 121
- Treatment, Methods of (L. Clendinning), 7th ed., 89; correction, 148
- Tuberculosis, Studies on (Amer. J. Hyg. series), 161
- Urology, Office: With Section on Cystoscopy (P. S. Pelouze), 729
- Voyage of the Cap Pillar (A. Seligman), 339
- War Medicine, Digest of, Nos. 1 and 2, 442
- Wounds, Early Treatment of (W. Anderson), 88
- Wartime Health and Democracy (H. Clegg), 547
- Warwick and Tunstall's First Aid to Injured and Sick, 18th ed., 480
- Willings Press Guide, 68th annual issue, 339
- Worry in Women (A. B. White), 810
- Year Book of Royal Society of Tropical Medicine and Hygiene, 810
- Your Health in Wartime: A Doctor Talks to You (C. Hill), 442
- Teeth: Their Past, Present, and Probable Future (P. J. Breckhus), 582
- Rheumatic cases, three unusual, 140
- children, home care for, 271
- Rheumatism, juvenile, bradycardia to, 735
- Ritopes, A. J. (and others): Herpes labialis after T.A.B., 298 (O); correspondence of poliomyelitis, 560
- obituary notice of, 286
- rostatotomy, 824
- Rickettsial infections, review of book on, 307
- RIDDLE, V. H.: Kidneys and limb compression, 885
- Ridout, Charles Archibald Scott, obituary notice of, 320
- RIGNY, R. A. C. (and W. J. Mowat): Case of x-ray dermatitis, 770
- RIGBY-JONES, G.: Disclaimer, 716
- RIGDEN, G. F.: Mobile units, 751
- ROBB, Douglas: Ligation of varicose veins, 392—Adrenal graft for Addison's disease, 392
- John J.: Treatment of haemorrhagic disease of newborn, 526—Treatment of hallux valgus in soldiers, 789
- ROBB-SMITH, A. H. T.: Lung injuries in air raids, 241
- ROBERTS, Charles Leonard Digby, obituary notice of, 529
- Harry M.: T.N.T. health hazard, 647 (O)
- Sir James Reid, obituary notice of, 36
- Lawrence: Activity of tuberculosis, 245
- Robertson, Alexander, obituary notice of, 596
- William, obituary notice of, 461, 529
- Robinson, Alfred Skirrow, obituary notice of, 673
- Arthur, obituary notice of, 144
- Geoffrey: Carriers of tuberculosis, 33—Unusual sequel to blood transfusion, 728
- J.: Disclaimer, 532
- J. T.: Army medical officer, 555
- Robson, Squad-on Lt David Alan Hope, obituary notice of, 106
- J. M.: "Euglanide" for burns, 748
- Roch, Maurice, medal presented to, 322
- ROGER, T. F. (and others): Night-blindness, 571 (O), 607 (O); leading article on, 620; correspondence on, 747, 858
- RODGERS, H. W.: Streptococcal cross-infection, 744
- R. Ewing: Unilateral clubbing of fingers, 439 (O)
- ROGERS, K. B.: Red cell suspensions in anaemia, 823
- Lambert: Suture of cauda equina, 212
- Sir Leonard: Thirst at sea, 211

- ROGERSON, C. H.: Depressive states in soldier, 209
- ROLLSTON, J. D.: Appreciation of Sir William Willcox, 180—Folk-lore of pulmonary tuberculosis, 417
- ROMANIS, W. H. C. (and P. H. MITCHNER): Science and Practice of Surgery, 7th ed., 121
- Ronald, John Gilliland, obituary notice of, 773, 713
- Rorschach test, bombed child and, 625, 787
- ROSE, A.: Anti-tobacco campaign, 896
- Acne, obituary notice of, 424
- Rose-hips: Use of, 253—Jam from, 464—For vitamin syrup, 496—In Bulgaria and Germany, 761
- ROSENBAUM, S.: Intraperitoneal sulphanilamide, 446
- ROSENTHAL, F. E.: Pterotoxin in another aspect, 701
- Roseola infantum, 805
- ROSS, Joan: Lung injuries in air raids, 241
- J. Paterson: Streptococcal cross-infection, 742
- T. A.: Lectures on War Neuroses, 21
- Rotenone lotion for scabies, 201
- Roughage in food, 186
- ROULSTON, T. J.: Closed-plaster treatment of burns of extremities, 611 (O)
- Rouse, James, obituary notice of, 144
- ROUTLEDGE, R. T.: Future of medical education, 420
- Rowlands, David Richard, obituary notice of, 461
- ROWSTON, Noel F.: Diagnosis of early venereal disease, 632
- ROXBURGH, A. C.: Endocrine therapy of hypertrichosis and acne, 890
- Rudolf, Robert Dawson, death of, 918
- Rumania: Gas-masks not for Jews, 290—Jews and blood transfusion, 714
- RUSSELL, David: Mental defective in Army, 353
- H. G. Bedford: Nasopharyngeal disease in mental disorder, 172
- William Kerr, obituary notice of, 595
- Russia. See U.S.S.R.
- RUTLEDGE, W. E.: Discussion of secondary cataract, 66
- RYLE, John A.: Air-raid casualties, 132—Lung injuries in air raids, 240—Future of medical education, 323 (O); leading article on, 340; correspondence on, 420, 421, 458, 525, 628, 753—Analysis of pain, 522

S

- SACHS, S. B.: Flat-foot in recruits, 137
- Sacro-iliac strain (J. Cyriax), 847 (O)
- Safe period; is it safe?, 23, 102
- St. Dunstan's: Annual report, 627
- SAKOSCHANSKY, E.: Skin and mind, 186
- Salvage appeal, 359
- Sanatorium, King Edward VII, Midhurst: Annual medical report, 26
- SANDERS, A. G.: Care in use of Group O card, 419
- SANFORD, B. R.: Diagnostic bacteriology, 359
- SANDISON, R. A. (and J. E. MURRAY): Congenital bilateral renal hypoplasia, 471 (O)
- Sanhueza, Angel C., death of, 713
- Sarcoma treated with Coley's fluid, 827
- SARWAR, M.: Intramuscular drip glucose saline, 616
- SAVILLE, P. R.: Idiosyncrasy to strychnine, 568
- SAVITSCH, Eugene de: In Search of Complications, 52
- SAWDAY, A. Ernest: Gum of postage stamps as germ carrier, 836
- Scabies: Review of book on, 88—Rotenone lotion for, 201—Economy in treatment (R. W. Carslaw and J. A. Swenarton), 225 (O); correspondence on, 356, 364—Comparison of treatment (J. F. Buchan), 227—Parasitology of (P. A. Buxton), 397 (O)—Use of sulphur lather tablets (D. L. Carter), 401 (O); correspondence on, 670—Benzyl benzoate emulsion for (I. F. Mackenzie), 403 (O)—Transmission of (K. Mellanby), 405 (O); correspondence on, 560, 631, 669—Questionable evidence of cure, 492, 561, 631—Treatment of, 560, 631, 669, 752, 758, 896—New order, 758—Control of, 836—Form of sulphur, 864
- SCADDING, J. G.: Closed wounds of chest, 57, 94
- SCHACR, Hans, death of, 144
- SCHARLIEA, Dame Mary: Change of Life, new ed., 878
- SCHICK, Norbert: Subcutaneous ligation of veins, 67
- Schulder, Paul Ferdinand, death of, 425
- Schistosome dermatitis, 701
- Schizophrenia, review of book on, 852
- School: Communal feeding in, 133, 211, 247, 282, 358—Meals in Scotland, 677
- medical service and Services, 216
- of Medicine for Women, London: Opening of winter session, 623
- Schools, medical: New session, 345
- Schroeder, Paul, death of, 713
- Schultz-Charlton test, allergic shock following (R. M. Calder), 198 (O)
- SCHWABACHER, H.: Clostridia, 616
- Sciatic pain (leading article), 698; correspondence on, 789, 825
- Science: Review of books on, 441, 696—And world order, 592, 671, 753
- natural, history of, 306
- Scientists: And post-war relief, 516—Review of book on, 810
- Sclerosing method for giant hydrocele (W. L. James), 693
- SCOBIE, W. Hutton: Crush fracture of sesamoid bone of thumb, 912
- SCOTLAND:
- Blood transfusion plant, new, 707
- Edinburgh: Nutrition inquiry, 174—Polish hospital in, 628, 706
- Eyes: exhibition of appliances, 557

SCOTLAND (continued):

- Food and nutrition in, 252
- Fracture and orthopaedic treatment in, 106
- Glasgow: Increase of tuberculosis in, 436, 525—Cleanliness of school children, 707
- Health Department: Report, 416—Liaison officer, 566
- services, 251
- Hospital policy, post-war, 598, 627, 821
- services, future organization of, 747
- Infant mortality increased, 677
- Maternity accommodation, 894
- Milk pasteurization, 416
- Neonatal deaths, 894
- Neurosurgical unit, 489
- Orthopaedics in, 174, 565
- Sanitary congress, 489
- School meals, 677
- Tuberculosis increase in, 677
- Vital statistics, 413, 599
- SCOTT, G. I. (and others): Night-blindness, 571 (O), 607 (O); leading article on, 620; correspondence on, 747, 858
- Sir H. Harold: Human ostrich, 892
- J. C.: Bacteria from wounds enclosed in plaster, 387
- J. Graham: Raspberry-leaf extract, 528
- R. A. Murray: Wholemeal bread, 64, 491
- SCRIBNER, E. Jane: Treatment with bacteriophage, 409
- Scurvy, infantile, 787
- Sea: Award for gallantry, 135—Thirst at, 126, 211, 286
- Seaweed, sulphanilamide and, 92
- Schorrha and B vitamins (leading article), 124
- Secret remedies: loophole in new Bill, 65
- STOON, H. J.: Peripheral nerve injuries, 286
- STOAL, L. J.: Cysticercosis epilepsy treated with sulphonamide, 693; correspondence on, 787
- SELIGMAN, Adrien: Voyage of the Cap Pillar, 339
- SELMONOR, B. (and others): Night-blindness, 571 (O), 607 (O); leading article on, 620; correspondence on, 747, 858
- Serology, effects of vitamins B and C on (W. Stephenson and others), 839 (O)
- Serum: Research in Australia, 314—For transfusion 315—Convalescent poliomyelitis, 322—Passing anti-pneumococcal, 447
- SERVICES:
- Air Force, Royal: Anti-cataract vaccine, 678
- Appointments, 36, 181, 289, 361, 462, 714, 79, 862, 929
- Army:
- A.M.S.: Director-General appointed, 181
- Dyspepsia, review of (C. A. Hinds-Howell), 473 (O)
- Grants for soldiers' wives during pregnancy, 290
- Hearing, defective, in, 529
- Medical officer (J. T. Robinson), 555
- Mental defective in (F. J. S. Escher), 187 (O)
- leading article on, 603; correspondence on, 280, 353, 422, 490, 630
- Psychiatry in, 598
- R.A.M.C.: Corps school for, 27—Colon Commandant appointed, 289—Plea for flexibility, 528—Courses for officers, 834
- Regimental medical officer, impressions (R. C. L'E. Burgess), 816
- Selection for (leading article), 410; correspondence on, 490
- Soldier: Depressive states in (R. F. Tredgold), 109 (O); correspondence on, 209, 243, 31, 490—Hallux valgus deformity in (R. Brooke), 605 (O); correspondence on, 709, 789
- Soldiers, unfit, examination and discharge of, 183
- Tuberculous soldiers from S. Africa, 598
- Awards, 105, 144, 181, 212, 249, 289, 322, 38, 462, 494, 530, 566, 638, 833, 862, 929
- Blood grouping in, 758
- Casualties in medical services, 36, 73, 106, 14, 181, 212, 249, 289, 322, 361, 389, 425, 46, 494, 530, 566, 597, 638, 675, 714, 756, 79, 833, 862, 929
- Commendation, 181
- Dependents, medical services of, 598
- Divisional medical units, surgical principles (C. M. Pace), 168
- Dyspepsia: Incidence in military hospital (J. I. Hutchison), 78 (O); correspondence on, 209
- Efficiency Decoration, 389, 862
- Hearing defects, No. invalided for, 678
- Home Guard: Medical officers, 253, 565, 792
- Medical supplies from Canadian Red Cross, 280—First-aid equipment, 598—District nurse for casualties, 680, 794—Review of book of, 695—Award, 792—Treatment of casualties, 88
- Medical examination after deferment, 183
- Mentions in dispatches, 37, 105, 181, 212, 28, 389, 494, 756, 862
- Prisoners of war, medical, 73, 144, 181, 249, 32, 389, 425, 462, 494, 530, 597, 638, 675, 71, 756, 833
- Recruits: Tuberculosis in, 65, 136, 245—Flat-foot in, 137, 254, 355—Medical history of, 289
- Review of book, 379
- Women, rank of, 167, 183
- Sesamoid bone of thumb, crush fracture of (W. H. Scobie), 912
- Sex, review of books on, 52, 615
- SHANKS, S. Cochrane: X rays in treatment of inflammations, 859
- SHAPIRO, Bennie G.: Iodine ointment for epidermal phytosis interdigital, 877

- SHARP, V. Ruth: Sulphapyridine in suppurative otitis media, 211
- SHAW, B. H.: Medical education, culture, and State aid, 421
- Henry Keith, death of, 713
- J. Vincent: Sacrocoma treated with Coley's fluid, 32
- W. Fletcher: Pericardial tetanus, 418
- Wilfred: *Tetrad of Gynaecology* 3rd ed., 615—Post-war medicine, 645
- SHILDON, Louis: Thomas, obit., 424
- SHILLFORD, Surg. Lieut. Arthur Charles: obituary notice, 469
- SHIMBURN, Andrew: Rehabilitation of injured air crews, 526
- SHIMDIN, Mary D.: Vocal tetraplegia and tremulousness, 680
- Surg. Lieut. Vincent Joseph Redmond, reported missing, 144
- SHIP SURGEONS: And medical personnel on transports, 52
- SHIRAS, Bertram: obituary notice of, 460
- SHIRLEY, G. B. (and C. FROCK): *Medicine versus Inflation*, 695
- SHOCK: From burns, see Compensation for, 833
- allergic, following Schultz-Charlton test (R. M. Calder), 195 (O)
- traumatic—past present and future (leading article), 350
- wound: Observation required (R. T. Grant), 332 (O)—Heated death, 668—Treatment of, in frost-bite cases, 750
- SHORR, R. H. D.: Lung tumours in air raids, 241
- SHOULDER, 772
- SHULZBERG, J. L. (and J. L. S.): 175
- SHURTIST, Henry F.: *Medicine and Human Welfare*, 695
- SIGHT, defective, remedy for, 389
- perfect, without glasses, 383, 459, 454, 562, 733; correction, 610 (A. S. Philips), 703
- SILVER: Without rays, out of gear, 102—Report on, 183—Presence in nature, 428—Review of book on, 545
- SIMMONS, H. T. (and E. D. Telford): Thrombosis in arteriosclerosis of extremities, 575 (O)
- SINCLAIR, Fraser: Complete stenosis of common bile duct; operative cure, 259
- SINCLAIR, William: obituary notice of, 143
- SINGER, Charles: *Four History of Science to Nineteenth Century*, 306
- SIXAR, Y. Balle, Sarikara: death of, 713
- SKIN: And mind, 55 (see Local sulphaphamide in infections of (A. G. Marshall) 544 (O)—Persistent skin conditions after a rash for years and, 716
- Dermatitis, cause for, —Normal and injurious effects of cold on (Sir T. Lewis), 795 (O), 837 (O), 699 (O); leading article on, 879. See also Dermatology
- SLATER, Elton: Neurosis or psychosis? 316
- SLICK, self-styled, 810
- SLIM, Maj.-Gen. John MacLachlan, obituary notice of, 462
- Small-pox and vaccination, deaths from, 678
- S-methyl isothiouracil sulphate properties of, 510 (A. and J. V. Carter); Blood-pressure-raising reflexes in histological anaesthesia, 874 (O)
- SMITH, F. H.: Glycystria, 316
- F. Percy (and others): *Clinicology*, 615
- F. W. G.: Ether convulsions, 252
- Grades: *Plagues on Us*, 12
- Hugh: Yellow fever in Africa, 172
- J. B. Gurney: Medical education, 525
- J. H.: Lig. ferri perchlor. fortis for impetigo and syphilis barbae, 640
- John Anderson, obituary notice of, 257
- and Nephew, Ltd.: Pamphlet, 896
- W.: Haemoglobin, 926
- William: Control of gastric hyperacidity in peptic ulcer, 13 (O); correction, 108
- Wilson (and others): Active and passive immunization against diphtheria, 717 (O); leading article on, 773; correspondence on, 861, 857, 724, 922
- Smith-Petersen nails, new director for insertion of, 549
- Smoking: And tachycardia, 680—Anti-tobacco campaign in Germany, 755, 896
- SMITH, E.: Treatment of impetigo contagiosa, 178
- SMITH, Sulphaphamide, for diphtheria carriers (A. M. Thomas), 687 (O)
- Smith's, antiseptic (M. E. Delefield and E. Straker), 221 (O); correspondence on, 357, 711
- Sobhamani, oral, in syphilis (R. C. L. Batchelor and others), 541 (O)
- Society of Apothecaries of London: Degrees and paid fees, 69, 361, 756, 862—Diploma granted, 69, 361, 756, 862—Officers elected, 361
- Biochemical: Assistance to foreign visitors, 48—Mode of action of chemotherapeutic agents, 921
- British Psychological: Mental defective in Army, 187—Survey of 100 cases of war neuroses, 365
- Red Cross: Annual report, 134—Representative visits U.S.A., 463
- Cardiff Medical Proceedings, 914
- Church of England: Marriage and Medical Gymnasium: Half-day congress, 494
- Church Missionary: *Attiles of Life*, 712
- Industrial Welfare: Annual lecture conference, 390
- Manchester Medical: Ancient burial rites and modern surgery, 350
- Medical Benevolent: For East and North Ridings of Yorkshire: Annual meeting, 758
- Society, Medical Golfing: Annual meeting, 932
- Officers of Health: President, 516—Meeting of Maternity and Child Welfare Group, 600—War and common health, 813—Planning in fever service, 922
- for Study of Venereal Diseases: Incidence of venereal disease, 208
- Nutrition: Leading article on, 316—Foundation, 831—Committee formed, 521—Notes on first meeting of, 417
- Ophthalmological, of United Kingdom: Annual congress, 417
- Pathological, of Great Britain and Ireland: Gastro-papillomatosis due to vitamin A deficiency, 81
- Pharmaceutical, of Great Britain: Appeal report of research departments, 312—Examinations appointment, 322—Volume commemorating centenary of, 615—Huxley medal, 659—Chemistry and pharmacy, 785
- Reading Pathological: Centenary, 185
- for Relief of Widows and Orphans of Medical Men: Annual meeting, 63
- Royal: Medals awarded, 702, 715
- of Edinburgh: Elections, 714
- Medical, of Edinburgh: Announcement, 530
- SOCIETY, ROYAL, OF MEDICINE: Section of Epidemiology and State Medicine—Lazarus home ophthalmia, 856
- History: *Medicine*—Polish Medical Faculty at Edinburgh, 706
- Laryngology: Oto-laryngologist on war service, 744
- Ophthalmology: Unburned cornea, 74
- Psychiatry: Reconstruction in psychiatry, 741
- Study of Disease in Children—War-time rationing and children's health, 920
- Surgery: Streptococcal cross-infection in wards, 742—Effects on kidney of limb compression, 68—Pharmacology and Pharmacology—Fat and carbohydrate metabolism, 591; correspondence on, 709
- Society, Royal, of Tropical Medicine and Hygiene: Yellow fever in Africa, 171—Year Book, 810
- Shaftesbury Military Hospital Medical: Trachinosis, 135
- Sodium meprobamate, fatal cases of poisoning with (P. Lazarus-Barlow and G. M. Norman), 407
- SOMERVILLE-LARGE, L. B.: Sulphonamides for ophthalmia neonatorum, 887
- SOM, M. R.: Treatment of cracked fingertips, 186
- SORBY, Arnold: *Medicine and Mind*, 851
- SOUTER, Alexander W. (and R. KARK): Hypochromic thrombocytosis and artemisinin-K in man, 199 (O); correspondence on, 279
- SOUTT, H. S.: obituary notice of Dr. H. M. McCrea, 754—Post-war hospitals, 820
- Soya bean (leading article), 269
- SPALDEN, E. B.: *Principles and Practice of Ophthalmic Surgery*, 2nd ed., 810
- Spain: First specimen of radium, 864
- SPAIN, A.: Water deficiency, 665
- Spectacles, horn-rimmed, first aid for, 292
- Speculum, useful, 696
- Speed and road casualties, 159
- SPENCER, H. R.: obituary notice of, 359
- SPILLMAN, Louis, death of, 713
- Spink John Topham, obituary notice of, 238
- Wesley W.: *Sulfanilamide and Related Compounds in General Practice*, 913
- Spunt, Bühler-Braun test, unilateral or bilateral, 697
- Spunt, 42—extension foot-piece and support for use with, 442
- SPOONER, E. T. C.: Bacteriology of air-raid wounds within 48 hours of infection, 477—Streptococcal cross-infection, 743
- SPOON, W. H.: Speed and road casualties, 359
- SPRUE, N. S.: St. Columba's Hospital for Advanced Cases, 149
- Sprue syndrome (leading article), 731; correspondence on, 823, 857
- STABLEY, Frank: Burns from penetrating tombs fragments, 246
- Stains for microscopic work, 264
- STALLWORTH, John: Useful speculum, 696—Loss of vision after haemorrhage, 823
- Stammers, review of book on, 122
- Stamps, postage: Gum as germ carrier, 836—Commemorating work of Sir W. Grenfell, 932
- STANDER, Henricus J.: *Williams's Obstetrics*, 8th ed., 771
- Stanley, Douglas, obituary notice of, 141
- STANNUSS, H. S.: Yellow fever in Africa, 172—Renal extracts, 177
- Staph. aureus in nasopharyngeal infections, 102
- STARLING, E.: Newspaper inquiry, 568
- Starling's Principles of Human Physiology, 8th ed., 338
- Statistics, medical, in wartime (leading article), 451; correspondence on, 562
- review of books on, 809, 878
- Surgical, for tropical surgeon, 492
- vital: For Scotland in 1939, 413—Quarterly returns: Scotland, 599, 931; England and Wales, 639, 757; Eire, 863; N. Ireland, 931
- Status lymphaticus and sudden death, 423
- STEAD, George F.: X rays in treatment of inflammation, 839
- STEEN, R. E.: Water deficiency, 665
- STEPHEN, Karin: Future of mental health, 539; correspondence on, 710, 836
- STEPHENS, G. Arbour: Treatment of gonorrhoea, 63—Problems of circulation, 216—Systemic factors in wound healing, 364
- STEPHENSON, W. (and others): Effects of vitamins B2 and C on senile psychosis, 839 (O)
- Sterilization, inefficient steam, 525
- Sterial puncture, review of book on, 513
- STERNUM, depressed fracture of (J. H. Kirkham), 614
- STEVEN, P. A.: Malaria illustrated by film, 836
- STEVENSON, G.: Treatment of chills, 794
- D. Lane: Voluntary hospitals, 456, 629
- Scott: Oto-laryngologist on war service, 744
- STEWART, A. D.: Scottish hospital services, 721
- Donald: Industrial medical services in Great Britain, 762 (O); leading article on, 775; correspondence on, 833
- STEWART, Medical Handbook for Nurses, 6th ed., 510
- STILL, Sir Frederic: obituary notice of, 69
- in American journal, 714—*Childhood and Other Poems*, 89
- STOCK, M.: Disclaimers, 532
- STOCKEN, L. A. (and R. H. S. Thompson): Treatment of gas casualties, 445; correspondence on, 459
- STOCKER, C. J.: Medical planning, 319
- STOCKS, Percy: Health indices for Greater London and New York, 96
- Stomach operations, review of book on, 379
- STONE, Gilbert C. H. (and others): *Laboratory Manual of Biochemistry*, 17
- Stopcock, three-way, improved edition of, 122
- STOPES, Marie: *Contraception: Its Theory, History, and Practice*, 4th ed., 772
- Strain, sacro-lumbar (O. Cynias), 847 (O)
- STRAKER, Edith (and M. E. Delefield): Antibiotic stains, 221 (O); correspondence on, 357
- STRANG, R. S.: Nasopharyngeal disease in mental disorder, 173
- STRATFORD, Howard M.: Lectures on first aid, 254
- First aid to injured, 672
- STROUT, S. J.: "Perfect sight without glasses," 753
- Streptococcal cross-infection, 742
- disease, epidemic of, 775
- infection, haemolytic, unusual outbreak of, 824
- Streptococci, persistent, after puerperal fever, 176
- Streptococci, laboratory to, 563
- STRYER, R. W. (and A. Philpott): Sulphonamide for corneal ulcer, 336
- Students: And curriculum, 629, 711—And help for Russia, 633—Seeking midwife cases, 836
- Sudan Medical Service: Announcement, 425
- Sugar-free diet and hypercalcaemia, 247
- SUGAR, R. W. (and others): *Diabetes*, 680
- Sulphadiazine in gas gangrene, 29
- Sulphaphamide. See Sulphonamide Group
- Sulphaphenylhydrazide. See Sulphonamide Group
- Sulphapyridine. See Sulphonamide Group
- Sulphathiazole. See Sulphonamide Group
- SULPHONAMIDE GROUP: Sulphadiazine in gas gangrene, 29
- Sulphaphamide: And seaweed, 52—Intraperitoneal, 436—Locally in skin infections (A. G. Marshall), 544 (O)—Recent applications of (F. H. Smith), 685 (O)—Review of book on, 913
- Sulphaphenylhydrazide: In gas gangrene, 29—For bacillary (Flexner) dysentery (D. E. W. Anderson and R. Cruickshank), 477 (O); leading article on, 514—Preparation of, 501
- Sulphapyridine: Bilateral renal colic due to, 71—In bacillary dysentery (Flexner) (G. M. Delefield), 199—And *Er. abortus* infection, 210, 213, 318, 423, 445—in suppurative otitis media, 211
- Experiment with, 278—Corneal ulcers cured by, 292—Herpes labialis after (C. E. van Rooyen and others), 253 (O); correspondence on, 357—Reaction after, 318—Renal complications of (H. G. Leathers), 336—For cutaneous anthrax (J. M. Davidson), 725 (O)
- Sulphathiazole: Sulf for diphtheria carriers (A. M. Thomas), 687 (O)—Cysticercosis epilepsy treated with (L. J. Seash, 693; correspondence on, 711)
- Sulphonamide E.O.S. (N. Marsh), 503 (O); correspondence on, 595, 631
- Sulphonamides: And bacteria in urine, 63—And sulphur, 139, 235—Toxicity of, to cells *in vitro* (F. Jacoby and others), 149 (O)—Internal absorption, 48—Complication of treatment (F. E. Crawley), 160; correspondence on, 319
- And nervous system (leading article), 365—For corneal ulcer (A. Philpott and K. W. Stuart), 336—In cerebrospinal meningitis, 631—For epithelial neoplasms, 749, 837—And cancer, 824
- See also Chemotherapy
- Sulphur lather tablets for scabies (D. L. Carter) 421 (O)
- sulphonamides and, 139, 255
- SULZBERGER, Marion B. (and J. Wolf): *Dermatological Therapy in General Practice*, 17
- SUMMERSKILL, Edith: *Babies without Tears*, 83
- SUMMERS, Emigene, death of, 713
- Surgery: Review of books on, 121, 162, 200, 337—Art of, 667
- acute abdominal, improved method of regional anaesthesia in (N. R. James and H. W. Burz, 906 (O)
- ophthalmia, review of book on, 870
- plastic: Results filmed, 622—Review of book on, 809
- vascular, 93
- war: Survey of (L. R. Broster), 273—Contributions to, from U.S.S.R. (R. Clarke), 372 (O)—Speed in, 456

Surgical principles in divisional medical units (C. M. Page), 168
 SUTHERLAND, John D.: Functional dyspepsia, 209—
 Survey of 100 cases of war neuroses, 365 (O)
 SUTTON, S. W.: Colic medical words, 38
 Suture materials, unabsorbable, 30, 281
 SWANSTON, C. N. (and J. HILTON): Clinical mani-
 festations of tetral and trinitrotoluene, 509 (O);
 correspondence on, 593, 630—Industrial medical
 board for women, 826
 Sweden: Advertising of medical preparations, 290
 SWENARTON, J. A. (and R. W. CARSLAW): Economy
 in treatment of impetigo and scabies, 225 (O);
 correspondence on, 356, 364
 SWINDELLS, S. W.: National wheatmeal flour? 822
 SWINGLE, D. B.: *General Bacteriology*, 51
 Switzerland: Appointment at Zurich, 678
 Syccosis barbae, liq. ferri perchlor. fortis for, 640
 Sydenham and Royal College of Physicians, 212
 SYMONDS, J. E.: Tenosynovitis of tendo Achillis,
 633
 Syndrome: Da Costa's, 175—Crush, 176, 388, 884,
 887—Sprue, 731, 857
 Syphilis: Note on, 158—Oral sobisminol in (R. C. L.
 Batchelor and others), 541 (O)—Blood transfusion
 and, 748
 Syphilology, review of book on, 408
 Szwakek, Jakob, death of, 361

T

T.A.B., herpes labialis after (C. E. van Rooyen
 and others), 298 (O); correspondence on, 562
 Tachycardia, cigarette smoking and, 680
 TALBOT, J. H.: Treatment by hypothermia, 231
 TANNHILL, R. W.: Planning in fever service, 924
 Taylor, Benjamin Robert Archer, obituary notice
 of, 493
 —C. J. Gordon: Post-war medicine, 891
 —David Robertson, obituary notice of, 932
 —G. L.: Blood groups, 315
 —J. L.: Students and curriculum, 629
 —Joan (and others): Active and passive immun-
 ization against diphtheria, 759 (O); leading article
 on, 773; correspondence on, 861, 887, 924, 932
 —Matthew Logan, obituary notice of, 494
 —N. B.: Isinglass as transfusion fluid, 166
 —Surge, Lieut. Robert, reported missing, 675
 —V. J. Morecom: Rehabilitation of injured air
 crews, 559
 —W. Norman: Easily made vein-seeker, 730
 Teaching, clinical (A. Loewenstein), 778 (O)
 Teeth: Magnesium and formation of, 92—Diet and,
 283—Review of book on, 582—Nation's, 928
 THORP, E. D. (and H. T. SIMMONS): Thrombosis
 in arteriosclerosis of extremities, 575 (O)
 Tellurite test for diphtheritic membranes on pharynx,
 882
 Tellurite-iron-rosolic acid medium selective for
 Flexner's bacillus (W. J. Wilson and E. M. McV.
 Blair), 501 (O); correspondence on, 563
 TEMPLER, Leslie J.: Melanotic carcinoma, sudden
 spread after hysterectomy, 511
 TEMPLETON, W. Lees: Post-war medicine, 753—
 Blood grouping in Forces, 758
 Tendons, ent flexor, suture of, 138
 Tenosynovitis of Achilles tendon (A. A. Williams),
 377; note on, 568; correspondence on, 633
 TERPLAN, Kornel: Anatomical studies of tuberculosis,
 585
 Tetanus, puerperal, case of (B. Maclean and P.
 Challen), 302 (O); correspondence on, 388, 418,
 492
 —treated with A.T.S., avartin, and high-calorie
 diet, 50
 Tetany, hyperventilation, in tropical countries, 138,
 210
 Tetral, clinical manifestations of (J. Hilton and
 C. N. Swanston), 509 (O); correspondence on,
 593, 630
 Theatre technique, review of book on, 809
 Therapeutic Research Corporation, 815
 Thin, Robert, obituary notice of, 493, 596
 Thirst at sea, 126, 211, 286, 528
 THOMAS, A. M.: Sulphathiazole snuff for diphtheria
 carriers, 687 (O)
 —Charles Edward, obituary notice of, 635
 —Derek T. (and C. W. Ward): Crohn's disease
 with acute obstruction, 613
 —E. W. Prosser: Treatment of scabies, 631
 —M. R.: Voluntary hospitals, 456
 —Thompson, John Knox, sentenced, 758
 —R. H. S. (and L. A. Stoddard): Treatment of
 gas casualties, 448; correspondence on, 559
 THOMSON, G. H.: Clinical manifestations of ex-
 posure to tetral and T.N.T., 593
 —G. M. (and others): Oral sobisminol in
 syphilis, 541 (O)
 —H. Hyslop: Tuberculosis in Glasgow, 525—
 Hospital policy, 828
 —S.: Bradycardia in juvenile rheumatism, 735
 Thoracoplasty for pulmonary tuberculosis (F. R.
 Edwards and others), 901 (O)
 THORNDIKE, Lynn: *History of Magic and Experimen-
 tal Science*, vols. 5 and 6, 479
 Thrombosis: Of superior longitudinal sinus follow-
 ing childbirth (J. P. Martin), 537 (O)—In arterio-
 sclerosis of extremities (E. D. Telford and H. T.
 Simmons), 575 (O)
 —cavernous sinus, heparin in, 735
 —jugular, after tonsillitis (R. L. Flett), 223 (O)
 —venous, and pulmonary embolism (leading
 article), 123
 Thumb: crush fracture of sesamoid bone (W. H.
 Scobie), 912

Thyroid diseases, chemistry of, 485
 —gland, interrelations of (leading article), 309
 Thyroidectomy in diabetes insipidus, 588
 TIBBLES, Sydney: Corneal ulcers cured by sulpha-
 pyridine, 292
 Tibia, fracture of, 351
 Tidey, Stuart Alexander, obituary notice of, 713
 Timepiece for blind person, 254, 322, 428
 TINGEY, A. J. Colby: Recurrent erysipelas, 496
 TINKER, C. M.: British Medical Students' Associa-
 tion, 278
 TITMUS, Richard M.: Medical statistics in war-
 time, 562
 T.N.T.: Clinical manifestations of (J. Hilton and
 C. N. Swanston), 509 (O); correspondence on,
 593, 630—Health hazard (H. M. Roberts), 647 (O)
 —Health of workers, 889
 Tobacco: See Smoking
 TOAST, Norman: *Essentials of Dermatology*, 546
 Toxopneumonia, 553, 618
 Toddlers, aggregation of, 137, 283
 TOMR, J. Walker: Crush injuries, 139
 Tonsillitis, jugular thrombosis after (R. L. Flett),
 223 (O)
 TORRENS, Dudley F.: National health policy, 672
 TOUFAR, F. A.: *Sokol: Czechoslovak National
 Gymnastic Organization*, 730
 —k on, 547

physical signs, and x-ray
 appearances in lung cavitation, 601 (O)
 Transfusion: Isinglass for, 166—Pannier, 230—
 Simple technique for intravenous, 459. See also
 Blood, Plasma, and Serum
 TRAYLEN, C. Leonard: Ether convulsions, 67, 216
 Treatment, review of book on, 89
 TREBOLD, R. F.: Depressive states in soldier, 109
 (O); correspondence on, 209, 243, 316, 490
 Trichiniasis: Mode of spread and manifestations,
 135—In Birmingham (L. J. Bacon), 909 (O)—In
 U.S.A., 912
 Trichloroethylene as anaesthetic, 103
 TRINCA, Frank: Mechanism of inflammation, 285
 TRINICK, R. H.: Diabetes and mercapyl diuresis, 750
 Trinitrotoluene. See T.N.T.
 TROKE, Clifford (and G. B. SHIRLEY): *Medicine
 versus Invasion*, 695
 TROUP, A. G.: Planning in fever service, 923
 Trust, Nuffield Provincial Hospitals: New trustees,
 363—Bristol Hospitals Commission, 521—Post-war
 hospital policy, 626—Regional hospital services,
 919
 Tuberculosis: Belfast scheme, 28—Carriers of, 33,
 65, 246, 525—In recruits, 65, 136, 245—Review
 of book on, 161—Activity of, 245, 316, 317, 358
 —In wartime, 252—Treated by arrest of lung-
 movement, 271—Statistics, 289—Response to, 316
 —In India, 361, 412—Increase in Glasgow (S.
 Laidlaw and D. Macfarlane), 436 (O); correspon-
 dence on, 525, 559, 669—Inquiry into increase in,
 530, 598, 632, 677, 708, 787, 892—Anatomical
 studies on (leading article), 585—In Wales, 587,
 883—Rampant, 594, 708—Increase in Scotland,
 677—In Lancashire, 821—In young women, 834—
 Chemotherapy for, 856
 —bovine, in Australia, 734
 —early bronchogenic, origin, diagnosis, and
 management of (G. G. Kynne), 154 (O); corre-
 spondence on, 423
 —pulmonary:
 senna compli-
 active, 317—
 of, 417—Col
 —Thoracop.
 901 (O)
 —workers, radiographs of, 568
 TUCKER, Theodore F.: Sex Problems and Youth, 52
 Tumor cells, plasma cells, and premonocytes, 633
 Turkey: Health institute founded, 74
 TURNBULL, J. N.: Vaccinia as complication of
 vaccination, 751
 TURNER, C. E. (and E. McHose): *Effective Lifting*,
 654
 —G. Grey: Appreciation of Dr. R. A. Welsh,
 892
 —H. M. Stanley: Antiseptic snuffs, 357—Possi-
 bility of malaria in Britain, 749
 —P. Waldren: Cerebrospinal fluid in closed
 head injuries, 569 (O)
 Turtle, Godfrey de Bee, obituary notice of, 928
 TUTTLE, W. W. (and W. D. ZOENHOOF): *Textbook
 of Physiology*, 7th ed., 339
 Twins, identical, tuberculosis in, 406
 Twynani, George Edward, obituary notice of, 71
 Typhoid carrier, 673
 TYRRELL, T. M.: Unburned cornea, 74
 TYSON, Mary: Death from mercurial diuretics, 855

U

Ulcer, anastomotic jejunal, 7
 —corneal: Cured by sulphapyridine, 292—
 Sulphonamide for (A. Philipp and K. W. Stuart),
 336
 —gastric and duodenal, distribution of, in British
 Isles (B. M. Nicol), 780
 —peptic: Control of gastric hyperacidity in
 (W. E. Smith), 13 (O); correction, 108—X-ray
 therapy for, 864
 —perforated gastric, and cirrhosis of liver in
 infant of 6 months (L. Firman-Edwards), 440
 Ulceration, streptococcal, around wounds, 553
 ULLMAN, E. V.: *Diet in Sinus Infections and Colds*,
 2nd ed., 696
 UNGAR, J. (and R. F. HUNWICKER): Experimental
 immunization with influenza virus, 12 (O)

Union, Medical Defence: Annual meeting, 557
 UNITED STATES OF AMERICA:
 American doctors in E.M.S., 792
 Army, medical co-operation with, 846
 Books published, 350
 British American Ambulance Corps' committee,
 932
 "Bundles for Britain," 103, 556
 Cancer: League founded, 185—Tumour clinic,
 185
 Children's Aid Committee, 290
 Doctors for Britain, 214
 Hospital, American, in England, 315
 New York: Typhoid, 74—Health indices com-
 pared with London (P. Stocks), 96—Institute
 for scientific research planned, 530
 Public Health Service: Problems of ageing, 120
 —And Army, 846
 Red Cross: Visit of British representative, 463—
 In Europe, 517
 Trichiniasis in, 912
 University of Aberdeen: Hon. degree conferred,
 105—Degrees and pass lists, 105
 —Belfast, Queen's: Degrees and pass lists, 145
 —Bristol: Degrees and pass lists, 36
 UNIVERSITY OF CAMBRIDGE:
 Announcements, 714, 756
 Awards, 68
 Degrees and pass lists, 36, 105, 250, 322, 564, 638,
 929
 Diploma conferred, 424, 756
 D.M.R.E. announcement, 792
 Vice-Chancellor's valedictory address, 564
 University of Dublin: Degrees and pass lists, 144,
 894
 —Durham: Appointment, 462
 —Edinburgh: Degrees conferred, 180, 929—
 Prizes presented, 181—Appointments, 833—Be-
 quest, 833
 —Glasgow: Degrees conferred, 36, 674—Post-
 graduate meetings, 322—Awards, 674
 —Harvard: Appointments, 74
 —Leeds: Degrees and pass lists, 462—Awards,
 462
 —Liverpool: Degrees and pass lists, 68
 UNIVERSITY OF LONDON:
 Announcements, 361
 Appointments, 361
 Awards, 144, 180, 250, 322
 Final examination for M.B., B.S., 615
 Principal: Report of, 180—Retirement of, 674
 Prize, 792
 Scholarships 424, 756
 University, McGill: No. of students in Medical
 Faculty, 495—Dept. of nutrition established, 932
 —McMaster: Hon. degree conferred, 38
 —Manchester: Degrees and pass lists, 69, 894
 —Michigan: Public health organization, 689
 —National, of Mexico: Social service system, 216
 —Oxford: Awards, 68, 361—Degrees conferred,
 288—Examination announcements, 180
 —Rochester: Degree conferred, 901
 —St. Andrews: Degrees conferred, 69—Award,
 69
 —Sheffield: Resignation, 144—Degrees and pass
 lists, 532—Appointments, 597, 792—Meeting of
 council, 597
 —Toronto: Hon. degree conferred, 37
 —Wales: Degrees and pass lists, 36, 638, 792,
 862
 —Yale: Dean appointed, 640
 Uraemia: Recovery from, following crush injury
 (R. G. Henderson), 197 (O)—Temporary vascular
 occlusion ending fatally in (A. M. Glen), 875 (O)
 URDAN, George (and E. KRENNERS): *History of
 Pharmacy*, 229
 Urease activity, test for, 932
 Urethra, female, cancer of, 362
 —ruptured, metal guides for rubber catheters for
 use in repairing, 548
 Urine, sulphonamides and bacteria in, 63
 Urology, review of book on, 729
 Urticaria, 108—Solar, 918
 U.S.S.R.:
 American Red Cross Mission in, 464
 Anglo-Soviet medical co-operation, 411, 424, 590
 British Red Cross aid, 495
 Contributions to war surgery (R. Clarke), 372 (O)
 Gift from Canada, 678
 Health in, 445
 —Resorts, 230
 Medical man joins British Mission to Moscow, 464
 —students and help for, 633
 Pavlov laboratories: work continuing, 714
 Surgical instruments for, 830
 Uterine action: Fragarine (Sir B. Whitehouse), 370
 (O); annotation on, 412; correspondence on, 418,
 528
 Uterus: Cancer and tuberculosis, 520—Operation
 for retroverted (C. Rendle-Short), 649 (O)

V

Vaccination: Deaths from, 678—Vaccinia as com-
 plication of, 751, 822
 VAN DEN ENDE, M.: Streptococcal cross-infection,
 742
 VAN ROOYEN, C. A.: Malaria parasites in fresh blood
 films, 87
 —C. E. (and others): Herpes labialis after
 sulphapyridine and T.A.B., 298 (O); correspon-
 dence on, 562

- Vaporizers, Oxford anaesthetic, 704
Vegetables, green, preparation and cooking of, 26
— root, as antiscorbutics in infant feeding (D. M. Mathews and A. L. Bacharach), 226 (O)
Vein-sealer, easily made, 730
Vejst, varicose; Subcutaneous ligature of, 67, 357, 392
— of operation (R. T. Payne), 533 (O); correspondence on, 670
Venereal diseases, in Jamaica, 146—Incidence of, 205—Control of, 359—Diagnosis of early, 632, 710
Venezuela: Society of Microbiology founded, 103
Verdon-Roe, Spencer, obituary notice of, 283
VERNON, H. M. (and Dame J. CAMPBELL): *National Health Services and Preventive Methods for Improving National Health*, 605
Viruses: Size and visibility of (A. C. Coles), 507
— (O)—And infection through skin, 557
— influenza, and their immune bodies, new test for, 777
Vision, loss of, following haemorrhage, 711, 823
— See also Sight
Vital, necessity for, 101
Vitamin deficiency, review of book on, 375
— syrup, rose-hips for, 456
— A: Gastro-papillitis due to deficiency of (S. Beck and P. R. Pasco), 51 (O)—Carotene as substitute for (L. Nichols and A. Nimalasuri), 406—Dark-adaptation tests and deficiency of, 747
— B: Sebaceous and feeding articles, 125—In old age (W. Stephenson and others), 539 (O)
— B₁ deficiency, 22
— B₂ (adenine), 166
— C in old age (W. Stephenson and others), 539 (O)
— E: International standard for, 555—In neuro-muscular disorder (feeding article), 618; correspondence on, 709
— H, 518
— K: Hypoprothrombinemia and deficiency of (R. Kark and A. W. Souter), 190 (O); correspondence on, 279—In newborn infants, 919
— P and capillary resistance, 517
Vitamin B₁₂ in meat, 170—In modified "O's" breakfast, 186—New preparation, 654
Vocal cords, function of, 496, 600
— resonance and fremitus, 680
Vost, Walter, death of, 529
Vomiting, chemistry of, 206
— incidence of post-anaesthetic (R. M. Davies), 571
Vulva, benign growths of, 671
- W**
- WADINGTON, C. H.: *Scientific Attitude*, 441
WAGNER, Harry (and others): *Laboratory Manual of Biochemistry*, 17
WAINWRIGHT, D.: Fractures of olecranon, 351
WAKLEY, C. P. G.: Lung injuries in air raid, 241—On otolaryngologist as war service, 744
Waldman, Anton, death of, 529
Wales: Tuberculosis in, 557, 833—Death rate in young women, 678
WALFORD, A. S. H.: Otolaryngologist on war service, 745
WALKER, James: Preparation of sulphamyl-di-guanide, 501
— R. Munn: Local anaesthesia in operations for pyloric stenosis, 66
WALL, N. M.: Intraperitoneal Sulphanilamide, 446
WALLACE, A. B.: "Euglandine" for burns, 748
WALSHE, F. M. R.: *Dilettos of Nervous System Described for Practitioners and Students*, 2nd ed., 319—Night-blindness: psychological study, 858
WALTER, J.: Epidural novocain infection in cervical cancer, 493
WALTERS, F. R.: Increase of tuberculosis, 708
— G. A. Bage: Hemiprotection, 824
WALTON, Sir James: Streptococcal cross-infection, 743
WAR:
— American doctor speaks, 483
— Behaviour of children and adults in, 532
— Collection of pathological specimens, 740
— Emergency Hospital Service: London hospital services, 38—All India Defence workers and, 63—Fracture clinics "C", 250, 819—Emergency x-ray service, 620—Rehabilitation services, 837
— Medical Service: Instructions, Part I, 89—Memorandum on first-aid treatment of burns, 140—After-care of children, 207—Organization of E.N.T. department (V. E. Nerus), 519; correspondence on, 594, 668—Radiological house-surgeons in, 528—American doctors in, 792
— Factory casualties, 834
— Health in: Review of books on, 442, 696—Paradox, 815
— Infectious diseases in (feeding article), 341
— Invasion: Care of wounded, 106—Medical services in, 185—Network plan for dealing with casualties (G. Ward), 736
— Medical diseases of, review of book on, 408
— Medicine, week-end of, 484
— Mental health of child and (F. Bodman), 456
— Neuroses: Leading article on, 21—Survey of 100 cases of (O. D. Sutherland), 365 (O)
— Nutrition, planned, during, 835
— Prescribing: *National War Formulary*, 656, 662
— Production and health (feeding article), 773
— Review of book on, 615
— Surgery: Survey of (R. Broster), 773—Contributions to, from U.S.S.R. (Dr. Clarke), 372 (O)
— Water supplies, domestic, during (feeding article), 351
WARD, Cecil W. (and D. T. THOMAS): Crebra's disease with acute obstruction, 613
— Ernest: Medical philosophy, 665
— Gordon: Network plan for dealing with invasion casualties, 736
— John Alfred, obituary notice of, 831
— Kirkland, *Stammering*, 122
— Robt. W. L.: Mobile first-aid post, 671
WARDEN, E. N.: Endoscopic resection of prostate, 749
WARIN, J. F.: Diphtheria immunization, 924
Waring, Col. Anthony Hepp, obituary notice of, 361
WARNER, ALBIN: Mental defective in Arms, 353
Warrick, outbreak of, in school, 392, 496
WARRICK and Tussall's *First Aid to Injured and Sick*, 18th ed., 330
Water: Domestic supplies (leading article), 331—Deficiency, 664
WATERS, E. T.: Impulse as transfusion fluid, 166
WATKINS, Arthur G.: Congenital arteriovenous anastomosis, 849 (O); correspondence on, 925
Watson, John W.: Clinical manifestations of exposure to tetryl and T.N.T., 493
— Kenneth: Voluntary hospitals, 419
WATSON-WILLIAMS, Eric: Nasopharyngeal disease in mental disorder, 172—Thus certification business, 600
WATT, J. A. G.: *Food and Agricultural Policy for Britain and Policy for British Agriculture*, 126
WAUGH, W. Grant: Systemic factors influencing wound healing, 236; correspondence on, 364
Wear, Alton Edward Luke, obituary notice of, 861
WEAVER, Ralph: Practical results of diphtheria immunization, 669
WEBB-JOHNSON, Sir Alfred: Surgical instruments for Russia, 530
WEBER, F. PARKES: Congenital arteriovenous anastomosis, 926
WEBSTER, C. Arthur: *Fighting Fit*, 379
WELCH, R.: Biting tuberculosis in Australia, 734
WELCH, Capt. Stewart: Injury death of, 361
Welsh toxins, physiological action of, 127
WELLS, A. Q. (and others): Active and passive immunization against diphtheria, 739 (O); leading article on, 773; correspondence on, 881, 887, 924, 925
— Charles: Ether anaesthesia, 177
WELSH, E. A.: First aid to injured, 716
— Falset, Voluntary hospitals, 457
— Robert Anthony, obituary notice of, 892
West, Henry Owen, obituary notice of, 830
— Marion M.: *Handbook for Industrial Nurses*, 77
WHITEL, Una M.: Municipal hospital, 790
Whitfield, Alexander, death of, 144
Weinberg-Mien, William Archibald, obituary notice of, 712
WHITFIELD, Sir William: Treatment of burns, 135
WHITNEY, L. H.: Casualty surgery in air raids, 131
— Long injuries in air raid, 541
WHITE, Amber Blanche: *Worry in Women*, 810
WHITHOUSE, Sir Beckwith: Fragrance—inhibitor of uterine action, 370 (O), annotation on, 412; correspondence on, 418, 528—Economy in dressings, 787
WHITLOCKE, Hugh: Surgical statistics for general surgeon, 492
WHITING, Maurice: *Ophthalmic Nursing*, 3rd ed., 547
WHITTINGALE, J.: Br. abortion infection responds to sulphydryl, 210, 423
WHITTLE, C. H.: Tuberculosis, 316
— Waring: Concomitant therapeutic agents for, 87
WHIDOWSON, E. M.: Wartime rationing and children's health, 920
Wiks, Bernhard, death of, 144
Wild, Robert Briggs, obituary notice of, 564
WILES, F. J.: Carriers of tuberculosis, 525
WILKIN, C. Hamilton: Diagnosis of early venereal disease, 710
WILKINSON, M. C.: Increase in tuberculosis, 669
WILKINSON, Sir William Henry, obituary notice of, 103, 180
WILLIAMS, A. A.: Tetanospasms of Achilles tendon, 377; note on, 568; correspondence on, 633
— Lewis, Col. Charles Edward, obituary notice of, 289
— E. K.: Clinical manifestations of exposure to tetryl and T.N.T., 493
— G. E. O. (and T. B. DAVIS): Concentrated red cell suspensions in anaemia, 641 (O); annotations on, 659; correspondence on, 823, 925
— Gwynne: Routine radiography of students' chests, 388
— J. Price: Treatment of burns and blisters, 33
— O. S. (and I. PUGH): Blood transfusion in malignant diphtheria, 844 (O)
WILLIAMS, Catherine E.: Timepiece for blind person, 423
WILLIAMS' Press Guide, 68th issue, 339
WILLIUS, Frederick A. (and T. E. KERR): *Cardiac Clutter*, 614
WILLMER, E. N. (and others): Toxicity of sulpho-namide drugs to cells in vitro, 139 (O)
Wilson, Alexander, appointed Deputy Lieutenant for County of London, 254
— D. C.: Rationing and children's health, 920
— D. Wright: *Laboratory Manual of Physiological Chemistry*, 4th ed., 339
— G. S. (and others): Active and passive immunization against diphtheria, 717 (O), 739 (O); leading article on, 773; correspondence on, 861, 887, 924, 932—Control of diphtheria in schools, 925
WILSON, Owen: Cost of diphtheria immunization, 568
— Thomas Henry, obituary notice of, 661
— W. James (and E. M. McV. BLAIR): Tetanospasms—iron-sulphate and medium sensitive for Elmer's bacillus, 501 (O); correspondence on, 563
WINGFIELD, Alec: Tuberculosis in restraint, 136—Hyperventilation therapy in tropical climates, 210
WINNICOTT, D. W.: Communal feeding in schools, 343
WINSTREY-WHITE, H. P.: Metal grids for rubber catheters for use in repairing ruptured urethra, 548
WINGMAN, C. Wynn: Pretending eye blind, 212
WISE, K. S.: Appreciation of Dr. J. R. Dickson, 70
WITKOWSKI, E. (and others): Night-blindness, 571 (O), 607 (O); leading article on, 620; correspondence on, 7, 835
WITTS, L. J.: Amidopyrine and peroxides anaemia, 199
WORKS, Frank: *Food: the Degrading Factor*, 125
Wolf, Jack (and M. B. SUTZGARD): *Dermatologists Therapy in General Practice*, 17
WOLF, Claude Thomas, obituary notice of, 713
— J. J. (and C. E. Das Gupta): Acquired immunity to blood transfusion reactions, 867
Women: "To match the men" (Sir R. Hutchison), 623—Consumption of, 862
Wood, Guy Edward Mills, obituary notice of, 415
Wood, Col. Leonard, obituary notice of, 597
WOODMAN, William: Organization of E.N.T. dept. in E.M.S., 665—Otolaryngologist on war service, 745
WOODRUFF, Thomas A., death of, 461
WOODS, D. D.: Chemotherapeutic agents, 922
WOODS, L. S.: Deaths on table, 252
WOOLLEY James G.: *Electricity and polymyositis*, 452
WOOLLEY, Eric: Voluntary hospitals, 420
Work, rest, and diet, Mr. Churchill on, 214
Worry review of book on, 810
Worthing, Lieut.-Col. Henry George Luther, obituary notice of, 510
Wound healing, systemic factors influencing (W. G. Waugh), 236; correspondence on, 364
Wounds: Envelope method for (J. Banyan), 1 (O)—Coated silk fabric for (R. V. Hudson), 7 (O)—Leading article on, 53; correspondence on, 125, 245, 316, 730—Review of book on, 828
— Bacteriological specimens from, 265, 337—Hygienic sodium sulphate for, 385—Reduction of hospital infection of (W. McKissock and others), 375 (O)—Research on, 745—From bath-tubing muscles (A. N. Black and others), 872; leading article on, 881
— etiology of, within 48 hours of infection (E. T. C. Spooner), 477 (O)
Wray, Stanley: Convalescent polymyositis serum, 322
WRIGHT, A. Dickson: Ether convulsions, 63
— H. W. S.: Spinal complications of amphetamine dysentery, 246 (O); correspondence on, 357
— Joyce (and others): Reduction of hospital infection of wounds, 375 (O)
— Margaret D.: Nutritive value of bread, 679 (O); correspondence on, 790, 835
— R.: Carriers of tuberculosis, 525
WYNN, W. H.: Medical education, 623
- X**
- X-ray dermatitis, case of (R. A. C. Rigby and W. J. Moxley), 770 (O)
— injury, 164
— severe, emergency, for hospitals, 520
— therapy for peptic ulcer, 864
X-rays: In treatment of inflammations, 700, 825, 859, 891—Persistent skin condition after, 716
See also Radiographs
- Y**
- YAPP, Brandon: Medical education, 733
Yarr-Peck, *Hospital*, 1941, 729
Yeast as human food, 170
YELLOWLEYS, Henry: Depressive states in soldier, 243
YORFEE, J. M.: Spread of polymyositis, 450—(and Col. D. DICKSON): *Lymphatic, Lymph, and Lymphoid Tissues*, 63; correspondence on, 747
YORK, Warrington: Mode of action of chemotherapeutic agents, 921
YOUNG, F. G.: Nomenclature of primary principles, 240—Growth and diabetogenic action of anterior pituitary preparations, 897 (O); leading article on, 915
— I. Mawson (and P. L. MOLLISON): Failure of *in vitro* tests as guide to value of stored blood, 797 (O); annotation on, 813
— James: "Crash syndrome" in obstetrics, 687
— W. J.: Scabies, 818
YOUNG, John: Dark-adaptation tests and vitamin A deficiency, 747
- Z**
- Zappert, Julius, death of, 180
ZECHINSTEIN, L. (and L. CHOLNOKY): *Principles and Practice of Chromatography*, translation, 479
Zhu-Yang Kuo visiting Gresham, 594
ZIMMERMAN, D. W. (and W. TOTTLE): *Text-book of Physiology*, 7th ed., 339
ZUCKERMAN, S.: Eye injuries in war, 417—(and others): Wound mechanism of high-velocity missiles, 677 (O); leading article on, 671

LIST OF ILLUSTRATIONS

SPECIAL PLATES

Burns treated by Envelope Method (J. Bunyan)	facings	4, 5
Sulphonamides, Toxicity of, to Cells <i>in vitro</i> (F. Jacoby and others)	facings	153
Tuberculosis, Early Bronchogenic (G. G. Kayne)	facings	152

ILLUSTRATIONS IN THE TEXT

Abdominal Catastrophe which did not take place (G. E. Parker)	120
Ambulance Ship, Motor Barge as (J. Evans)	59
Amoebiasis—Pulmonary Complications (B. A. Dormer and J. Friedlander)	259
Anastomosis, Congenital Arteriovenous (A. G. Watkins)	849
Anthrax, Cutaneous, treated by Arsenicals and Sulphapyridine (A. M. Davidson)	725
Band-aging, Eye and Mastoid: Looped-cap System	339
Blood-pressure Readings, Apparatus for	334
"Blue Drum," or Idiopathic Haemotympanum, in Children (J. H. O'Donnell)	86
Burns, Local Treatment of (R. S. B. Pearson and others)	43
— and Wounds treated by Coated Silk Fabric (R. V. Hudson)	8
Cancer of Rectum, Operability of (J. C. Golisher)	395
Cannula, New Type of	878
Chest, Closed Wounds of (J. G. Scadding)	58, 94
Clark, Alfred Joseph	213
Closed-plaster Method, Bacteriological Specimens from	268
Clubbing of Fingers, Unilateral (R. E. Rodgers)	439
Coitus-training Apparatus (J. Loewenstein)	50
Crush Fracture of Sesamoid Bone of Thumb (W. H. Seobie)	912
Cystotomy, Suprapubic, Two-minute	730
Dermoids, Post-anal, Treatment of (G. K. Harrison)	87
Dipropion, Radiographs and (J. V. O'Sullivan)	543
Duodenal Intubation (A. Fidler and others)	867
Eyes, Contaminated, Device for Washing	480
Foreign Bodies in Tissues, Electric Probe for Location of	616
Gas: Plan of Cleansing Centre	448
Hallux Valgus Deformity in Soldiers (R. Brooke)	606
Head Injuries in Motor-cyclists (H. Cairns)	466
Heart Massage for Impending Death under Anaesthesia (H. Bailey)	84

Hemiprostectomy for Unilateral Adenomatous Enlargement (W. S. Handley)	PAGE 685
Hospital, Guy's: York Clinic	738
Hospitals, Voluntary	523
Hot Drinks for Trapped People	680
Hypoplasia, Congenital Bilateral Renal (J. E. Murray and R. A. Sandison)	471
Kelly, Adam Brown	33
Kerr, James	563
Laryngoscope, Improved	914
Layton, Frank George	105
Leiomyoma of Stomach with Ulceration (S. J. Levy and J. S. Horn)	580
Lung Injuries in Air Raids	240
Mobile Unit, Useful Addition to Equipment of	513
Os Calcis, Reduction of Fractures of (W. G. Campbell)	652
Pentothal Sodium Solutions, Apparatus for Administration of	19
Phagedaena, Wound (A. Callam and A. Duff)	801
Plaster Casts, Removal of	772
Prostate, Endoscopic Resection of: Improved Technique	583
Rehabilitation of Injured Air Crews (R. N. Houlding)	429
Sacro-iliac Strain (J. Cyriax)	848
Scabies, Parasitology of (P. A. Buxton)	397
Sling, Self-fitting	810
Smith-Petersen Nails, New Director for Insertion of	549
Speculum, Useful	696
Spencer, Herbert Ritchie	389
Splint, Böhler-Braun Leg	697
— Thomas, Extension Foot-piece and Support for Use with	442
Still, Sir Frederic	69
Stopecock, Three-way, Improved	122
Thoracoplasty for Pulmonary Tuberculosis (F. R. Edwards and others)	904
Thrombosis in Superior Longitudinal Sinus (J. P. Martin)	537
Urethra, Ruptured, Metal Guides for Rubber Catheters for Use in	548
— Repairing	730
Vein-seeker, Easily Made	103
Willcox, Sir William Henry	873
Wounding Mechanism of High-velocity Missiles (A. N. Black and others)	770
X-Ray Dermatitis, Case of (R. A. C. Rigby and W. J. Mowat)	770

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THE TREATMENT OF BURNS AND WOUNDS BY THE ENVELOPE METHOD

BY

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(WITH SPECIAL PLATE)

Introductory Remarks

The outbreak of war has naturally resulted in much research into the treatment of burns and wounds. Experience has led to the modification and even rejection of some previously accepted methods of treatment. The most notable incident has been the discovery of the disasters that may follow the application of tannic acid to the hands and face. Some of the therapeutic advance up to date has been of an empirical, trial-and-error type, and has left much room for improvement. The scientific theoretical aspect of the question is still, it is suggested, capable of further development.

My interest in inflammatory disorders and wounds of the mouth led me to form certain hypotheses and opinions on the problem of the local treatment of inflammatory conditions in general. My theoretical views were as follows:

First, sound healing of the tissues is assisted by gentle but thorough cleansing, with removal of dead tissue and avoidance of irritant applications, together with every encouragement to the physiological outpouring of serum and leucocytes into the injured area. This assistance is, of course, strengthened by any bactericidal treatment that can be given without damage to living cells and by the prevention of secondary infection.

Secondly, it is desirable that any treatment given should be painless, and, if possible, alleviate existing pain, and that it should reduce to the minimum the necessity for general anaesthesia. It would be a great advantage if the local treatment permitted the active and passive movements of the injured part at all times.

Thirdly, a local treatment of burns should have the following qualities: it should not aggravate primary shock; it should diminish and inhibit the loss of body fluid from the burnt area; it should reduce toxæmic shock from the absorption of protein breakdown products and bacterial toxins; and it should disinfect without irritating or damaging the healing tissues.

In the past less success than was hoped for has followed the treatment of burns and wounds because irritating, destructive antiseptics were used, which killed tissue as well as organisms. At the same time the type of frequently changed dressing, conventionally applied, gave rise to pain on removal, to destruction of newly formed tissue to which it was adherent on each removal, and to immobility and disuse of the part to which it was applied. Frequent changing of a dressing introduced the inescapable danger of secondary infection from such sources as droplets from the nose and mouth of other individuals or from ward dust.

To obtain improvements in the local dressing of burns and wounds it is therefore desirable to employ a dressing which may be kept applied without changing for a considerable period—preferably during the whole course of treatment. The dressing should be flexible, frictionless, bland to the tissues, and, if possible, transparent, in order that progress may be constantly observed. The dressing should combat bacterial contamination and be watertight, so that fluids applied to the injured area would be confined within bounds.

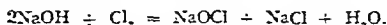
Apart from avoiding the necessity for changing, the dressing should permit free movement if this is desirable, and permit constant drainage and cleansing of the affected area.

The Therapeutic Agent

In attempting to devise an improved form of dressing to meet the above-mentioned requirements, the form of solution to be applied to burns and wounds was attended to first. It was desired to find one which was non-toxic, non-irritant, capable of dissolving dead organic matter, able to encourage transudation of serum and cells, and to exert some bactericidal power in concentrations that would be harmless to healing tissue, and which would be easily obtainable anywhere and at any time.

From personal clinical experience, and from literature on the subject, it was decided that sodium hypochlorite solutions most fulfilled these desiderata, and that the hypochlorite solution produced by electrolysis of sodium chloride was the best preparation, having the least irritant action. The following are a few important points in the manufacture of hypochlorite solutions.

First, sodium hypochlorite solution can be made by a chemical process. Chlorine gas can be passed through dilute caustic-soda solution at suitably low temperatures. The reaction is as follows:



In solutions prepared this way sodium hypochlorite and sodium chloride will usually be found in equal quantities, but there will always be an excess of caustic soda remaining in solution.

Sodium hypochlorite solution can also be made in an indirect chemical manner by the use of bleaching powder. The danger of causticity is present in this method also, as exemplified in the case of *liq. scd. chlorinatae* (B.P.C.). In Dakin's solution causticity is reduced by the addition of boric acid, but some of this is absorbed by the tissues, so that free soda is always present. Calcium hypochlorite solution made from bleaching powder is also combined with boric acid to form *eu-sol*.

Different shapes and sizes are being tried out, and as the method develops it is hoped to be able to provide a simple means of effectively isolating any part of the body.

(b) *Other Apparatus:*

1. Special trolley for use in hospital.
2. Containers for hypochlorite solution, of glass or vulcanite.
3. Thermometer.
4. Rubber tubing and clips (sterile).
5. Glass cannula and vulcanite roses (sterile).
6. Higginson's syringe (sterile).
7. Waste container (bucket or bowl).
8. Silk sheeting.

(c) *Method of Application of Envelopes.*—See Treatment of Burns.

Technique of Treatment: (i) Preparation of Sodium Hypochlorite

Electrolytic sodium hypochlorite can be made with a small electrolytic cell, as used in modern water purification, producing three pints of 0.6% NaOCl (unstabilized) from 10% NaCl solution in six hours. With a larger plant considerable quantities of NaOCl can be produced as required. However, if this plant is not available, the simplest way to obtain as much sodium hypochlorite as required, in a standardized stabilized solution, was found to be to use "milton" solution, which is 1% NaOCl, standardized and stabilized, and which has been and is being kindly supplied by Messrs. Milton Proprietary Ltd. Since this concentration is a very convenient one for using as a stock solution, it has been decided to refer always to a 1% solution of sodium hypochlorite, electrolytically produced, as E.S.H., so that when we talk of a 5% solution of E.S.H. we mean 1 part of 1% electrolytic sodium hypochlorite to 20 parts of water. This 1% solution of E.S.H. has been used in all my experiments, and appreciation of the assistance given by the manufacturers must be expressed.

Various concentrations of E.S.H. were employed for different purposes. It should be remembered that solutions of E.S.H. above 5% in water are hypertonic, those of 5% almost exactly isotonic, and those below 5% hypotonic. The following guide to the concentration of E.S.H. for various purposes is given.

First, when gross sepsis is present, or dead tissue such as sloughs, scabs, etc., has to be removed, then E.S.H. in strengths up to 50% in water may be used. A concentration of 20% is a good average one. Hypertonic solutions assist the diminution of oedema.

Secondly, when the primary object of thorough cleansing has been attained, and daily irrigation is instituted, to remove stale exudate and to control infection, this daily irrigation should be carried out with a 5% solution. If the skin is very sensitive, or if healing is progressing rapidly, then the concentration may be reduced to 2½%. When there is no infection, or the infection is so slight as to be almost negligible, and stimulation of healing is the main objective, the 1% solution is adequate.

Temperature control is important. The solution should be kept at body heat. It should be made a rule that it be kept at 100° F., except that the initial irrigation done under analgesia or anaesthesia may be carried out at 110° F. Patients are extraordinarily sensitive to slight temperature variations, and great care should be exercised to ensure that the solution is at 100° F. exactly.

(ii) *Treatment of Burns*

The general treatment of shock, etc., need not be detailed here. It may be mentioned that when a general anaesthetic is necessary for the débridement and dressing of burns it need only be a light one. Various forms of anaesthesia and analgesia have been employed, including intravenous morphine, omnopon, and barbiturates. I have been impressed by the advantages of a vaporizer for delivering warm ether vapour of any desired concentration,

devised by the Nuffield Department of Anaesthetics, Oxford: anaesthesia, and even analgesia, have been most satisfactory, and the patients have had no ill effects from their use.

There is much confusion regarding the best method of first-aid treatment for burns, and guidance has hitherto taken the rather negative form of instruction to do nothing. Since some time may elapse before admission to hospital it is felt that the application of packs of E.S.H. to the burn is a considerable advantage—the relief of pain and the practical disinfection, together with prevention of fluid loss, are of great importance. Packs may be applied anywhere quite easily, and cannot possibly do any harm.

First-degree burns may be bathed in 50% E.S.H. for ten minutes, after which the concentration is lowered to 10% for ten minutes. The area is dried and then covered with adhesive plaster. Relief of pain is found to be immediate, and after twenty-four hours there will be little sign left of the burn. Second- and third-degree burns may be classed as either primary or secondary. Primary burns are those that arrive for treatment without having received any attention other than first aid.

It must here be noted that it has been found most difficult to decide at first whether a burn is a bad second or of actual third degree. There can be no doubt that many second-degree burns progress to third degree because of sepsis or trauma, and it is felt that the use of this method will enable treatment to be carried out without the possibility of any harm until the degree of the burn is established. By then any form of treatment may be undertaken without having run the risk of the catastrophes associated with the treatment of deeper burns.

A patient with a second- or third-degree burn is pre-medicated and anaesthetized as may be necessary, and local treatment is begun. When the blisters are unbroken the area is washed over on the surface with 20% E.S.H. at 100° F. Blisters should then be aspirated with a fine needle and some 10% E.S.H. injected into them. This should be left in for five minutes, and then withdrawn by syringe and needle, and the skin pressed down flat with a dry dressing. When the skin is broken the dead skin should be cut away under a stream of E.S.H., bathed for ten minutes in a 10% solution, and covered with a sheet of the special coated silk sealed at the edges with adhesive.

To deal with large burnt areas a suitable silk envelope, previously sterilized, is fitted. E.S.H. in the strength described is run through the envelope, washing all the affected area. The envelope is drained well and then inflated with oxygen, the inlets being sealed with adhesive tape or rubber-covered clips. Next day the irrigation routine begins: 5% E.S.H. is employed at 100° F., and is run through the envelope over the affected area for twenty minutes. This procedure is carried out three times a day, draining thoroughly for half an hour after the irrigation and then inflating with oxygen. A sheet of coated cotton is placed under the affected part to prevent wetting of the bedclothes, and the tube from the outlet is run into a basin, all this being explained in the directions for applying the envelopes.

In the case of hands the envelope may be filled with E.S.H. for the last ten minutes of irrigation to encourage the patient to move the fingers and wrist. A jet of E.S.H. from a Higginson syringe through the inlet opening may be used to remove sloughs and exudates.

In the case of third-degree burns of the hand and forearm an arm-bath is filled with E.S.H. solution up to a concentration of 20%. The more cleansing that has to be done the stronger should be the concentration. A jet from a Higginson syringe should be employed to scour-irrigate the limb, using the solution in the arm-bath. Dead skin should be removed almost to the margin of the burn. It should not

be removed right up to the edges, to its junction with normal skin, as this may result in subsequent pain. No scrubbing should be employed. Hosing with the Higginson syringe should be continued until spontaneous haemorrhage takes place and the burnt area becomes covered with a firm shiny fibrin coagulum. If profuse bleeding occurs no anxiety need be felt, since it has been found that it will cease spontaneously when the envelope is applied. Definite bleeding-points should be twisted or ligatured. Axillary depilation and nail-cleansing should be carried out.

The burned area is now covered with coated silk sheeting and dried outside this with sterile towels, the envelope being slipped into position over the limb and outside the sheeting. The latter is withdrawn from inside the envelope, the normal skin beneath the seal of the envelope is dried with aether meth., and the seal is closed. A small quantity of E.S.H. (of concentration previously described) is then run over the whole limb, the envelope is drained, oxygen is run in, and the inlets are sealed. Routine thrice-daily irrigation is now maintained for as long as necessary, as previously outlined.

These details apply equally to burns of the legs; but there are certain practical points of importance in addition so far as the legs are concerned. It is convenient to lay the patient on a length of coated cotton sheeting spread out on a table (e.g., an operating table), the sides of the sheeting being raised up by any suitable device. The lower end of the sheeting is formed into a trough leading to a receiver at the foot of the table. The table is slightly tilted to allow the fluid to run into the receiver. The whole of the affected area is then sprayed with E.S.H. of suitable concentration. The whole leg may be enclosed in an envelope, but if this is done care should be taken to see that the foot is thoroughly cleansed. In burns involving the upper thigh pubic depilation is necessary, and should there be no room between the perineum and the burn for the envelope to be sealed, then its use should not be attempted. Burns of this nature need treatment in a "perineal bath," which has proved of great value in the treatment of burns and wounds involving this area. Otherwise, primary third-degree leg burns are treated exactly as those of the hands and arms.

Secondary third-degree burns are those which have been subjected to treatment beyond that of mere first aid and which have failed to heal and have become infected. The technique of their treatment is similar to that of the primary type, but cleansing must be very thorough. When supuration is present under the tan the latter should be dissected away to the healthy margins. Any obviously necrotic subcutaneous tissue should also be removed. The dissection should be carried out under a stream of E.S.H. up to a 20% concentration, and a thorough scour-irrigation should be given for twenty minutes after the removal of the tan. The envelope is then applied and routine thrice-daily irrigation instituted as previously described. Healing usually proceeds rapidly in third-degree burns subjected to this treatment, and at the end of ten days, and sometimes earlier, any areas needing it can safely be skin-grafted.

Where the face and head are burnt, the initial cleansing is done in the normal manner, except that 10% E.S.H. is used. This is sprayed on through a vulcanite rose, with the patient bending his head over a wash-basin or bowl. If a patient cannot leave his bed he lies back with a silk sheet attached around his neck and beneath his head, forming a chute through the head of the bed into a pail. A cylindrical envelope which has slits for his eyes, mouth, and nostrils is then applied. In the two cases treated in this manner the patients have been free from pain, oedema of the eyelids has been reduced very rapidly, and the eyes have shown no signs of any irritation. Where necessary the eyes are washed with 1% E.S.H. solution, after which drops of sterile paraffin are inserted. Immediate skin-

grafting may be carried out in many cases or may be deferred for a few days to permit some granulation.

Burns of the limbs may be complicated by the presence of compound fractures. When this is the case it is suggested that treatment might be as described, and plaster or other splinting be applied outside the envelope. In some cases splinting is best fitted (if it is small) inside the envelope.

It has been noticed that most of the burns suffered by small children are extensive and are not capable of being treated in one or other of the limb envelopes. Small vests have been made for covering burns of the upper part of the body, and a nightgown of coated silk with hood has been fitted so that the whole of the child is enclosed, leaving sufficient length from the feet to form a trough over the end of the cot. Children can move freely in this, and are quite comfortable and free from pain. This device is very much in the experimental stage, however, but promises well.

(iii) Grafting

The envelope system of treatment has been successfully employed in the early preparation of an area for grafting. When a denuded area has progressed under treatment sufficiently to be ready for skin-grafting an irrigation is carried out and the envelope immediately removed. The whole area to be grafted is gently wiped over with gauze soaked in 1% E.S.H. Grafting is then carried out in the usual way. The skin-graft may be kept in position by a sheet of perforated coated silk stitched to the surrounding skin; a new envelope may now be applied, and after twenty-four hours have elapsed irrigation once daily with 1% E.S.H. can be resumed. In many cases the skin can be taken from the same limb and both areas healed in the one envelope. The system is not in any way meant to displace skin-grafting. It is left entirely to the surgeon in charge of the case to decide whether he will leave the area to epithelize or whether he will carry out an early graft. In any case, the use of the envelope will ensure the prevention of secondary infection.

(iv) Wounds and Lacerations

I have confined myself to the treatment of burns, but after watching the results of the treatment of various injuries and septic conditions by other workers have felt that the system will open up a new field of work in connexion with the problem of dealing with septic wounds—in fact, with most septic conditions. Various surgeons are using this method in treating septic fingers and infected tendon sheaths, cellulitis, osteomyelitis, varicose and trophic ulcerations, various types of dermatitis—in fact, all surgical cases in which non-traumatic cleansing, prevention of secondary infection, and early restoration of function are important. While the results from the closed-plaster method are excellent, the very fact that expert surgery and proper hospital accommodation are needed for success in this type of treatment prevents its use in most cases on active service, and it is here that the usefulness of the envelope system will be found.

About two hundred cases have now been treated by this method. Detailed below are five illustrative cases.

Case I

A man aged 64 was admitted on January 14, 1941, with phagedaena of the whole of the flexor surface of the left arm. He had grazed a knuckle two days before, and the arm had become painful and swollen. On examination the whole of the flexor surface of the arm had an appearance of one large sanguineous blister, and a vivid erythema was rapidly spreading over the shoulders and on to the face. The patient looked ill. Saline compresses and sulphapyridine were ordered, but without effect.

JOHN BUNYAN: TREATMENT OF BURNS BY THE ENVELOPE METHOD



FIG. 1

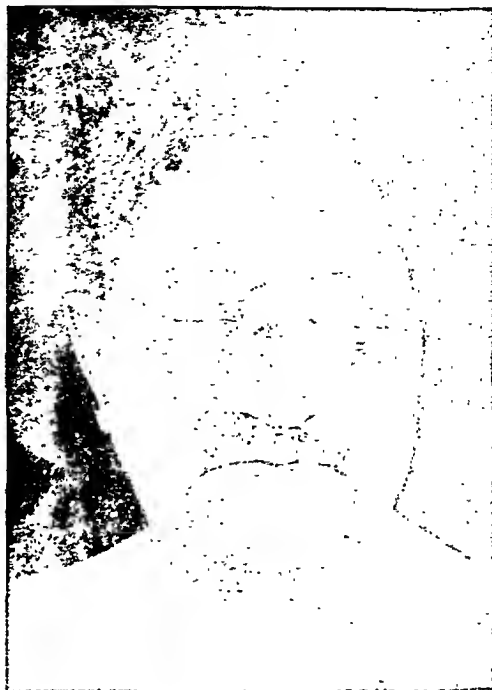


FIG. 2



FIG. 3

FIG. 1.—Tar burn, second degree. Slight areas of third degree.

FIG. 2.—After initial washing with 10% E.S.H. Oedema has started to subside; exudation has stopped. No pain. No anaesthetic.

FIG. 3.—After ten days.

FIG. 4.—Arm in full-length envelope; rubber band for use only during irrigation. Employed only as bath (instead of flow irrigation) where movement of injured fingers is required.



FIG. 4

JOHN BUNYAN: TREATMENT OF BURNS BY THE ENVELOPE METHOD



FIG. 5.—Severe third-degree burns of hands. Initial cleansing with 20% E.S.H.



FIG. 6.—After another month doing full household duties on farm. Absolutely full function.



FIG. 7.—Severe third-degree burn of child aged 4. Cleaned with 10% E.S.H. under analgesia. Note fibrin film.

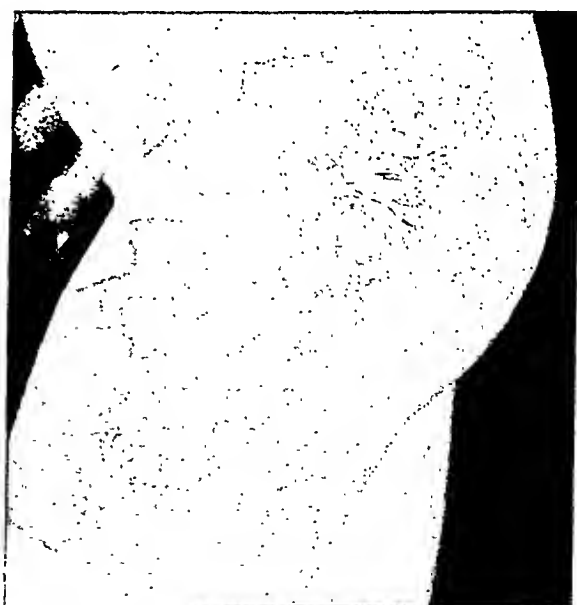


FIG. 8.—Eight weeks later: almost healed; skin very strong and supple. Discharged two days afterwards completely healed. Full movement of limb.

I was asked to see the case in the Radcliffe Infirmary, Oxford, by Mr. Abernethy, to whom I am indebted for permission to publish the record. The patient's arm was washed down for half an hour with 50% solution of E.S.H. and the arm fitted with an envelope. From the time of this irrigation the spread of infection was controlled, and within five days the whole of the skin and subcutaneous tissues had come away in one large slough, leaving the muscles and large blood vessels completely exposed. Daily irrigations of 10% E.S.H. were carried out, and in three weeks the whole of the area was covered with healthy bright red granulation. The patient was very well, was completely comfortable, and had almost free movement of his arm. A Thiersch graft was done on March 11 and the arm irrigated with 1% E.S.H. after twenty-four hours.—This graft took perfectly. Further grafts were carried out. By March 28 all the skin-grafts had taken and the whole area was healed. The man had full function of his arm, and the new skin was quite supple. He was discharged healed with free function on April 7, and when seen on April 29 the skin was found to be very good, with only slight scarring, but complete function.

Case II

A man aged 25, admitted January 13, 1941, suffering from deep second-degree burns of back and side of hand and wrist, due to petrol on sleeve catching alight. Total area, 105 sq. cm. He was not shocked or in obvious pain, but there was some oedema and stiffness. He had had no previous treatment.

Morphine 1/4 grain was given, and in the theatre the hand was immersed in 12 pints of 10% E.S.H. at 100° F. and washed down for twenty minutes. All loose skin was cut away to periphery of burn. Patient experienced no pain, merely describing sensation as "tingling." A full-arm envelope was then applied. Next day the patient was completely comfortable, and slept well without a sedative. All oedema had disappeared, and a shiny film covered the wound. Thrice-daily irrigations were carried out with 8% E.S.H., and there was extensive epithelization, especially at the wrist. On January 21 a slight irritation was observed at the wrist, and oil was added after the irrigations. On the 26th the hand was cleansed and a new envelope fitted owing to the clouding effect of the oil. All sign of irritation was removed on giving ascorbic acid, 50 mg. thrice daily. By February 9 epithelization was complete, and the hand had perfect function.

At no time had the patient experienced any pain. There was no dermatitis under the seal, and the slight irritation in one part of the arm disappeared on administering 50 mg. of ascorbic acid t.i.d.s.

Case III

A woman aged 42 discovered in 1938 that she had diabetes. She went into hospital in London and was stabilized on a low starch diet, without insulin. Her urine was free of sugar for two days before she was discharged, but it had never been tested since. Diet worked until evacuation 6 weeks previously, when she began to eat starchy foods occasionally. Her condition became worse, so under protest she came into hospital. During the day her right leg had been badly burned by a hot-water bottle.

She was admitted on March 11, 1941, in semi-coma and was given 50 units insulin subcutaneously and 50 grammes glucose, also 2 pints of water by mouth. The following day she appeared fit and sat up in bed; felt better; given 15 grammes glucose intravenously. Blister burns from hot-water bottle on back of thigh burst, and were dressed with tannafax. On the 21st the burn was in very bad state, and sloughs were forming.

Operation, March 22.—Area of burn from flexor surface of knee extending upwards seven inches; two inches across top and five inches across at knee. The whole skin sloughed away under irrigation with 10 pints 10% E.S.H. at 100° F., and the area began to bleed. There was suppuration into the fat. Edges of wound were ragged. By the time the envelope was fitted haemorrhage had ceased.

Two swabs were taken of burn before irrigation, with the following results. 1 (a), Gram film: numerous pus cells, few Gram-positive cocci. (b), Culture: haemolytic streptococci, *Staph. aureus*, diptheroids. 2 (a), Gram film: few pus cells, few Gram-positive cocci. (b), Culture: haemolytic streptococci, *Staph. aureus*, diptheroids. The burned area filled with granulations in seven days, and was completely epithelized in three weeks. The patient was discharged healed, with good skin, on April 30. When seen on May 7 the skin was becoming pinker, and was quite supple and fine. She states that at no time did she experience any pain from the irrigations or any discomfort, either day or night.

Case IV

A man aged 26, admitted January 29, 1941, with petrol burn of palmar surface of wrist and hand, and two small areas on each side of dorsal surface of hand—second degree. Morphine 1/4 grain was given intravenously, and the hand was washed down for twenty minutes with 20% E.S.H., finishing with 10%, for eight minutes. All blistered skin was excised. Patient did not complain of any pain, merely remarking that it was "tingling." After five minutes of washing the capillaries dilated and soon burst, but the slight haemorrhage persisted for only five minutes. The whole area became covered with a shiny fibrinous film. A hand envelope was fitted, and was inflated with oxygen.

The next day two washings with 5% E.S.H. were carried out, and the patient was discharged for daily treatment as an out-patient. The hand was irrigated with 5% E.S.H. each day, and epithelization was rapid. On February 10 the envelope was removed, and all areas were found to be covered with a pink cuticle. The hand was quite painless to touch and full movement was possible. The patient was discharged to return to work in a few days. He reported on February 20 having been employed as a bricklayer for a week. The epithelium had cornified owing to the hard work, and local and general conditions were excellent.

This case shows that the method may be used successfully in the out-patient department.

Case V

On January 27, 1941 the patient, a woman aged 25 was cleaning the grate and turned round to tie up one of her children's shoe-laces, when the back of her dress caught fire. She unsuccessfully tried to tear off the dress, thus burning her hands, and then plunged herself into a bath which happened to be full of water. The vicar's wife applied dressings of bicarbonate of soda, and the doctor was called in. At 1 p.m. she was brought into the Radcliffe Infirmary.

Examination showed extensive burns of the second degree from scapulae to scrum, involving the right buttock; and of both hands, of second and third degree, extending over wrist and lower right forearm. At 1.10 p.m. morphine 1/4 grain was given, and at 2.50 p.m., in the theatre, the burns were irrigated with 10% E.S.H., all blisters and dead skin being removed. The left hand was immersed in 10% E.S.H., and some of the blisters were opened. The patient was encased in a coated silk envelope and the left hand in a hand envelope. She was returned to the ward and placed in a hot-box. At 7 p.m. the right hand was immersed in 10% E.S.H. and at 8.15 p.m. an envelope was applied.

The patient passed a comparatively good night, and next morning cleansing of the hands was attempted in the ward, but the burns proved to be too extensive. At 4.55 p.m. on the 28th blisters were removed in the theatre under gas-and-oxygen. Burns of the palmar surface were partially third degree. Hands were soaked in 10% E.S.H., and the envelopes reapplied. At 8 p.m. 1/3 grain of omnopon was given.

January 29.—Tolerable night. All three envelopes were irrigated with 5% E.S.H. and dried with oxygen.

January 30.—In theatre envelopes were removed. Back was washed with 5% E.S.H., and a new envelope enclosing the trunk and arms was applied. Movement of hands quite good.

January 31.—Envelope irrigated twice with 5% E.S.H. Sulphapyridine given.

February 1.—Patient, not so well to-day. Complained of "stinging" on back. Arms irrigated 5% E.S.H. t.i.d. (An experiment was being carried out to determine whether the healing in the envelope method is due to the mere fact of isolating the part from secondary infection and from any irritation, or whether the E.S.H. is associated with the envelope in healing.) Patient's hands are being irrigated in the normal manner thrice daily, but the back is left untouched.

February 5.—Hands and arms irrigated with 5% E.S.H. t.i.d. Movement free.

February 7.—Hands and arms irrigated with 5% E.S.H. t.i.d. Back is covered with thick yellow exudate, which gives off a fetid odour. Where the exudate has run away from the burnt area healing has proceeded rapidly, but where the exudate has collected in the small of the back the granulations are unhealthy and healing is delayed. In the theatre the back was washed with 10% E.S.H. and all exudate removed. The whole was covered with a coated silk sheet.

February 8.—Back much cleaner, but still slightly painful when irrigated with 5%.

February 11.—Back is epithelizing well. Right hand has been removed from the envelope, and has perfect function.

February 13.—Bath given in coated silk. Right hand now quite well.

February 17.—Patient walked to bathroom and lay in E.S.H. bath for twenty-five minutes. Her back is almost healed, and feels "wonderfully comfortable." She is able to lie on the area, and moves quite freely.

February 18.—Patient walked to bathroom for her E.S.H. bath. Both hands are completely healed and have perfect function. There is no pain at all. The back has one small area on the lumbar region which has not healed over.

February 20.—Washings in bathroom are continued. Patient is happy and contented. There is still a small area on the back not healed.

February 28.—Patient discharged with hands perfectly healed, but one small area on the back not yet epithelized. She was given some E.S.H., with instructions how to use it on this small patch.

April 8.—Patient seen as out-patient. She uses her hands for heavy household duties, including the washing of clothes. The new skin on her hands is not shiny or tense, as in the case of treatment under tan, but is supple and allows free movement of all parts of the limb. There are no signs of scarring. Her back is quite healed, but the areas which were slowest in epithelizing are slightly raised. She can bend down and touch her toes quite easily, and is very well.

Clinical Progress

The preliminary irrigation rapidly cleans the whole area of the burn or wound. In many cases there is considerable capillary dilatation and transudation with spontaneous haemorrhage, which stops very quickly with the production of a shining fibrin coagulum; the patient feels little or no pain during the irrigation, and is almost always comfortable afterwards. Soreness may persist for a few hours in some cases of secondary burns. Oedema is often visibly reduced during the washing, and the patient may remark on the loosening-up of an affected limb. Excessive exudation tends to cease at the end of the washing. No signs of aggravation of primary shock have been seen. Tissue and bacterial toxæmia are favourably controlled, provided that the burn or wound has been adequately cleansed and all dead material removed. The latter is softened by irrigation, its adequate removal being thereby much eased.

So far as the daily irrigation through the envelope is concerned the patients remain comfortable and can lie on the burnt area with ease. They usually look forward to the irrigation, which they describe as soothing. In most cases temperature and pulse quickly settle and the burn or wound heals rapidly. Movement is encouraged, since it is certain that skin grown on a functioning joint is more likely to withstand use than skin grown on an immobile limb. Patients with burnt hands are made to use them as soon as possible from the time of the application of the envelope. They are encouraged to use a knife and fork and to grasp objects.

The morale of the patients is high and confidence is gained from the start; one never sees the frightened staring appearance so often associated with burns. Some apprehensive patients may describe the irrigation as giving a "tingling" or "pricking" sensation. This is never really unpleasant, and has usually disappeared after the first two irrigations. Secondary burns are more sensitive than primary ones. When epithelization is slow, short-wave therapy may accelerate it.

It has been found that the new skin grown over damaged areas as in third-degree burns is of sound and well-vascularized quality, though perhaps there have not yet been enough cases over a sufficient period of time to form final conclusions on this point.

It has been said before that the primary aim of this treatment is the control of infection. It has never yet been possible to sterilize a wound or the inside of an envelope, but from the clinical signs, and from the fact that the burns heal, it seems that the infection has been adequately controlled. There are some who would even go so far as to say

that a sterile wound is probably not desirable. Be that as it may, normal healing has been obtained in ten days by this method, and yet bacteria could be grown in the envelope. It must be said, however, that the numbers of bacteria are very small, and in some cases growth is difficult.

Results of Treatment Analysed

The following are the results of treatment of specific parts of the body.

Hand Burns.—In six cases treated by me relief of pain was immediate. The patients were encouraged to use their hands as much as possible, with the result that in all cases full function, with complete healing, was obtained within three weeks. Second-degree burns were healed, with full function, in ten days. In those cases in which it has been possible to follow up the results it is noteworthy that the new skin is quite free from scarring and is standing up to hard work. There is no sign of contraction.

Burns involving Joints.—Because full function is encouraged and obtained in every case, the new skin is grown to a fully flexed joint and is therefore not stretched at full flexion. Consequently there has been no breakdown of skin on a joint. In one case in which the joints were opened by the burn the hand was healed and is a satisfactory functioning member.

Face Burns.—In the few cases treated oedema of face and eyelids has been reduced completely within twenty-four hours and healing has progressed without interruption. There has been no sign of scarring or of involvement of the eyes or eyelids.

Body Burns.—Various areas of the body have been successfully treated in a vest, a "perineal bath," or a "full casualty bath."

Burns of the Perineum, Buttocks, and Upper Thigh.—The use of the perineal bath has given complete comfort to the patient and made the dressing very much easier than normally in this region. There has been no ascending infection of the urinary tract, and with the exception of one extremely severe burn of a quarter of the body surface, no infection from the urine or faeces. In the one case infection from pyocyaneus occurred, but this was rapidly controlled.

Combined Burns and Fractures.—No case of combined burn and fracture has been treated, but from the experience gained in the treatment of compound fractures by this method it is quite certain that the problem can be solved by applying the necessary splinting outside or inside the envelope, whichever is desired.

Electrical Burns.—Uniformly good results have been obtained in the cases treated, resulting in full function within three weeks.

Chemical Burns.—One case of severe chemical burns has been treated under my direction at a military hospital.

A soldier was accidentally burned by mustard gas on both buttocks, involving the perineum, scrotum, penis, and anus. After ten days I was asked to treat the case. The patient had a thorough washing down with 20% E.S.H., the dead skin was removed, and a perineal bath was fitted. He was irrigated three times daily, and at the end of three weeks was discharged healed, and able to touch his toes without bending his knees.

Dermatitis.—There have been isolated cases of slight irritation of the skin. By changing the envelope and washing it before refitting, by lowering the concentration of the solution, and in one case by the administration of ascorbic acid, the trouble has always cleared up. It is rare to find the slightest irritation beneath the seal.

Chemotherapy.—It would appear that the sulphonamide type of bacteriostatic agent works at its best when dead organic matter is not present. An initial cleansing of the area to be treated with E.S.H. solution enhances the value of these agents. It may be that in a very septic case a

combination of the two types of treatment will be most successful. At present sulphanilamide is being tried out in the envelopes; hypochlorite is used to wash away exudate, and the envelope to prevent secondary infection.

Active Service.—The treating of burns and wounds with an envelope and sodium hypochlorite irrigation was devised as a simple method suitable for use under active service conditions—for example, in field ambulance, dressing station, or in the sick bay of a man-of-war. Its small bulk, its ease of application, and the fact that hypochlorites may be obtained anywhere should make it a most useful addition to modern surgery in warfare.

Conclusions

We feel justified in making claims with some certainty on several points, chief of which are: pain is relieved; primary infection is controlled, secondary infection prevented, and function restored at the earliest possible moment; primary shock is not aggravated, and secondary shock is minimized.

It is a system of treatment which will produce satisfactory results when used in small hospitals without specialist training, in ships, and in fact wherever the simple needs of the system are met. The catastrophes seen heretofore cannot occur when this method is used.

Future developments are in the orthopaedic field, in industrial accidents—in which immediate rehabilitation is so important—and in all branches of war surgery. Numerous varieties of treatment are possible, and many methods which were sound in conception but failed because of secondary infection may now be tried with an envelope, with the assurance that this problem will not arise.

Summary

Investigations into an improved form of dressing for burns and wounds are described.

The reasons for considering electrolytic sodium hypochlorite to be the best antiseptic to use are outlined.

The method of irrigating burns and wounds with this antiseptic, and dressing with coated silk envelopes which do not need daily changing and which shield raw areas from exposure to air and secondary infection, is described.

Burns and wounds covered with coated silk envelopes and irrigated with the appropriate concentration of sodium hypochlorite solution heal rapidly and painlessly, with the maximum preservation of function. The disadvantage of the painful daily changing of dressings is eliminated.

The envelope dressing can be combined with plastering or splinting in cases of fracture, and ulcerations of all kinds may be treated with advantage.

Five of the 200 cases treated by this method are described in detail.

Results are given of the treatment of burns on various parts of the body.

The advantages of this method of dressing for use during active service are emphasized.

I have to acknowledge my gratitude to Surgeon Rear-Admiral Cecil P. G. Wakeley, Mr. Vaughan Hudson, F.R.C.S., Mr. R. V. Hannay, F.R.C.S., Dr. Bruce Pearson, Prof. Hugh Cairns, F.R.C.S., the staff and sisters and nurses of the Radcliffe Infirmary, Oxford, and to all those who have so kindly helped and encouraged me in these investigations. Especially, I have to put on record my appreciation of the way in which Mr. Wm. Stannard has co-operated with me in the development of the envelope system.

M.M. Montgomery and J. D. Kirshbaum (*Arch. intern. Med.*, 1941, 67, 609) illustrate the rarity of anastomotic jejunal ulcer occurring after gastro-jejunostomy alone or combined with gastric resection by the fact that they could find only eight cases among 13,000 consecutive necropsies performed at the Cook County Hospital from 1929 to 1940. All the patients were white men and their average age was 49. Perforation and haemorrhage were frequent causes of death. The interval between operation for the original peptic ulcer and death varied from six weeks to twenty-one years, the average being eleven and four-tenths years.

WOUNDS AND BURNS TREATED BY COATED SILK FABRIC

A REPORT UPON AND CONCLUSIONS DRAWN FROM THE TREATMENT OF 82 CASES

BY

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On November 6, 1940, Bunyan and Stannard reported a case in which a large infected burn of the thorax and abdomen in a child was successfully treated in an occlusive envelope by immersion in and irrigations with electrolytic sodium hypochlorite. The envelope was manufactured by Stannard, and the electrolytic sodium hypochlorite was the proprietary preparation "milton" fluid, stabilized to 1% of sodium hypochlorite. The method seemed worthy of trial and capable of extension to wounds. Investigation was started in November, 1940, upon two main lines:

1. The use of coated silk fabric as (a) a fashioned dressing in the form of an envelope, and (b) an unfashioned dressing in the form of sheeting.

2. The clinical uses and properties of (a) electrolytic sodium hypochlorite, and (b) the sulphonamide group in conjunction with this special fabric.

In all, 82 cases were chosen because they showed ulceration in some form or another, or ulceration and infection. In a certain number the method was used because all other treatments had failed to relieve pain or to heal the wound, and one was at a loss to know how to proceed. The patients were treated at the Middlesex Hospital and the E.M.S. hospital to which I am attached. Although improvement in technique is continuing to be effected, it is felt that it is not too early to evaluate the results for the benefit of other general surgeons. In addition, there has been obtained a standard that enables us to contrast the quality of other substances. The following is a classification of the 60 cases whose treatment has been completed, 22 further cases being still under treatment:

1. Burns, primary and secondary.
2. Ulcers and gangrene.
3. Severe lacerating wounds, including compound fractures.
4. Acute pyogenic lesions.

Strict attention was paid to the treatment of shock, the use of prophylactic sulphanilamide compounds, surgical toilet, and constitutional and rehabilitation therapy when indicated.

Method of Treatment

In many cases the application of the envelope or sheeting, and in all cases the treatment, have been conducted by the nurses and dressers, who have also taught some of the patients to treat themselves. The envelopes were used as an occlusive or inoclusive dressing. The occlusive dressing was fixed to the intact skin of the patient by means of the seal incorporated in the envelope and reinforced by a light turn of the strapping; the inoclusive dressing by the removal of the seal, and the maintenance of the position by a light turn of the bandage, enabling the envelope to be removed at will for treatment or sterilization. The occlusive method provides the best means yet devised for minimizing the conduction and conveyance of infection, provided that the wound and the inside of the

envelope are kept clean and dry, using a bactericidal or bacteriostatic agent of non-irritant properties. Sheeting was cut to the required shape and used as a pre- and post-operative dressing, or during the operative procedure. As a dressing it was lightly strapped or fixed with mastisol to the intact skin or laid upon the wound and maintained with a minimum of dressings, care being taken to provide a redundancy of fabric, enabling free drainage and tissue "breathing space." In this way it was found of value in primarily sutured wounds, as a covering for raw tender areas, and as a protection of the skin around colostomies and fistulae. In the theatre it was successfully used for "towelling off" operation sites, to protect abdominal swabs, and for the drainage or light packing of large wound cavities—in fact, it was employed wherever bandages and dressings could justifiably be avoided or minimized, and in

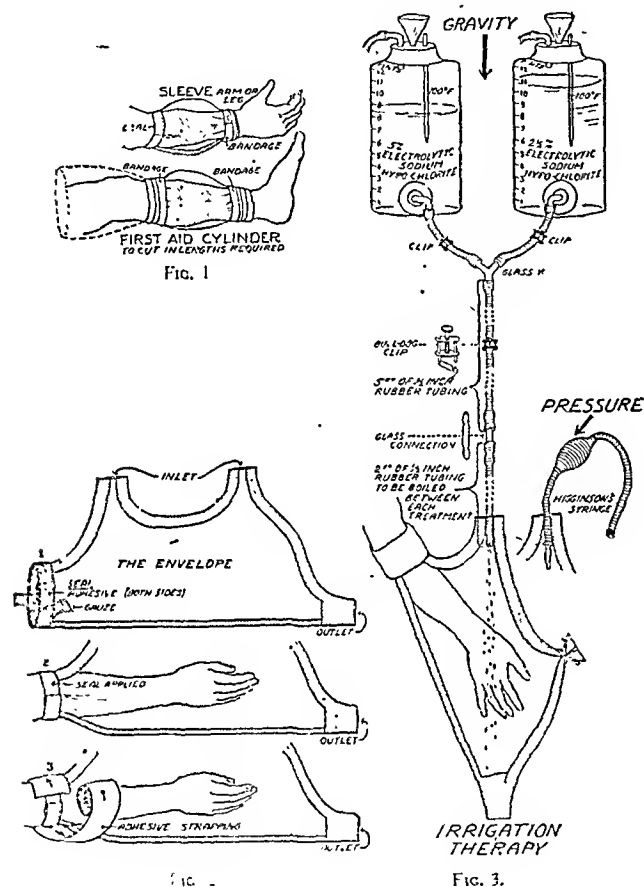
an irrigation room. For a few cases gravity irrigation can be dispensed with and pressure irrigation substituted by means of a Higginson syringe and a tube leading to a suitable container. By these methods the average life of the occlusive envelope was three weeks, and the sheeting lasted many weeks, provided it was washed with soap and water and boiled for the adequate period of two to three minutes only. At the termination of each irrigation the envelope and the wound were dried by postural drainage or suction, oxygen being blown through the envelope to complete the process. The sulphonamide compounds consisted of 20% sulphanilamide or sulphathiazole in a mineral base or as a powder. The employment of these compounds by mouth or parenterally was adopted in all cases in which their use as a prophylactic measure was rendered advisable by the probability of infection. Locally they were introduced in all primarily sutured wounds and applied to certain open wounds. The frequent occurrence of *Staph. aureus* suggested the use of sulphathiazole or a similar compound. Previous work and clinical experience appear to confirm that the efficiency of chemotherapy depends upon free access to normal tissue and to the invading organisms: it does not prevent infection in irregular deep wounds or those containing debris and dead tissue. Its local action is relatively evanescent. A clean wound and frequent reapplication therefore are necessary, and its use was confined to wounds cleansed or kept clean by irrigation. An emulsion or mixture in a mineral base was particularly suitable for the face, where powder imparts a feeling of stiffness and discomfort.

Burns

The total number of cases was 27—primary, 12; secondary, 15. The so-called toxæmia of burns has not occurred; on the contrary, in secondary burns it has been abated.

Primary Burns.—The patient was considered to have a primary burn if he was received within a few hours without having had previous treatment of any duration. Toilet was as gentle as possible, no rough handling or scrubbing being permitted. In certain cases the toilet was by preliminary immersion or irrigation without anaesthesia. Blisters were removed; if they arose subsequently they were dealt with by sterilized scissors through one of the inlets of the envelope. The relief of pain was remarkable, and the average healing time, with full function, was eight to ten days in superficial burns and twenty-one days when focal areas of deeper burns were present. Superficial burns of the face were treated by sulphanilamide or sulphathiazole cream, reapplied morning and evening. If crusts formed they were irrigated away by means of electrolytic sodium hypochlorite before the application of each treatment. A simple face mask was cut from the sheeting and used for the first day or two of the treatment; beyond this the area was left exposed to the air. These results were very satisfactory, pain being slight and cosmesis excellent. The average healing time was six to eight days. Here are two illustrative cases:

Ambulatory Case.—A man aged 38 was admitted on May 11, 1941, with a severe burn of his left hand, which showed large areas of blistering and several areas with complete loss of epithelium. Both dorsal and palmar surfaces were involved, and the burns extended into the web between thumb and index finger and into the webs between the other fingers. The burn was caused when dealing with a burning tarpaulin, the lighted tar from which had dropped on the hand. The blisters were removed and an envelope was applied, irrigations with 5% electrolytic sodium hypochlorite being carried out three times a day. The patient was advised to use his hand, and to put his thumb and fingers through a full range of movement at least once a day. After twenty-four hours he attended as an out-patient for his irrigations. Pain, a prominent feature before irrigations were started, disappeared, and did not return.



place of rubber tissue; thus one easily sterilizable substance acted as an efficient substitute for several kinds of surgical equipment.

The irrigation, its duration and frequency, depended upon the area of the wound and its cleanliness. In clean wounds the minimum number of irrigations was two, morning and evening, and with dirty wounds at least three during the twenty-four hours. The average duration of the irrigation was ten minutes, and the temperature a constant 100° F. The strength of the solution was 5% of the 1% stable electrolytic sodium hypochlorite in tap-water; this strength was reduced to 2½% if the patient showed discomfort or a dermatitis, and as a routine when the wound became clean. The treatment was continued until the wound was healed or ready for primary suture or skin grafting.

In dealing with a number of cases it is essential to provide the nursing staff with suitably large containers, placed at a convenient height on a wagon, or to establish

After five days the burn was practically healed in its entirety, and the patient's only complaint was that a small puncture had been caused in the envelope while he was unloading some heavy barrels from a brewer's dray! On May 20, nine days after the start of the treatment, the envelope was removed, complete healing having taken place in spite of full work, and the final result is a hand whose function is every bit as good as before the accident.

Air-raid Casualty, complicated by Penetrating Wounds.—A woman aged 29 was admitted during the night in an intense air raid, suffering from severe shock. Blood pressure 80/40. She was unable to speak and semi-comatose, was filthy dirty, and had extensive first-degree and second-degree burns of the whole face, neck, and upper part of the chest, the whole of the right arm and hand, the right leg and thigh, and the left leg. In addition there was a foreign body and an open wound in the left arm and left leg. A plasma drip infusion was given, and after the second bottle the blood pressure was improving and the patient's general condition became more satisfactory. Clothing was carefully removed without disturbing the patient, who was nursed on a bed placed on high blocks. An envelope was applied to the right arm, the right leg, and the left leg. These envelopes were slowly filled with a 10% solution of electrolytic sodium hypochlorite by means of a tube attached to a tap tied into the drainage inlet, the remainder of the inlets being tied off. The face was gently cleaned up and covered lightly with sulphanilamide cream. The left arm was covered with a sterile towel. After half an hour's soaking the filthy residual fluid was drained off by means of a tap and rubber tube introduced into the uppermost inlet drainage site. The envelopes were filled once again with a 10% solution. About four hours after admission the patient was fit enough to be transferred to the theatre, where she was given an anaesthetic—nasal gas-and-oxygen—and pentothal into the drip, which was still running. The metallic foreign body was removed from the left arm; the wound in the left thigh was excised and decompressed, there being extensive muscle damage, but the foreign body proved to be inaccessible. The right arm was left in the original envelope. The right leg envelope was changed without cleaning up the leg; but the left envelope had to be removed in order to enable us to excise the wound, and the limb was replaced in a clean envelope. The left arm, after the removal of the foreign body, was cleaned up and then covered with sulphanilamide cream and bandaged with gauze and wool. In the early hours of the next morning oedema of the face was pronounced and the eyes were completely closed. The patient's general condition slowly improved, but it was not until the fourth post-operative day that her mentality was normal. Throughout the whole period she complained of severe and persistent pain over the left side of her thorax, and on one or two occasions coughed up some black sputum. Although the radiographs of her chest were negative, the physical signs and diagnosis pointed to a localized blast area of the lung. The envelopes were irrigated three times a day with 5% electrolytic sodium hypochlorite, and after a light toilet the sulphanilamide cream was changed twice daily, the face and chest being covered by a mask of coated silk; this mask was replaced by a clean sterilized "fellow" at each change of the dressing. About the sixth day she complained of discomfort in the left arm. The bandages and gauze were removed, and it was found that her discomfort was mainly due to the fact that the dressing had become adherent to the multiple sites of the burn. This dressing was replaced by sulphanilamide cream and a coated silk sheeting, lightly bandaged in position, without any gauze and wool. Thereafter she was quite comfortable. It was noteworthy that this arm was swollen and oedematous until the dressing had been changed; but, on the other hand, the oedema of the face had completely resolved by the fourth morning, and at that time there was no oedema of the limbs treated in the envelopes. Throughout the period, movement of the limbs in the envelopes was free and painless, and the patient required only one dose of morphine. The temperature never rose above 99° for the first three days and subsequently was normal. Twenty days after admission all wounds and burns had healed and full function was present. It must be stated that, although the parts injured were very extensive, there were multiple localized areas under the extremities, but the face, neck, and chest consisted of one large superficial burn. With the exception of a few focal points the burns could be described as of first and second degree. As is usual, up to the third and fourth day blisters tended to make their appearance, and were removed, without interfering with the envelopes, through a convenient inlet hole made with sterilized scissors. Two wounds, which necessitated wide surgical exposure down to the bone, healed by primary union. So far the cosmetic appearance is excellent.

Secondary Burns.—Patients admitted some days or weeks after receipt of the burn were regarded as secondary cases,

the burn being complicated by infective ulceration. These were cases in which the use of tannic acid, sulphanilamide and tulle gras, saline dressings and flavine dressings, among other treatments, met with failure. All were heavily infected, usually with the triad *St. haemolyticus*, *Staph. aureus*, and *B. coli*, and suffered from pain and toxæmia. Either with or without an anaesthetic, according to the condition of the patient, initial treatment with a long irrigation of 5%, increasing to 10%, was used to clean up the wound and remove debris and pus. A suitable envelope was applied and irrigation treatment given. The length of time taken to clean up the wound was a matter of a few days only, and it was interesting to note that during treatment intact islets of epithelium began to appear, as survivals of the original burn and the infective ulceration caused by the previous treatment. The average length of time taken to heal the wound depended on the area and whether grafting was employed or not. The following are two illustrative cases:

A woman aged 20 was treated as an out-patient in a casualty department who had achieved success in minor superficial burns by the use of sulphanilamide cream and tulle gras. She had a large superficial burn complicated by an unsuspected deep burn. Ten days after her injury she was admitted with pyrexia, pain, oedema, and infection originating in the coagulated debris of the deep burn, 4½ in. by 3 in., on the extensor surface of the forearm. A rapid relief of symptoms was obtained by the use of the envelope and irrigations. Healing took place in forty-two days. Skin grafting could have been employed at an earlier date, and would have considerably shortened her convalescence. It should be noted that sulphanilamide did not prevent the area of necrotic tissue from becoming infected.

A man aged 73 was admitted three weeks after a fall into a fire. He was ill, pyrexial, and had a cough and bronchitis. The burnt area extended over half the dorsum of the thorax and the whole of the upper arm, reaching below the elbow-joint. This was covered by a suppurating mass of tannic acid and silver nitrate coagulum, containing *Staph. aureus*, *coliform* bacilli, and diphtheroid organisms. Suitable sheets of coated silk fabric were used as a dressing and to protect the bed during irrigations. Irrigations were started three times a day with 5% electrolytic sodium hypochlorite. After each irrigation sheets of coated silk fabric were laid over the raw area. The improvement in the general condition and the relief from pain were remarkable. In two days the whole of the coagulum and slough had been irrigated away. Five days after beginning treatment a "vest envelope" was fitted. The patient lay or slept on his back and needed only a ward jacket over the vest when sitting up in bed or in a chair. Gradual healing proceeded; the vest was removed and tulle gras and sulphanilamide dressing were instituted. In five days lysis of a considerable area of new epithelium had occurred. A new vest was fitted, and again epithelization proceeded apace. It is now seventeen weeks since the beginning of treatment, and only two small areas remain to be healed. The age of the patient and the bronchitis precluded saline bath treatment; but the bath, in the shape of a vest, was most successfully brought to the patient, permitting painless treatment and ambulation, and resulting in spontaneous healing of a vast area. Had the patient been younger, skin grafting, done at an earlier stage, would have shortened treatment and obviated a degree of contracture at the elbow-joint and posterior axillary fold.

• Ulcers and Gangrene

The total number of cases was twenty-six. These consisted of 14 varicose ulcers, 5 traumatic ulcers, 2 varicose ulcers and syphilis, 1 chronic infected olecranon bursitis, 1 radio necrotic ulcer, 1 Meleney's ulcer, 2 Buerger's disease.

With the exception of the Meleney's ulcer, which was unaffected by treatment, all were benefited. Surprisingly, a tabetic patient with a perforated ulcer of the foot, uncomplicated by an osseous lesion but complicated by cellulitis, was healed in three weeks. The 2 cases of Buerger's disease were treated as a preliminary to surgery. The 14 cases of varicose ulcer are worthy of mention. They consisted of patients admitted for ligation and injection

treatment, and formed a group which had had every known method of treatment, the envelope being used as the sole remaining measure. These patients certainly were kept from their work, but particular attention was not paid to resting them in bed. They were allowed to get up and sit or walk in the ward. In those cases in which the bacteriology was investigated the usual organisms were again the triad *Str. haemolyticus*, *Staph. aureus*, and *B. coli*. These ulcers are notorious for their tendency to break down again even after firm healing, and this may occur in our cases; but the rapid freedom from pain and the sound though slow healing of the ulcers made the treatment worth while. The following is a representative case:

A woman aged 88 had for thirteen years suffered severe pain and disability from a varicose ulcer, 1 in. by 1 in., situated immediately above the right external malleolus of the fibula. It was completely resistant to all previous forms of treatment. A fixed talipes equinus deformity was present, due to this ulcer. She was admitted, was fitted with an occlusive envelope, and was given irrigations of 5% electrolytic sodium hypochlorite thrice daily; these were later reduced to 2½% twice daily. In three weeks the ulcer was soundly healed. The train and bus fares to the out-patient department, the dressings, remedies, and medicines had cost her, and hospitals, many pounds a year.

Severe Lacerating Wounds, including Compound Fractures

The total number of cases was 15: 10 severe lacerating wounds, 5 compound fractures.

In primary clean cases with loss of substance the wound after surgical toilet was treated in an occlusive envelope, resulting in return of function and avoidance of infection. In certain cases of mutilating injuries with ingrained oil and dirt, amputation was avoided and some function preserved by this method. In infected compound fractures with loss of substance, deodorization and practical disinfection, with healing and union, were brought about. Where traction was necessary the apparatus was placed either inside or outside the envelope. If traction apparatus is placed within the envelope the pins or wires must be of stainless steel or "staybrite," as the great disadvantage of sodium hypochlorite is the destructive action upon unprotected silk and metals.

A man aged 67 was admitted two months after sustaining a compound fracture of the mid-shaft of tibia and fibula, treated by unpadded plaster casts with light packing of the wound and a Steinmann pin through the os calcis. The patient was ill and pyrexial, the plaster dripping pus containing *Str. haemolyticus*—a menace to other patients and medical personnel. The odour was indescribable. Under light anaesthesia the plaster was removed and cultures taken, revealing haemolytic streptococci. The leg was flail at the fracture and up to the knee-joint it was covered with superficial ulcers and pus, the ivory-white dead ends of the tibia protruded through a large ventral ulcer, and posteriorly a large ulcer led to the fibular fragment. The whole area was irrigated for twenty minutes with 10% electrolytic sodium hypochlorite, a sleeve envelope fitted with a ventral opening for irrigation and a dorsal for drainage, and the patient put up in a Hodgen splint. The odour disappeared immediately; comfort was established and treatment was rendered easy. Three times daily the wound was irrigated. The posterior ulcer healed quickly, and the ventral ulcer healed save for an area of one square centimetre where a portion of the tibia is sequestering. The extension has been removed as union is starting, and is firm enough to permit a light Cramer wire padded splint, enabling the patient to sit in a chair. It is now eleven weeks since treatment was begun.

Acute Pyogenic Lesions

The total number of cases was 14: 8 were infections of the hand, 2 cellulitis of limbs, 2 bursitis, and 2 Brodie's abscess of bone.

The cure of suppuration of the hands and fingers, the legs and feet, has long been a matter of difficulty; consequently we made a trial of the envelope method in the

treatment of this condition. The results were determined entirely according to whether free drainage had been instituted and every pocket opened up at the time of the surgical procedure. Provided this had been done, the results were good—better than those of the old-fashioned saline baths or fomentations, as maceration and oedema did not occur. If the drainage provided was not adequate the slight drying action of the electrolytic sodium hypochlorite tended to heal and close the superficial edge of the wound, enabling pockets of pus to collect, necessitating further drainage. Careful watch must be maintained to ensure free drainage and adequate irrigation or immersion, the envelope being removed if pain and oedema are not abating and the area thoroughly examined.

A man aged 31 was admitted six days after a small cut with a knife. There was a suppurative tenosynovitis of the middle finger of the left hand and lumbrical spaces. Under anaesthesia surgical drainage was instituted. The organism cultured was *Str. haemolyticus*. An envelope was fitted in the theatre, and irrigations were given thrice daily with 5% electrolytic sodium hypochlorite. Fourteen days later a small residual abscess in a lumbrical space was opened; healing and return of function proceeded. The wound had healed five weeks after operation, but function is limited, though improving.

In the acute stages of infection chemotherapy was not neglected and the greatest care was exercised in starting movement. Movements that the patient could voluntarily perform were permitted, but only when drainage was perfect and the signs and symptoms of acute infection had subsided. Too early an attempt at rehabilitation may lead to disastrous invasion of organisms, locally and into the blood stream.

Pain

Irrigation can be made painful if exposed nerve endings are traumatized by the force of the stream. The wound must be watched, and the fluid should be allowed to run over a sensitive area and not directed upon sensitive focal points. The abolition of pain is the function of medicine and the patient's criterion of successful treatment. The relief of pain from the use of this method has been remarkable, and has helped in the reconstitution and rehabilitation of the patient.

A woman aged 29 was suffering from a residual deep burn of a large area over the left ankle-joint of two months' duration, with persistent infection due to a combination of tannic acid and plaster treatment. All methods, including saline, tulle gras, and chemotherapy, had failed. Persistent pain necessitated sedatives. Spasm of the whole limb-girdle was present, with consequent slight movement of the hip-joint, less at the knee-joint, and absence at the ankle-joint. An envelope was applied eight weeks after the injury and irrigations with electrolytic sodium hypochlorite begun. After forty-eight hours spasm of the limb-girdle had disappeared. No sedatives were required. In eight weeks the area was healed, with full function of the ankle-joint. During treatment the patient became ambulatory, regularly visiting the cinema wearing the envelope.

Function and Rehabilitation.

The importance of early rehabilitation of the patient cannot be over-emphasized. Below are three cases which illustrate this point.

Ten days after a resection of bone for a chronic staphylococcal Brodie's abscess of the upper end of the humerus in a youth aged 17, the vaselined pack was irrigated away with 10% electrolytic sodium hypochlorite under evipan anaesthesia and an envelope was fitted to the shoulder-girdle. The patient was permitted full movement, and to be up fully dressed, wearing his clothes over the envelope. He shopped and visited the cinema in his usual attire.

A man aged 55 had severe pain due to an irregular varicose ulcer situated over the external malleolus of the left foot; this was resistant to all forms of out-patient treatment over a period of six years. He was unwilling to come into hospital, but lived near enough to undergo ambulatory treatment. An envelope was applied, and he voluntarily attended the irrigation room three times daily as an out-patient, and continued to do

so because, twenty-four hours after the first treatment, his pain had been relieved. He was taught by the nursing staff to administer his own treatment, and attended until, in sixteen days, the ulcer was completely healed.

A woman aged 41 sustained a severe penetrating wound of the left leg from a bomb splinter. The injury involved all compartments of the mid-lower leg, ruptured the anterior tibial artery and interosseous membrane, and caused extensive loss of tissue. The dead and dying tissue was removed and the area extensively decompressed, powdered with sulphanilamide, and packed lightly with vaselined gauze. The limb was then placed in a padded plaster stretching from the toes to the groin. In three weeks, under light anaesthesia, the plaster was removed and the packing irrigated from the gaping wound with 10% electrolytic sodium hypochlorite. The limb was placed in an envelope and irrigations were continued three times a day. Voluntary movements were gradually encouraged and the patient eventually became ambulant. The wound healed in six weeks, with full function of the limb.

Conclusions

The coated silk fabric is a valuable addition to the armamentarium of the surgeon. Its value as a dressing, whether by the occlusive or the unocclusive method, has been proved. Sodium hypochlorite prepared by electrolysis and stabilized has been of pronounced value in this treatment, enabling wounds to be kept clean and dirty wounds to be made clean, with the relief of pain and oedema, and early rehabilitation. As an adjunct to this treatment, the sulphonamide group has been of great service in oral, parenteral, and local therapy. The common factor in successful treatment depends upon the adoption of general surgical principles—the prevention and control of infection, the removal of dead tissue, and the provision of free drainage with the minimum disturbance of tissue. Provided that cases are wisely chosen, rehabilitation and healing can occur simultaneously in clean open wounds in spite of the employment of full movement. The illustrative cases suggest that a full trial should be made of the coated silk fabric under Service, civilian, and factory conditions—as a first-aid measure and as a method of treatment in burns and wounds of minor and major degree.

First Aid.—In extensive injuries the application of a full-length envelope will conserve body heat and lessen shock. A full-length envelope, a local envelope, or sheeting will provide a light, transparent, non-frictional dressing which will diminish pain, permit free drainage, and facilitate inspection and handling without disturbance of the wounds. In first-aid stations or casualty posts remote from a surgical centre, and at the surgical centre during the waiting and resuscitation period, immediate general and local control of infection can be carried out. In the absence of electrolytic sodium hypochlorite, powdering the wound with sulphathiazole may be advocated. During this waiting period before and during transit anti-shock measures should be continued and the blankets and clothing occasionally lifted for the rapid examination of the wound. If oozing is troublesome a firm bandage may be applied outside the envelope to obtain pressure on the wound. Where there is considerable delay in transport, or at the surgical centre, immersion or irrigation therapy may be employed, and be combined with chemotherapy. In the absence of these facilities the repowdering of the wound every twelve hours is suggested. Casualties so dressed on arrival at the surgical centre can be inspected and treated with the minimum disturbance. In gas-contaminated wounded lavage will be facilitated, and with sodium hypochlorite available a direct action upon mustard gas can be obtained. In the wards a ready detection of the earliest appearance of delayed burns will be rendered more certain.

At the Surgical Centre.—The selection of cases regarded as suitable for treatment by these methods may be considered under the headings of primary and secondary methods.

Primary Method: 1. By Irrigation:

(A) Burns whose depth is in doubt, or surgical toilet perforce imperfect. Deep burns unsuitable for primary excision. Burns complicated by penetrating wounds.

(B) Open clean wounds after adequate surgical toilet. Mutilating wounds in which precise surgical toilet is prevented by the ingraining of oil or dirt. Compound fractures with loss of substance, or in which delay in arrival renders primary suture unwise—provided that skeletal or skin traction, or splinting, can efficiently control the fracture.

(C) The burns, wounds, and compound fractures of the gas-contaminated.

2. By 20% sulphathiazole emulsion or cream:

In superficial burns of the face and as a cream or powder for superficial wounds or burns elsewhere. The surface to be kept clean, soft, and exposed, but the dressings performed daily.

Secondary Method: 1. By Irrigation.

(A) Secondly infected burns. Delayed mustard gas burns.

(B) Wounds in which immobilization by plaster had been necessary, but in which the lapse of time has enabled the acute symptoms to subside and made the establishment of movement safe.

(C) Secondly infected primarily sutured wounds, including compound fractures, as a complement to adequate surgical drainage.

(D) Certain cases of acute infection involving soft, hursal, or synovial tissues.

(E) Chronic, traumatic, infective, or varicose ulceration resistant to treatment by other methods, or as a complement to recognized surgical procedure.

2. By sulphathiazole powder or cream.—To clean healing wounds as a final dressing.

Points that Must be Emphasized:

Movement is only to be encouraged when the wound is clean and acute symptoms are absent.

Free ventilation and redundancy of fabric in the neighbourhood of the wound are essential. Close apposition and superimposed dressings or excess of clothing are to be avoided. The only exception is the deliberate intention of keeping the wound warm and moist.

Strict attention must be paid to the avoidance of conduction and conveyance of infection. Inefficient surgical nursing ritual is the cause of the contaminant organisms arising in the wound and envelope during treatment.

A bactericidal or bacteriostatic agent must be applied, and frequently reapplied, to prevent gross infection and reduce the bacterial count. Without antiseptic methods the coated silk fabric may conceivably encourage growth of organisms.

Catgut (not silk), stainless steel, and "staybrite" (not unprotected metals, should be used when sodium hypochlorite is the irrigation fluid.

The method increases the possibility of the early replacement of skin loss by skin grafting, and this grafting should not be unduly delayed and should be accompanied by sulphonamide therapy.

The average strength of the irrigation fluids used is 5% or 2½% of a 1% stable sodium hypochlorite. Hospitals, ships, and factories having their own plant for the electrolysis of brine should check the percentage of sodium hypochlorite obtained and carefully adjust the percentage dilution of irrigation fluid before use, in order to avoid too strong or too weak a solution.

The treatment needs care and thought. It is not a competitor or a universal panacea, but it has a definite place in surgical treatment.

The average life of the envelope in use is three weeks and of the sheeting used as a dressing many weeks. A considerable economy in bandages and dressings can be effected. Patients have not been averse to seeing their own wounds, but, on the contrary, have been interested and encouraged by their progress. The visibility of the wound has enabled the medical staff and nurses to observe the pathology and physiology of living tissue.

Summary

Twenty-seven cases of burns and 55 of wounds have been successfully dressed with a coated silk fabric, in conjunction with treatment by sodium hypochlorite, prepared electrolytically and stabilized, and the sulphonamide group of chemotherapy.

peutic agents: twenty-two of them are nearing the end of their treatment. The methods employed and illustrative cases are recorded. The tabulated conclusions provide a basis for an extended trial of these methods as a first-aid measure in the prevention of shock and the control of infection and as a method of treatment in selected cases. The possibility of replacing dressings and rubber tissue by one portable and easily sterilizable substance is suggested. Stress is laid on the necessity and facility for early painless rehabilitation of the wounded.

My most grateful thanks are due to Mr. Rodney Smith, Mr. H. M. Darlow, and many members of the nursing staff and students of the Middlesex Hospital; to the Board of the Middlesex Hospital for facilities afforded to me and my two commandants, Mr. B. W. Windeyer and Dr. Breeze; to Lieut.-Commander Bunyan, Mr. Bruce Pearson, and Mr. Hannay, for their association and help and for allowing me to see their cases; to Dr. Maurice and Dr. Chiesman for their co-operation; to Prof. McIntosh and Dr. Britton of the Bland-Sutton Institute of Pathology, Middlesex Hospital; to Mr. Stannard for his advice and generosity in the supply of envelopes for these research purposes; to the Milton Proprietary, Ltd.; and to Messrs. May and Baker for their supply of materials.

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THE VALUE OF THE NON-SPECIFIC FACTOR IN EXPERIMENTAL IMMUNIZATION WITH INFLUENZA VIRUS

BY

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Influenza is one of the few virus diseases which do not induce in the patient after recovery any manifest immunity, although during and after convalescence virucidal antibodies can be detected in the serum. After a few months have elapsed a second attack may be experienced. As there is only a transitory immunity after recovery from the illness, the possibility of acquiring more prolonged immunity by artificial immunization is very limited.

So far laboratory experiments on ferrets and mice show that it is possible to immunize these animals for a period of about three months only if the virus is applied intranasally. If at the end of that time the virus is injected subcutaneously, immunity can be prolonged over a further period, as shown by the resistance of the ferrets to reinfection by the nasal route (Laidlaw and others, 1935). The only positive effect in the immunization of ferrets and mice by routes other than nasal is an increased resistance in the immunized animals to lung lesions caused by the subsequent application of influenza virus; this may be due to the presence of protective antibodies induced by the previous injection of the virus.

In the blood of immunized animals and in human beings after recovery there can be demonstrated virucidal, precipitating, and complement-fixing antibodies (Magill and Francis, 1938; Hare, 1939; Fairbrother and Martin, 1939; Eaton and Beck, 1940), but their immunizing effect, as demonstrated by insufficient subsequent protection against reinfection, is disappointing in most cases. One possible explanation of this inadequacy is the fact that there are several types of influenza virus; but, on the other hand, these are antigenically very close, as they give a cross-complement-fixation with each other.

Unfavourable reports on the immunization of human beings with the vaccines at present available have been published in this country and in the U.S.A. (Dochez, Mills, and Kneeland, 1938; Powell, Sparks, and Clowes, 1940; Stuart-Harris, Smith, and Andrewes, 1940; and others). The

new combined influenza and distemper virus vaccine introduced by Horsfall and Lennette (1940a, 1940b) seems to be promising, but results are not yet available.

As the usual influenza virus suspensions do not give satisfactory (that is, only transitory) results when applied by routes other than the nasal, we tried to increase specific immunity by adding to the specific stimulus an unspecific factor which would activate the reticulo-endothelial system, or act by simultaneous local irritation of the tissues. This method is often successfully applied in immunization against bacteria and their toxins, and therefore a trial in the case of the influenza virus was logical.

The following experiments were carried out:

Experiment 1

Groups of 50 mice from one stock were given subcutaneous injections of 0.25 c.cm., 0.25 c.cm., and 0.5 c.cm. at weekly intervals of the following three preparations:

(a) A vaccine containing per c.cm.:		
B. pneumoniae (Friedländer) ..	25 millions	
M. catarrhalis ..	25 "	
Pneumococcus ..	150 "	
Streptococcus ..	150 "	
Staphylococcus ..	100 "	
C. coryzae ..	25 "	
H. influenzae ..	100 "	

Preservative, 0.5% phenol

(b) A vaccine containing per c.cm.:		
Sarcina ..	3 millions	
B. mycoides ..	2 "	
Pneumococcus ..	1 million	
Streptococcus ..	1 "	
Mixed lipoids (cod-liver oil, 0.02 mg.; cholesterol, 0.67 mg.; lecithin, 0.1 mg.) ..	0.187 mg.	

Preservative, 0.5% phenol

(c) Saline containing 0.5% phenol

Three weeks after the last injection the mice received 0.05 c.cm. of a suspension of influenza virus Type A prepared as follows:

Lungs were removed from mice which had been infected with the virus five days earlier. The lungs were weighed moist, pulped in a mortar, and taken up in broth in the proportion of 2.25 grammes to 10 c.cm. This suspension was centrifuged and filtered through a small Berkefeld candle. The filtrate showed high activity of the virus, as mice were killed by intranasal instillation of dilutions of 1 in 1,000. The injections were made intranasally under chloroform-ether anaesthesia. Ten normal mice were similarly injected at the same time to serve as additional controls.

The results from the three preparations were: (a) 6% survivals, (b) 12%, (c) 11%. Survivals from the controls amounted to 20%.

Experiment 2

A suspension of influenza virus prepared as described above, except that saline was used instead of broth, was incorporated in the following preparations:

(d) A mixture of preparation (a), 2 parts; mixed lipoids as in (b), 1 part; influenza virus, 1 part	
(e) Mixed lipoids, 3 parts; influenza virus, 1 part	
(f) Colloidal calcium, 3 parts; influenza virus, 1 part	
(g) Saline, 3 parts; influenza virus, 1 part	

0.1% formalin was added to all the mixtures, and they were kept in the refrigerator pending animal experiments.

Groups of 24 mice were given subcutaneous injections of 0.25 c.cm., 0.25 c.cm., and 0.5 c.cm. at weekly intervals. One week after the third injection they received 0.05 c.cm. of a suspension of influenza virus intranasally under chloroform-ether anaesthesia.

The results from the four preparations were: (d) 57% survivals, (e) 96%, (f) 79%, (g) 88%.

Conclusions

From the above experiments it is evident that the immunization of mice against bacteria associated with cold infection has no protective effect against subsequent infection with influenza virus. Mice immunized either with a cold vaccine or with a polyvalent antigen show the same

percentage of deaths as the mice injected with phenolized saline.

Having excluded the possibility of the production of non-specific immunity by bacteria, we found in the second experiment that there was no substantial difference between the resistance of animals in the four groups to subsequent infection with influenza virus.

These experiments indicate that the simultaneous application of heterogeneous substances had no influence on the production of immunity against influenza virus.

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THE CONTROL OF GASTRIC HYPERACIDITY IN PEPTIC ULCER

BY

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In spite of all attempts to discover the aetiology of chronic peptic ulcer it must be admitted that the essential cause still eludes us. Analysis of the gastric juice frequently shows a high acidity, less commonly a moderate or low one, but a total absence of hydrochloric acid is quite unknown in this condition. While we have often concluded that hyperacidity is a cause of gastric ulcer, we have no evidence in favour of this at all. There is more evidence that the presence of HCl tends to continue the activity of an ulcer, once it has formed, and that healing is prevented. For this reason, chiefly, our main attempts at therapy in peptic ulcer have hitherto centred on the continuous neutralization of HCl by diet, drugs, and other methods. Quite probably the acid factor is not the sole cause of an ulcer's not healing, but at present the neutralization of HCl is our main therapeutic weapon. Furthermore, it is already clear that ulcers do heal even when HCl is present in the stomach during part of each day.

Diet as a means of neutralization of acid takes first place, and is given at hourly or at most two-hourly intervals; but it is already known that this cannot bring about continuous neutralization, and, moreover, during the hours of sleep feeding is impossible. Numerous drugs (alkalis and others) have therefore been used, but they are in many ways unsatisfactory. We want to find, if possible, foods or simple drugs that will ensure continuous neutralization throughout the twenty-four hours, or will keep the secretion of HCl permanently as low as possible.

The series of experiments now to be described were undertaken with a view to discovering the most suitable foods or simple drugs to maintain neutralization for as long as possible during the twenty-four hours. The substances under investigation were given two-hourly, and the stomach contents in all cases were examined repeatedly during a continuous period of twelve hours, the Ryle tube

being kept in position; samples were removed for hourly examination shortly before and one hour after feeds. All patients included in this investigation presented clinical and radiological evidence of peptic ulcer, and fractional test meals were first given in the usual way, with oatmeal gruel as the stimulant of gastric juice. Every test showed hyperacidity, and the curves obtained over two and a half hours were in general similar to those described by Ryle (1921).

Methods of Titration

The amounts of fasting juice and residue were measured and all specimens were titrated for free and total acidity with decinormal sodium hydroxide, using methyl orange and phenolphthalein as indicators respectively. Results are expressed as units in terms of c.c.m. N/10 NaOH required to neutralize 100 c.c.m. of fluid. Only the free-acid readings are here recorded.

Group 1 (9 Cases)

For purposes of comparison feeds of milk, 10 oz by mouth, were used in each case before other treatment. Parallel experiments with whole milk and citrated milk indicated no appreciable difference between the two in the resultant acid level, and as the thick clots of whole milk were found to block the tube the work was continued with citrated milk, to which alone results refer. Considering the great importance attached to milk in the treatment of peptic ulcer, one would expect to find that it caused a substantial reduction of acidity. But Nicol (1939) could not demonstrate this either by two-hourly or by hourly feeds; indeed, he recorded a higher acidity with milk two-hourly than with a diet consisting of three full meals. By quarter-hour readings he showed that a fall occurred immediately following each feed, but only of short duration; before the next feeding-time the level had risen to its previous height. The results of the present experiments are in complete agreement with those of Nicol. Surprisingly high levels were obtained: it was common to find figures of total acidity of 70 to 80 units, and few were below 30. The charts, with hourly readings, did not show the fluctuations indicated by Nicol, but the reference is the same—namely, that milk given at two-hourly intervals has little if any continuous antacid value.

Gelatin (feeds of 10 oz.) was next used, prepared according to the method of La Due (1939)—gelatin 1 part, lactose 2, water 5.2 parts. Andresen (1927, 1939) used this mixture with success in the treatment of haematemesis. I had already tried it as a secretory stimulus in the fractional test meals of 7 patients and had compared the results with those of gruel meals in the same cases. Apart from the fact that gelatin specimens were homogeneous and easier to titrate, no significant differences were noted in the acid curves; similarly, in the twelve-hour tests gelatin appeared to have approximately the same neutralizing power as milk, although the former is supposed to be a powerful stimulant of gastric juice.

The rational use of olive oil in the treatment of peptic ulcer is demonstrated in this series; both olive oil and peach-kernel oil were found to cause a substantial reduction of acidity, an effect already reported by Roberts (1931). In 4 cases three feeds of milk (10 oz.) were given two-hourly followed by three of oil (2 oz.) two-hourly; and in the second half of each test there occurred a fall of 20 to 60 units. The experiments were repeated several times in the reverse order, and a similar depression with oil was followed by a rise to over 40 units under the influence of milk. Chart I represents such curves obtained from one patient. Peach-kernel oil and an emulsion of olive oil, as will be observed from Table I, are not quite so effective as undiluted olive oil. A criticism was offered that the low acid values were due to the nauseating taste of oil; but this was disproved by the fact that when oil was syringed down the Ryle tube the values were even lower than when it was given orally.

As a deliberate contrast tests were made with two substances which are supposed to be strongly acid-producing—bovine and strained meat stock. The latter has always been excluded from the dietary regimes of dyspeptic patients; but as Table I shows, from the point of view of acidity this is an

unnecessary restriction, as the acid levels were in no case higher than those resulting from milk.

Table I indicates the average readings of the experiments in this group. It would appear that so far as two-hourly feedings are concerned the actual food given is of no account: milk, as a supposedly acid-lowering food, and meat soup, as acid-raising, are shown to be of little value in either respect. Olive oil, however, is a remarkable exception, being a real depressant of acid secretion, and further experiments were designed to estimate its effect in conjunction with milk.

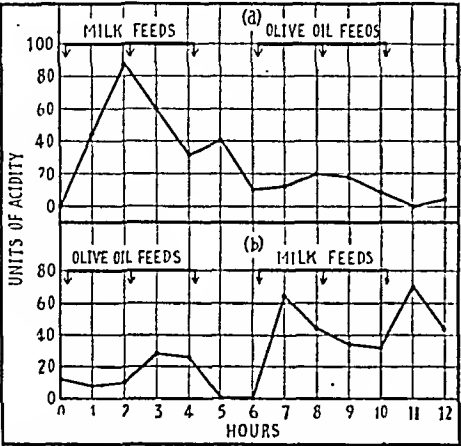


CHART 1.—Hourly free acidity of gastric contents over 12-hour periods in one case, with 2-hourly feeds of (a) milk 10 oz. and olive oil 2 oz., and (b) olive oil 2 oz. and milk 10 oz.

TABLE I.—Average Free Acidities of Gastric Contents over Periods of 12 Hours, in Tests with Various Foods given 2-hourly.

Case	F.T.M. Max.	Milk 10 oz.	Gelatin Mixture 10 oz.	Bovril 1 dr. in Water 10 oz.	Strained Meat Stock 10 oz.	Olive Oil 2 oz.	Peach-kernel Oil 1 oz.	Olive Oil Emul. 2 oz.
1 D.U.	60	53	—	—	—	31	—	53
2 D.U.	104	53	—	—	—	36	40	—
3 G.U.	80	47	—	50	43	11	—	—
4 G.U.	30	26	—	12	22	—	—	—
5 D.U.	100	27	52	64	90	—	—	—
6 D.U.	85	67	47	—	—	32	—	—
7 J.U.	90	60	50	50	—	—	—	—
8 G.U.	24	38	—	35	—	—	—	—
9 D.U.	62	33	44	—	—	—	—	—
Mean		52	48	42	51	27	40	53

Results are expressed as units in terms of c.cm. decinormal NaOH required to neutralize 100 c.cm. of fluid. G.U. = Gastric ulcer. D.U. = Duodenal ulcer. J.U. = Jejunal ulcer. F.T.M. max. = Maximum reading of fractional test meal.

Group II

Confirmation of the acid-depressing power of oil was demonstrated by this series, in which six feeds were given two-hourly by mouth, and 1 oz. of olive oil was syringed down the aspirating tube half an hour before each of the last three feeds. Reference to Table II will show that of the 9

TABLE II.—Average Free Acidities of Gastric Contents in 12-hour Tests of Six 2-hourly Feeds of Milk 10 oz., with Olive Oil 1 oz. Half an Hour before the Last Three

Case	F.T.M. Max.	First Half of Test: Milk Alone	Second Half: Milk and Oil
1 D.U.	45	3	15
2 D.U.	70	54	17
3 D.U.	70	31	31
4 G.U.	85	37	28
5 G.U.	60	16	5
6 D.U.	80	40	29
7 G.U.	70	14	30
8 D.U.	60	53	37
9 D.U.	—	73	68
10 D.U.	75	32, 43*	3, 14*
Mean		36	25

* Test repeated with peach-kernel oil.

patients examined by this method 4 showed no significant difference between the two halves of the test; in the other 5 the addition of olive oil induced a reduction of acidity of 20 to 40 units. Peach-kernel oil in one case resulted in a depressant effect similar to that of olive oil. The preliminary fractional test meals of all 9 cases gave similar curves (Chart II), and no reason could be discovered for the apparent absence in the 1 case, of a depression by the vegetable oils, an effect which when present in the other 5 was considerable.

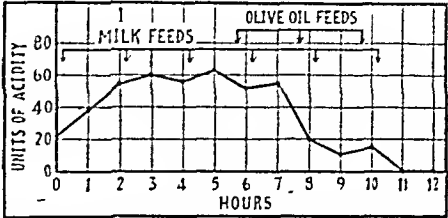


CHART II.—Hourly free acidity of gastric contents over 12 hours in one case, with six 2-hourly feeds of milk 10 oz. and olive oil 1 oz. half an hour before the last three.

Group III

The preceding data refer to results obtained with methods of treatment of a purely experimental nature, and it was felt desirable to attempt to evaluate the changes in acidity brought about by methods more applicable to routine treatment. Three patients admitted for peptic ulcer complicated by haematemesis were the subjects of this investigation, and three parallel experiments were performed: (1) Meulengracht - Witts dietary regime alone (Meulengracht, 1935; Witts, 1937); (2) that diet plus olive oil; (3) that diet plus olive oil and alkali.

The procedure was as follows: (1) On the first day gastric specimens on diet alone were analysed hourly; (2) on the second day the experiment was repeated with the addition of 1/2 oz. of olive oil half an hour before meals; (3) on the third day oil was given before meals and 1 drachm of an alkaline mixture (equal parts of mag. carb. pond., bismuth. carb., sod. bicarb.) after meals. The results are summarized in Table III. With the diet alone readings are fairly high; in

TABLE III.—Average Free Acidities of Gastric Contents over 12-hour Periods in Patients on the Meulengracht-Witts Diet, with and without Olive Oil and Alkali

Case	F.T.M. Max.	Diet Alone	Diet + Olive Oil 1/2 oz. a.c.	Diet + Olive Oil 1/2 oz. a.c. + Alkali 1 dr. p.c.
1 G.U.	45	48	31	—
2 D.U.	55	49	40	31
3 D.U.	90	61	50	33
Mean		53	40	32

the series they varied from 30 to 80 units, and a fall of 10 to 20 units followed each feed. The use of oil depressed the acid level considerably, although in no case did it entirely obliterate free acid. With oil and alkali the reduction was more pronounced, several specimens being neutral in reaction; maximal values, however, were still high.

These experiments show that a dietary scheme which was designed to promote healing of an ulcer does nothing to lower acidity. Olive oil, as in the previous groups, plays its part in reducing acid levels, and a still greater fall is obtained by a combination of oil and alkali.

Group IV

The continuous intragastric drip apparatus has recently been much used experimentally to obtain a constant reduction of acidity. The substances in most common use have been milk (Winkelstein, 1933; Nicol, 1939) and aluminium hydroxide (Woldman, 1937; Woldman and Rowland, 1936; Woldman and Polan, 1939; Browne and McHardy, 1939; Eads, 1940). In the present series other simple foods and drugs have also been investigated. All 7 patients of this group received a standard "ulcer diet" consisting of three meals of easily digested food, not necessarily fluid, and three intermediate feeds, mainly of biscuits and milk. The acid levels with this diet alone were

similar to those in patients treated by the Meulengracht - Witts regime, described above, although the ulcer diet was fuller and more solid: it was thus again demonstrated that such dietary schemes are in themselves of little value in the control of hyperchlorhydria. The substances used flowed at the rate of 10 to 15 drops a minute into the stomach, through either a pharyngeal or a nasal tube with the tip at the cardia, from a container hung above the bed. At hourly intervals the tube was disconnected and swallowed further until the tip was near the pylorus; after air had been injected to clear it, gastric samples were removed, and the tube was withdrawn to its former position and reconnected to the apparatus.

TABLE IV.—Average Free Acidities of Gastric Contents over 12-hour Periods in Patients on the "Ulcer Diet" and a Continuous Intragastric Drip of Various Substances

Case	F.T.M. Max.	Diet Alone	Diet and Drip of				
			Milk	Alumini- um Hy- droxide	Olive Oil	Bovril	Water
1 D.U. ..	70	44	24	30	—	—	—
2 G.U. ..	37	61	10	4	29	41	—
3 D.U. ..	104	85	22	21	67	—	—
4 D.U. ..	48	18	15	2	41	—	—
5 G.U. ..	60	42	41	26	—	—	—
6 G.U. ..	63	46	5	4	29*	—	34
7 D.U. ..	66	63	17	—	—	—	—
Mean ..		57	20	14	41	41	34

* Drip of olive-oil emulsion.

Table IV summarizes the findings by this method. A drip of water was taken as a control, and, as was to be expected, it caused no significant alteration to the curve resulting from diet alone; bovril was similarly inactive. The acid-depressant action of olive oil was again in evidence: both undiluted and in emulsion form it reduced the general level to a considerable degree, although the minimal readings were still about 20 units. With both milk and a suspension of aluminium hydroxide (aludrox) the results were remarkably constant and effective; they regularly obliterated free acid, and one case was noteworthy in that no readings after the first were above the base-line. Chart III illustrates curves from one patient, and shows the effects of milk and aluminium hydroxide.

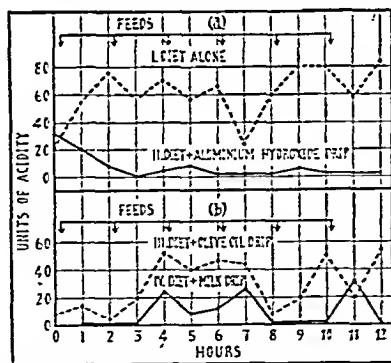


CHART III.—Hourly free acidity of gastric contents over 12-hour periods in one case on the "ulcer diet" with continuous intragastric drip. (a) i..... diet alone; ii..... diet plus aluminium hydroxide drip. (b) iii..... diet plus olive oil drip; iv..... diet plus milk drip.

It can be concluded from this part of the study that with chosen substances, used by a continuous-drip method—for example, milk and aluminium hydroxide—an effective control of hyperchlorhydria is obtained. An explanation is required, however, for the comparative failure of olive oil to do so alone, and some possible reasons are set out below.

Discussion

An investigator reporting alterations to gastric acidity in peptic ulcer must consider (a) the mechanisms involved in such alterations, and (b) their relation to healing. The factors concerned in the former are: (1) the motility of the

stomach; (2) the diminution of acid secretion; and (3) the neutralization of acid juice already produced.

Specimens taken an hour after the introduction into the stomach of any substance (especially in fluid form) do not show the changes in acidity which occur immediately, and by the end of an hour a rise in acid level may have taken place, whereas there had been immediate depression or neutralization. This may well explain the results with bovril and meat soup (Group I) and the initial fall in acidity with milk reported by Nicol (1930).

The present work was concerned, however, not with the immediate reaction to any food, but with the general effect over periods of prolonged feeding. The experiments indicate that there is no continued lowering of acidity when feeds are given two-hourly, in which circumstances a meal passes out of the stomach too rapidly for efficient neutralization because of enhanced motility, fresh secretion accumulating to raise the acidity of the emptying stomach to its previous high level. The initial fall after food may also be partly accounted for by dilution.

The continuous drip of milk induces a constant neutralization, enough milk being left to control the constant acid secretion, and this process can be maintained indefinitely. The effect is also obtained by the continuous drip of aluminium hydroxide, the properties of which, and of its pharmacological ally magnesium trisilicate, have been investigated very fully by many workers: to mention a few, Einsel and others (1932, 1934), Adams and others (1936), Emery and Rutherford (1938), Adams (1939a, 1939b), Bennett and Gill (1939), McIntosh and Sutherland (1940), in the case of the former; and, in the latter, Mutch (1936), Mann (1937), Kraemer (1938), Kraemer and Aaron (1940), Reid (1939). Experiments show that these agents neutralize HCl more slowly than do other alkalis, and from clinical experience their antacid effect is known to be spread over several hours.

Why should olive oil reduce acidity to a greater extent when given as a food (Group I) or added to the diet (Groups II and III) than when supplied continuously (Group IV)? If the hypothesis mentioned above holds good the explanation must be that oil has little acid-neutralizing power, and that its effect is in the main due to control of the other factors involved in the maintenance of acid level—namely, reduction of actual secretion and diminution of gastric motility. It is believed by many that the problem of motility is an important one, and that it throws light on the inconsistent results often obtained.

It is evident that undue stress has been laid on reduction of HCl alone as a necessary provision for the healing of gastric ulcers. Brown and Dolkart (1937, 1939) find that fluctuations in gastric acidity bear no relation to the onset of recurrence. Bloomfield and French (1938) obtain no correlation between healing and acidity, as measured by the "basal secretion" method. Wosika and Emery (1936) report that although the Sippy regime is effective in controlling acidity, they could demonstrate no relation between symptomatic relief and effectiveness of neutralization; while Steigmann and Fantus (1940), in their investigations of various antacids, showed that relief of pain could easily be produced, but that lowering of acidity occurred in less than one-quarter of their cases. Their conclusion is that ulcer therapy should not be based solely on methods of decreasing gastric acidity. The majority of these investigators, however, refer to acid levels before and after some particular application of treatment, and it is well known that hyperchlorhydria cannot be permanently cured by medical means. The matter is summarized by Mann (1930), who affirms that the important factors in the development of a peptic ulcer are chemical and mechanical. Healing always begins immediately after the surface is

protected from the acid gastric contents. The attainment of a low acid level is only one method of realizing this; such an effect is most completely attained by neutralization of the gastric juice as soon as it is secreted, a process which can only be carried out effectively at present by means of the continuous intragastric drip apparatus. This, however, is not a practicable method for the vast majority of cases, and should be reserved for those of especial severity.

The question of gastric motility in cases of ulcer would appear to be the problem of the future, and the next step ahead seems to be the discovery of some practical means of ensuring continuous diminution of gastric motility. Olive oil does not supply this want, and the continuous intragastric drip, as has been indicated, will not fulfil the condition of practicability. The purpose of further research must be to find some more effective method.

Summary

An investigation into the effects of various foods and simple drugs on the gastric hyperacidity of peptic ulcer is recorded, particularly with a view to prolonged acid reduction.

Certain foods, notably milk, when given two-hourly, have little persistent neutralizing power; these foods, although diverse in nature, produce similar acid levels.

Olive oil is strongly acid-depressant when supplied as a food or given before meals.

Considerable reduction of acidity results from a combination of oil and alkali with a suitable diet which by itself is ineffective.

The continuous intragastric drip apparatus provides at present the only means of constantly maintaining a low acid level. Milk and aluminium hydroxide are most effective in this method; oil is less so.

The mechanisms of these alterations in acidity are discussed.

Some considerations of the relation of acid control to healing of an ulcer are examined.

Investigation of alterations in gastric motility—i.e., some method of controlling the emptying of the stomach so that remedies are retained to ensure continuous neutralization of acid as it is formed—is suggested as perhaps the most important problem requiring further study in the treatment of peptic ulcer.

This work was performed in the Gardiner Institute of Medicine, Glasgow University and Western Infirmary, during the tenure of a Carnegie Medical Research Scholarship, which was interrupted owing to war service. I wish to express my gratitude to Prof. J. W. McNee for his constant advice and helpful criticism. I have to thank Messrs. John Wyeth and Brother, Ltd., for a supply of aludrox, and for the continuous intragastric drip apparatus.

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Medical Memoranda

Interstitial Subcutaneous Emphysema complicating Pulmonary Tuberculosis

After reading the case report by Dr. T. B. L. Bryan in the *Journal* of December 21, 1940 (p. 868), I looked up the records of a case which was under my care in the Sanatorium Pavilions, City Hospital, Walker Gate, Newcastle-upon-Tyne.

CASE RECORD

The patient, a man aged 27, was first seen by me in consultation in his home on April 21, 1936. He gave a history of not being well for about four months, the last five weeks of which had been spent in bed. There was no history of tuberculosis, but three years previously he had had an operation for a rectal abscess. The family history with regard to tuberculosis was bad. A sister was a sputum-positive case of pulmonary tuberculosis; a brother who had been a sputum-positive case of pulmonary tuberculosis died in 1934, and another brother who had been a sputum-negative case of tuberculosis died in 1919. The home conditions were poor; the family of three lived in a two-roomed tenement.

On examination the patient was pale and ill and his general condition was poor. He had impaired percussion over both sides of the chest, with crepitations more pronounced on the right. He was admitted to hospital on April 22, 1936. While there his temperature varied between 99° in the mornings and 103° in the evenings, and his pulse was rapid, usually about 120. A radiograph showed very widespread scattered densities in both lungs, with cavitation in each upper zone below the clavicles. His sputum was negative for tubercle bacilli. On April 25 he suddenly developed emphysema of the tissues of the neck and upper part of the chest and back. This caused some dyspnoea. A radiograph taken the same day showed a small left lateral spontaneous pneumothorax and also the air in the tissues of the neck. He was then transferred to the Newcastle General Hospital to see if surgical intervention could assist him and perhaps lessen the dyspnoea and distress. It was, however, decided that he would not be benefited by any operation, and he was brought back to the City Hospital on May 1. He continued to retrogress, and he died on May 31, 1936. The surgical emphysema which persisted until his death was limited to the neck and chest in its upper half. Permission for a post-mortem examination was not obtained.

COMMENTARY

This patient, who had extensive acute pulmonary tuberculosis, developed a left spontaneous pneumothorax and, at the same time, subcutaneous emphysema of the tissues of the neck and upper half of the chest. Spontaneous pneumothorax as a complication of pulmonary tuberculosis is common, but subcutaneous emphysema is a much rarer condition. Since I became associated with the Sanatorium Pavilions in 1923 there have been 6,266 admissions of cases of pulmonary tuberculosis and 1,512 deaths. The case recorded is the only one that has developed subcutaneous emphysema.

Fishberg (1932) states that interstitial subcutaneous emphysema is not unknown in acute pulmonary tuberculosis and is very rare in chronic tuberculosis. Meade and Stafford (1930) review the condition and describe some cases, but it is not often recorded in medical literature.

I am indebted to Dr. J. A. Charles, medical officer of health for Newcastle-upon-Tyne, for permission to publish this case.

GEORGE HURRELL, M.D., D.P.H.
Tuberculosis Medical Officer, Newcastle-upon-Tyne.

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The wisdom of subsidizing private growers of cinchona in India is being urged by the Indian Chemical Manufacturers' Association, which points out that if efficient anti-malarial treatment is to be provided in India, at least 6 lakh lb. of quinine will be required annually. The present consumption is about 2 lakh lb., of which India produces about 70,000 lb., the remainder being imported from abroad.

Reviews

CHINESE MEDICAL THOUGHT

The Chinese Way in Medicine. By Edward H. Hume. (Pp. 190 \$2.25 or 14s. net.) Baltimore: The Johns Hopkins Press; London: Oxford University Press. 1940.

Dr. E. H. Hume was connected with the Peking Medical College of the Rockefeller Foundation and became first Principal of the Yale Medical College in China. He had a gift for cultivating Chinese friendships which gave him ample opportunities for discussing the merits and demerits of the age-old empiric system of medicine as compared with modern scientific medicine. From the records of the Shang Dynasty (1766-1122 B.C.), which saw the evolution of early concepts of the oneness of all life, a group of metaphysicians sprang up who gave form to the prevailing ideas of still earlier years and taught that the phenomena that make up health and disease related to the universe as a whole. They contended that the life of man in all its phases is inseparably linked with every other form of life, whether of animals and birds, of trees and plants, or even the less perceptible life of material things. Empiricism in China was a blind acceptance of traditional beliefs as against independent inquiry.

Dr. Hume's book is a survey of a system of Chinese medical thought which is philosophical in conception and has evolved practical procedures of real value for both diagnosis and treatment. The author thinks that this system, far older than Greek or Arabian medicine, has proved adequate to the needs of an Eastern Asiatic civilization. He deals with three aspects of his subjects: (1) the universe and man in Chinese medicine; (2) the founders and conspicuous exemplars of Chinese medicine; (3) some distinctive contributions of Chinese medicine. High up among Chiha's contributions of permanent value is the establishment of medical libraries and the preparation of special monographs. One compiler has estimated the number of known medical books at 12,600 volumes. Nor did medicine find itself concerned with theory and practice only. The legal aspects of the profession's task were also faced frankly. A volume published during the Sung Dynasty (A.D. 960-1279) was the one recognized coroner's handbook before the establishment of the Chinese National Health Administration in 1927.

In reading this book the thought frequently occurs that "there is nothing new under the sun." The Chinese had practical inoculation against small-pox from the sixth century A.D. Gonorrhoea was known and accurately described from the earliest times, but syphilis was not introduced to China till A.D. 1505. A manual on obstetrics and gynaecology published in A.D. 1661 laid special stress on pre-natal treatment. Ephedrine (ma-huang) has long been known to the Chinese, as also chaulmoogra oil for leprosy. These are but a few of many noteworthy points. The volume is interesting and informative throughout and concludes with a good bibliography which gives evidence of much painstaking research by the author.

PRACTICAL DERMATOLOGY

Dermatologic Therapy in General Practice. By Marion B. Sulzberger, M.D., and Jack Wolf, M.D. (Pp. 675; illustrated. 22s. 6d., or \$4.50 post paid.) Chicago: The Year Book Publishers, Inc.; London: H. K. Lewis and Co.

Dermatological therapeutics are so intimately bound up with diagnosis that any work on skin treatment must devote a large space to questions of diagnosis, and this book is no exception, but being intended for general practitioners it almost exclusively deals with the commoner affections of

the skin after an opening essay of considerable length at value on the general principles of dermatologic therapeutics which most practitioners will find very useful.

There is one very good illustration of the extent to which cutaneous treatment is bound up with diagnosis, and this is the admirable chapter on the management of drug eruptions. This is devoted for the most part, as it must be, to the detection of the peccant drug—in other words to the diagnosis of the eruption. The chapter is well illustrated and there are some excellent tables to assist the practitioner in making his diagnosis, but the space devoted to actual therapeutic measures is small. After all, the only therapy needed in 90% of drug eruptions is the discontinuance of the drug which is doing the mischief. These considerations lead us to doubt whether it is really legitimate to label books as ostensibly devoted solely to cutaneous therapeutics. In our experience the more valuable such works are the greater the proportion of space devoted to diagnosis. We really fancy that the fundamental reason for bringing the suggestion of therapy so prominently into the title is to offer a special attraction to the practitioner appealing to his well-known (and very natural) hunger for help in treatment.

It is always interesting to note the peculiarities of terminology in American writings. Our transatlantic brethren are never afraid of a new word (whether it be needed or not!), and here is one which certainly is a new one to us in this connexion, and that is an "id." It appears that an "id" is an eruption which is secondary to fungoid infection of the skin and is a convenient abbreviation for such clumsy terms as dermatophytid, trichophytic etc. It certainly has the merit of brevity. Very sensible Sulzberger warns the practitioner against the too facile diagnosis of fungoid infection of the skin, a diagnosis which, as he says, has been much overdone of late years. He points out that the management of the "ids" require considerable tact, as their behaviour closely resembles that of ordinary eczematous dermatitis, and the employment of gross antifungoid remedies (for example, iodine) often merely causes a regrettable exacerbation of the eruption. This may happen even when actual mycelium has been found on the feet or elsewhere, and when there is a positive reaction to trichophytin skin tests. The habit, so common at the present time, of diagnosing an "id" without such positive evidence of fungoid infection he greatly deprecates.

Although this book is much to be commended as a clear exposition of practical modern dermatology. It is a sound guide to the family physician and there are few dermatologists who will not glean useful hints from its perusal.

BIOCHEMICAL CLASS WORK

Laboratory Manual of Biochemistry. By Benjamin Harrow, Ph.D., Gilbert C. H. Stone, Ph.D., Ernest Borek, Ph.D., Harry Wagreich, Ph.D., and Abraham Mazur, Ph.D. (Pp. 119; 19 illustrations. 7s. 6d.) Philadelphia and London: W. B. Saunders Company. 1940.

Prof. Harrow's laboratory manual describes an up-to-date course of carefully selected class experiments. Starting with the usual qualitative tests and experiments the course leads on to a number of well-chosen quantitative estimations. The experiments are so carefully described that the student should have little excuse for failure in their performance. Although the authors make no such claim the course is well suited to medical students. The book is certainly one which merits careful examination by teachers of practical (animal) biochemistry and which they will be tempted to keep on their shelves. It is a ideal practical book for class use and is offered at a reasonable price, for its 119 pages are well filled and there is no superfluous descriptive matter. Even in the hands of students the wire-O binding should survive the course.

While the reviewer has nothing but praise for the book as a whole, there are a few curious omissions. Blood spectra, pyridine-haemochromogen crystals, Fehling's test, and Harrison's test for bile pigments are not mentioned. The student is frequently instructed to examine and draw crystals; it would have been more helpful to provide good drawings or photographs of these crystals in place of the illustrations of Kjeldahl's apparatus and a colorimeter. But these omissions are easily made good by the teacher and do not detract from the value of a book which is certainly among the best of its type and merits a wide circulation.

A MISSION DOCTOR IN THE CONGO

Congo Doctor. By W. E. Davis, M.D. (Pp. 286; illustrated. 12s. 6d. net.) London: Robert Hale, Ltd. 1941.

The greater part of Dr. Davis's book deals with the people, white and native, who inhabit the Coquilhatville Province of Belgian Congo. When the author left the U.S. Marine Corps, in which he served in the last great war, he resolved to devote himself to missionary work. So he went to college and, while there, met the girl who later became his wife and persuaded him to be a mission doctor in the Congo. The result surpassed any dreams he had ever had, and his ten years in the jungle were a tremendous experience that he never regretted. Judged by our present-day standards the Congolese are a backward people, for they have no need of progress, living as they do in a region where very little effort is required for subsistence. Nature is adequate and calls for but a minimum of work from her creatures. Hidden away in the dense fastnesses of their tropical woods they lead the simple life, and time has no significance for them.

The author led a busy professional life; during his last year at Lotumbe over 65,000 patients came to the hospital dispensary, and he performed 536 major operations with a mortality of less than 1%. He had his full share of dramatic cures: he notes that "there is nothing more striking in medical therapy than the effect of neosalvarsan on a full-blown case of yaws. The foul disgusting yellow pustules which cover the entire body of the sufferer frequently fade away in the course of a few days. One might almost say they disappear before one's eyes." He had many cases of enormous elephantiasis of the scrotum; "hundreds came who had scarcely walked for years and returned to their villages able to lead an active life."

The book is an encouraging account of the opportunities for great good which a capable and self-reliant medical man can find in a primitive country. The author speaks well of the Belgian Colonial Administration, and gives graphic word pictures of the jungle forests and their inhabitants.

Notes on Book:

Dr. J. W. FISHER's little book, *Psychology and Mental Disorders for Nurses*, is meant to be a refresher for mental nurses preparing for their examinations. The first part is a survey of normal psychology which is rightly rather fuller than the next, since without the fundamentals the practical issues of a subject cannot be comprehended or successfully put in practice. It is always difficult to know how much nurses can understand in their reading, and of necessity abbreviation means that simplicity and clarity are to some extent sacrificed. Most nurses have neither time nor energy after their day's work to read much, and some books will be too long and others too concentrated to be useful to them. Whether the present volume, which in addition to normal psychology covers the whole field of mental illness as well as practical hints for mental nurses, will steer between these two extremes is for the nurses themselves to decide, but it is a clear compact little book which should be useful at least to some of those for whom it is written. The publishers are Edward Arnold and Co. and the price is 4s.

Preparations and Appliances

AN APPARATUS FOR CONTINUOUS OR INTERMITTENT ADMINISTRATION OF PENTOTHAL SODIUM SOLUTIONS

RODERICK A. GORDON, B.Sc., M.D., D.A., Captain, Royal Canadian Army Medical Corps, writes:

The apparatus described below is designed with three purposes in mind—namely, (1) to provide a means of continuous or intermittent administration, over considerable periods of time, of pentothal solutions which would keep the needle patent and allow the anaesthetist freedom to attend to the airway, blood pressure, and pulse determinations; (2) to give rapid control of anaesthetic level; (3) to provide a portable apparatus which can be used for several patients in succession without the necessity for re-sterilizing the whole of it and without the need for mixing fresh solutions for each patient.

The apparatus, shown in Fig. 1, consists essentially of two bottles, one containing normal saline and the other pentothal

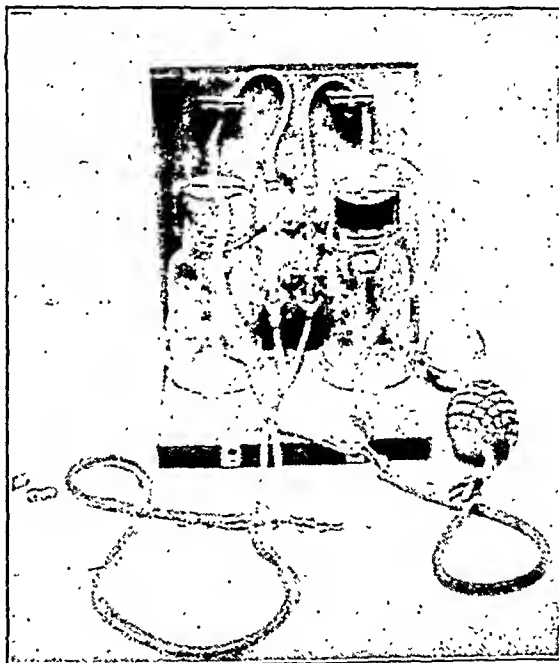


FIG. 1.

sodium solution, connected through independent drip bulbs and rubber tubing to a Y adapter fitting to the intravenous needle. The rubber bungs in the bottles are arranged to lock in, and the solutions are delivered by pressure applied to the bottles through a Y connector by a rubber bulb syringe. Flow is controlled by a screw pinch-cock on each tube, placed between the bottle and the drip bulb. The whole apparatus is arranged to fasten on to a stand, and is readily removed for boiling. The stand has a cover which clips on like the cover of a portable typewriter, and makes it possible to transport the whole apparatus after sterilization (Fig. 2). Two adapters are provided (Fig. 3), each attached to two short lengths of rubber tubing, the tubing having glass windows in the form of short glass connectors.

The interchangeable connector allows the apparatus to be used for several patients in succession without the necessity for re-sterilizing the whole equipment. The glass windows are used to determine any flow of blood back through the needle. If blood is allowed to back up past the interchangeable length of tubing it becomes necessary to wash and re-sterilize the whole tubing.

This arrangement allows the delivery of either the pentothal or saline solution simply by turning the screws of the pinch-cocks, adequate pressure in the bottles being maintained by occasionally squeezing the rubber bulb. The level of anaesthesia is controlled with a minimum of lag by the use of the double tubing to the Y adapter, thus cutting down the "dead space" to the volume of the adapter and needle.

We have used this apparatus with success during the past six months, both for inducing and maintaining anaesthesia for surgical procedures lasting up to two hours, and to keep

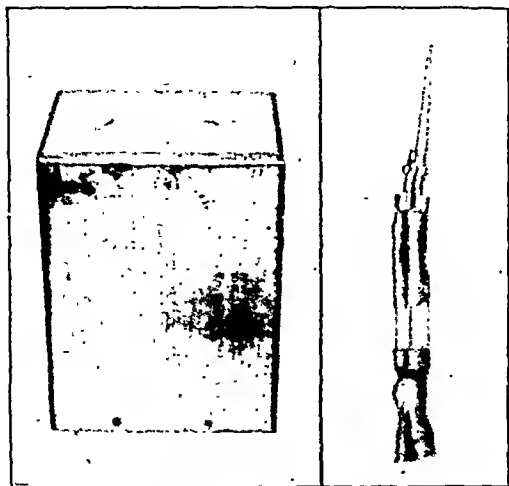


FIG. 2.

FIG. 3.

patients asleep during procedures undertaken with spinal anaesthesia or regional blocks. We prefer, after this amount of experience, to use a 2% solution for maintaining full anaesthesia, and a 1% solution to maintain light anaesthesia in association with blocks. In addition to the obvious technical advantages of the method there is a considerable saving in the amount of drug used per unit time of anaesthesia.

Nova et Vetera

CHLOROFORM IN THE 'EIGHTIES

HINTS TO YOUNG ANAESTHETISTS

Many young doctors, during this war, will be called on to administer chloroform to patients and may feel not too confident over the business. Having given chloroform or seen it given for well over fifty years, I offer a few hints to junior colleagues. My impression is that the art of giving chloroform is passing away. The surgeons to the Glasgow Western Infirmary about fifty years ago never seemed to have deaths from chloroform. In a debate on the subject, about that time, under the chairmanship of Dr. William Macewen (later Sir William), Prof. Macleod stated that up to that point he had never had a death from chloroform. Macleod used a folded towel placed over the face, with his finger lifting the edge of the towel away from the mouth about one or two inches; he gave the chloroform, to begin with, slowly. Thus Macleod, in roughly 10,000 cases, had no deaths from chloroform. I believe the same could be said of Prof. George Buchanan, Hector Cameron, and Alexander Patterson, all contemporary surgeons to the Western Infirmary.

The Glasgow Tradition

Buchanan allowed his students to give chloroform, and they unwittingly showed us how not to give it. Time and again I have seen Buchanan run and dip the end of a towel in cold water and vigorously slap the patient's bare chest two or three times. The effect was magical, the patient suddenly sitting upright on his haunches and looking round bewildered. If a patient collapses under chloroform, becoming pale from heart failure, Buchanan's method should be at once adopted, along with sudden inversion of the body, by getting the lower end of the table thrown up into the air. These two measures alone will frequently save life. In the discussion alluded to, reported in the *Glasgow Medical Journal*, Dr. Walker Downie referred to a case of Marion Sims's, in Paris, where the patient collapsed and the great surgeon Nélaton advised inversion of the body. When the body was inverted recovery took place; but inversion, with artificial respiration, had to be maintained for an hour and a half. I have had occasion to use Buchanan's method of the

wet towel in patients brought into a police office, comatose from whisky, and found it most effective in about ten to fifteen minutes.

The pulling out of the tongue with forceps I look upon as an indication of faulty administration. The secret of giving chloroform is not to give it too concentratedly in regard to the oxygen of the air. I fancy if chloroform were given slowly and sufficiently diluted with oxygen it could almost be given *ad libitum*. Lister stated that Syme, the great Edinburgh surgeon, never had a death from chloroform up to the end of his operating career. Macleod taught his students to watch the breathing, the colour of the lips, and the pulse. The great danger of chloroform—which in my opinion arises from too large a dose at a given time and in reference to the oxygen—is heart failure.

For practical purposes the young medical man should confine the dropping of his chloroform on to one of the lower quadrants of the mask, and on no account splash it over the whole mask. If possible a small bottle of ether should be carried as well as the chloroform; and if the patient begins to turn pale ether should at once be substituted for chloroform. For asphyxia, artificial respiration, pulling out the tongue, venesection, etc., will be resorted to. But such complications can be prevented.

Dornoch.

J. T. MACCACHIAN, M.D.

MORE OLD MEDICAL BOOKS

Hard upon the dispersal of Sir D'Arcy Power's library come some more opportunities for medical book collectors. Messrs. Sotheby have been selling a library, largely botanical, which included Culpeper's *English Physitian*, 1st edition, 1652; Dodoens's *Nieue Herball* . . . now first translated out of French into English by Henry Lyte, black letter, 1578; the *Grete Herball* which geuth partly knowlege and understanding of all manner of herbes . . . for they hele and cure all mager of dyseseas and sakenesses, Southwarke, Peter Treveris, 1526; Jerome of Brunswick's *Noble Experyence of the Vertuous Handyworke of Surgeri*, black letter, 1525; another similar treatise on herbs by the same author, 1527; and William Turner's *Herbal*, 1568, with a Booke of the bath of Baeth in England, bound up with Jerome of Brunswick's most Excellent and Perfecte Homish Apothecarye, translated out of the Almaigne Speche by Jhon Hollybush [i.e. Miles Coverdale], black letter, 1561.

Messrs. Davis and Ortol, now of Wallingford, lately of Bloomsbury, have issued a long catalogue of old medical books, only a few of which can be noted here. Alexis of Piedmont's *Secretes*, translated into English by William Ward, the three parts bound together (1560, 1563, 1566), is offered at £15 15s. Philip Barrough's *Methodo of Physicke*, 1553, went through many editions: the first one is of the greatest rarity, and a copy of it is priced at £48; little is known of the author beyond the fact that he graduated in surgery at Cambridge in 1559. Andrew Boorde's *Breviarie of Health* is represented by an edition of 1575; Sir Thomas Browne's *Religio Medici* by the second edition, of 1645. An interesting item is the Playbill of the Edinburgh Pantomime of January, 1848, which mentions "Doctor Chloroform's Establishment" and goes on to refer to the "new anaesthetic agent, Sulphuric Ether," listed at 15s. Sir T. Elyot's *Castell of Helth* is a reprint, probably of 1560, though it has the title page of the original edition of 1534. The original recipe for Dover's powder, not quite the same composition as that which now passes under this name, is contained in the Widow Bradley's *Ancient Physician's Legacy to his Country*, 1733; another widow whose book is of some interest is Mrs. John Hunter, who published a volume of poems in 1802; the copy now offered is inscribed by the great surgeon's relict on the flyleaf . . . perhaps the only one of her poems which is still familiar is the lyric, "My mother bids me bind my hair." John of Gaddesden (1250-1361), physician to Edward II, is represented by the rare fourth edition of his famous textbook, 1595: it was first published in 1492. An "association" copy of a century ago is an issue of Townsend's *Physician's Vade Mecum*, with autograph of John Snow on the title page and 28 pages of his MS. at the end, giving details of his professional work in London from 1838 onwards; he is best remembered as one of the earliest pioneers of the scientific study of anaesthesia, which he administered to Queen Victoria at the birth of her two youngest children (one of whom, H.R.H. Princess Beatrice, is still alive) to the scandalization of many narrow-minded pietists.

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CHEMOTHERAPY IN ACUTE OTITIS MEDIA

Harvey Cushing once pointed out that progress in medicine occurs mostly by fission, and that special departments and groups, once they are strong enough to be independent, seldom fuse either with one another or with the parent body. He revealed a proposal for the creation at Johns Hopkins University, on the resignation of Osler, of a *super*-professorship of medicine to keep all the departments in contact and in proper relationship with one another. The scheme never matured because W. H. Welch, who was asked to undertake the task, refused; but it is not difficult to see what influence the holder of such a position might exercise. One matter that would certainly occupy his attention to-day would be the control of acute bacterial infections by chemotherapy. Every clinical department, both general and special, has turned eagerly to the new resources. Enthusiasm and sometimes lack of judgment have been manifested, so that the abuse of chemotherapy has become as important a subject for inquiry as its use. A speaker in a recent debate named the quantity of the new drugs which had been dispensed in one year in a large hospital in London, and the figure was so large that it is impossible to avoid the conclusion that a respectable fraction must have been misapplied. This is probably the state of affairs in many other hospitals. The early and most spectacular successes with chemotherapy were in cases of septicaemia, mostly obstetrical in origin; but such cases are sometimes otogenic, and aural surgeons soon found that not only septicaemia but also meningitis could be controlled, and that recovery could become commonplace in cases which a few years ago would certainly have been fatal. Recovery, however, if no longer a miracle, is still not the end of every case. Why should there be failures? How and to what extent should chemotherapy be used in those early infections where complications have not yet arisen and the trouble is likely to be self-limiting?

The answer to the first question is twofold. It is necessary to be certain that the infecting organism, both in the primary focus and in the area to which the complication has extended, is one which may be expected to yield to the treatment. Clinical examination, however careful and frequent, is nowadays not enough. Bacteriological examination is essential so that the appropriate drug, if there be one available, may be administered. Generally sulphanilamide is chosen, but in a pneumococcal infection it may be necessary to change to sulphapyridine or sulphathiazole. Secondly, the treatment cannot succeed in the presence of a collection of undrained pus or if there is an infected thrombus anywhere in the area concerned. It is no use demanding

the impossible of these drugs, and to employ them in such circumstances only brings discredit on a potent remedy; for either the patient will die unrelieved or there will be a temporary but only apparent clinical improvement which masks the real state of affairs. In the latter case the complication will ultimately prove fatal, even if it seems to disappear, as in the case of meningitis, for it will be fed afresh from the primary focus of suppuration if this is not eliminated. The treatment required may vary from a simple paracentesis of the tympanum to an extensive mastoid operation. If there is a venous thrombosis the clot need not, in theory, be disturbed so long as it is aseptic; but how often this occurs may be guessed from the usual clinical history of such cases. In practice it should be removed until there is free bleeding from each end of the opened sinus. If it extends downwards out of reach to the jugular bulb there should be no hesitation in tying and dividing the jugular vein in the neck, so that the bulb can drain when the ligature is removed from the upper end of the vein. It seems remarkable—even taking for granted the potent effect of the appropriate drug on each organism—that in purulent streptococcal or pneumococcal meningitis so many recoveries ensue, for the ease with which a collection of pus may become entangled in the meshes of the arachnoid must be a severe handicap upon the action of the drug. It may be, therefore, that a basal meningitis, on account of the size of the cisterns, is more prone to resolution than a meningo-cortical extension, which would easily become encysted and localized into an abscess. For this reason a very high percentage of recoveries from meningitis can be expected only when the treatment is administered at an early stage.

Chemotherapy has proved its worth under desperate conditions. The next question is how and to what extent it should be used in early infections that are likely to be self-limiting and which might recover spontaneously or with simple, old-fashioned treatment. Once an acute infection of the middle ear has been initiated it is impossible to predict what its course may be. It is therefore wholly reasonable to adopt a treatment that may shorten its duration and, by promoting early resolution of the inflammation, give protection against complications. That chemotherapy can do this is not merely a general clinical impression: the figures of Horan and French¹ give satisfactory proof. In a series of 607 cases from 1934 to 1937 there were 138, or 22.7%, needing the mastoid operation. In 621 cases treated by chemotherapy from 1937 to 1939 only twenty-one, or 3.4%, required operation; there were no deaths in the second series. Wesley Bowers² has produced similar evidence. In a series of 793 cases, 396 were treated by chemotherapy. He found that both the duration of the discharge and the proportion of patients needing mastoid operation were reduced in this way by 50%.

The statistics of Horan and French present two convincing features. The numbers of the control series and the experimental series are nearly the same, and the clinical material is of a homogeneous character, being drawn from the personnel of the Royal Navy. Not only is the number of mastoid operations materially reduced, but the absence of any fatality is strong evidence of protection against complications. There is, therefore, justification from the evidence (supported by the observation of Wesley Bowers) for administering

¹ *Lancet*, 1940, 1, 680.² *J. Amer. med. Ass.*, 1940, 115, 178.

either sulphanilamide or sulphapyridine in acute otitis media. But this is not to be done in a casual manner, for although the administration is an exceedingly simple matter it is not without some risk. Here again it is necessary to know the nature of the infecting organism if it is to be made certain that an appropriate drug is available for administration. It is no excuse to plead that because the tympanic membrane has neither ruptured nor been incised there is no discharge to examine. The infection comes from the nasopharynx, and material taken from there will give the bacteriological diagnosis. In any case discharge collected from the meatus is liable to be contaminated from the skin.

In all statistics the majority of infections are shown to be streptococcal, though the pneumococcus is nevertheless frequently found. T. B. Layton has divided the infections of the middle ear into the nasopharyngeal and the cutaneous—the former travelling by the Eustachian tube and the latter reaching the tympanum from the skin of the meatus through a perforation. This assumes that the primary infections are streptococcal and pneumococcal, while the *Staphylococcus aureus* is a secondary infection from the meatus; along with it go a number of other organisms, including *Staphylococcus albus*, *B. coli*, *B. proteus*, and *B. pyocyaneus*. The latter are no doubt secondary invaders. But the question which is difficult to settle is whether the *Staphylococcus aureus* attacks the middle ear as a primary nasopharyngeal infection. E. P. Fowler of Columbia University, in a series of 2,775 cases in the years 1933 to 1939, found pure cultures of staphylococcus in 36.7%. This is far higher than most authors report, and suggests contamination in taking material from the meatus. It is probable that the *Staphylococcus aureus* is occasionally the primary organism (but much more rarely than Fowler suggests), and that it easily overgrows and masks the primary organism in cultures from the meatus. Certainly it is remarkable how constantly the *Streptococcus pyogenes* is found by the bacteriologist when the culture is made at an operation from pus in the mastoid process or—what is the only absolutely satisfactory method—from chips of bone. This explains the frequent success of sulphanilamide given empirically, though it affords no justification for neglecting bacteriological examination or for not taking care to avoid contamination in collecting material for the laboratory.

The general risks attaching to the administration of these drugs—such as gastric intolerance, leucopenia, and occasionally agranulocytosis—are well known and concern only the exceptional patient. It is perhaps not practicable to obtain blood counts in every case, but if the clinical course is not satisfactory and suggests unusual sensitiveness, which is naturally beyond control, the blood examination should certainly not be omitted. There does, however, appear to be a decided though easily controlled risk arising from insufficient dosage. This insufficiency may come about either by administration in too small quantity (which for an adult should be 2 grammes as an initial dose—continued at the rate of 1 gramme every four hours, taking the age and especially the weight of the patient into consideration), or by administration over too short a period (which should extend to two or three days after all clinical signs have disappeared). If the administration is

stopped too soon there may be either a relapse or a subsidence of symptoms, masking incomplete resolution and leading to complication later. Repeated examination of the ear is essential; if the patient is in pain or the tympanum is seen to fill with fluid under tension, paracentesis should not be withheld in the hope that the process will resolve without spontaneous perforation of the membrane. The neglect of paracentesis at the right time may be a factor causing either incomplete resolution and an adhesive otitis with subsequent deafness, or the need for a mastoid operation. Unless these precautions are observed and the patient is kept in bed, it is better to employ the ordinary methods of treatment only. Fowler recommends that treatment by chemotherapy should begin a week or ten days after onset if the patient does not seem to be getting on well without it. It seems reasonable, however, to begin the treatment as early in the course of the illness as possible under the conditions already mentioned. If the best results are to be obtained from the drugs used in chemotherapy their limitations must be recognized and they are not to be regarded as a panacea for all acute infections. The drugs are so powerful that the early results seemed to border on the miraculous, but this is no excuse for using them in a casual way: their very potency demands that they be used in the most efficient manner available.

WAR NEUROSES

The late Dr. T. A. Ross had probably a higher reputation as a psychotherapist than any other doctor in the country, and his book, *The Common Neuroses*, is already a medical classic. In a little book, *Lectures on War Neuroses*,¹ published posthumously, he gives in brief and simple form the fruits of his experience in the last war and since; before he died he had been applying his knowledge to the cases he saw in this war. Ross was a man of independent mind and irreproachable integrity, with no axe to grind. He had learned his methods in a very practical school—the school of his own experience. They were not coloured by any special form of training or adherence to any particular doctrine. It would be a mistake to suppose that he relied only upon personality and common sense, although he had both in uncommon abundance. His methods, as they appear in this book, could certainly be simple; but they were always most systematic and logical, the result primarily of the quality of his own mind and secondarily of his appreciation of the methods of both Dejerine and Freud. They were reinforced by an acute intuitive perception of the foibles of human character, and he did not hesitate to admit that in certain cases his own methods were not enough and had to be supplemented by something as near a psycho-analytical technique as he cared to compass. He reiterates in this book that there is a real difference, not one of degree only, between what is called a "neurosis" and a "psychosis." He found from his experience that on the whole the two conditions behaved very differently from one another in his hands, whether he cured them or not. The onus of proving the opposite rests upon those who, without his therapeutic achievements to their credit and with no

¹ *Lectures on War Neuroses*. By T. A. Ross, M.D., F.R.C.P. London: Edward Arnold and Co. (5s.)

published writings illustrating the use of the "common-sense method" in psychoneuroses in general, claim that this method is as effective as any other.

Ross was not burdened in his efforts by haunting thoughts of constitutional factors. He recognized their existence, as he does again in these lectures; but he was interested mainly in what he could work with and could influence in his patients. He stressed the greater susceptibility of such people to psychological illness, while insisting that what made them fall ill was often faulty upbringing and mistaken handling of personal situations, both of which can be modified by psychotherapeutic re-education. "Even if he had a bad heredity, that was all the more reason why he should have a good education." There is one point in which Ross's remarkable memory may have deceived him. He records that Weir Mitchell was led to the idea of his rest cure by seeing cases of exhaustion in soldiers of the American Civil War. Osler² at any rate gives a different account, citing chapter and verse for the story. He says that Weir Mitchell was prompted to the discovery by despair at not knowing what else to suggest when confronted by a woman patient who had been prescribed everything except rest.

Ross comments adversely on the use of the term "shell shock" and regards "effort syndrome" as a no less unfortunate label for the "D.A.H." of the last war. He understood discipline as a factor in the treatment of neuroses, especially when they are determined by a primitive desire to escape responsibility, as so many war neuroses are. There was a superior officer of Ross's in the last war who remarked that discipline lay in his hands only, and that Ross was wrong in forbidding patients with hysterical fits to go out of hospital to parties. He hints dryly that under this regime the incidence of fits rose again. Nevertheless, Ross was tolerant towards both coward and malingerer. "Cowardice is a military and not a medical category," and, as he said, we have not solved our problems by calling a man a malingerer, but should try to find out why he is one. Having been a family doctor for many years himself, he wanted the family doctor consulted for a previous history of each recruit. On the recruiting board itself a specialist was required, he argued, to assess what should be done, although the specialist could not hope to be one hundred per cent. right. In particular the motive for joining, and especially for seeking a commission, should be ascertained. His third point was that battalion medical officers should look out for signs of strain, and he mentions the findings of the Shell-shock Commission after the last war, which are not sufficiently remembered. The battalion M.O. should take his equal share in the risks and hardships of the men, and commanding officers should recollect that even the best man can be sent too often to a dangerous task. The best psychiatric prophylaxis is done, Ross felt, by the battalion medical officer among the healthy men who are going on with their jobs, and not in special camps behind the lines. He points out something that responsible authorities should remember now: that it is going to be much more difficult to cure war neurotics at the end of the war if return to civil life means return to unemployment. It is a pity that Ross's humanity and skill are lost to us now, except in his writings, and that this little book must be his last.

² *Life of Osler*, by Harvey Cushing. Oxford, 1925.

VITAMIN B₁ DEFICIENCY

It has been recognized for many years that the breakdown of pyruvic acid, itself a product of carbohydrate metabolism, is dependent on the presence of a co-carboxylase which has recently been identified as the di-phosphoric ester of aneurin, vitamin B₁.¹ In diseases known to be due to a deficiency of vitamin B₁, such as beriberi and peripheral neuritis, pyruvic acid accumulates in the body fluids (blood and spinal fluid). Methods of estimating pyruvic acid² and co-carboxylase^{3,4} in the blood have recently been devised and applied to determinations of these substances in the body fluids of children and adults in order to find out how far the amounts may be influenced by various pathological conditions. Wortis, Goodhart, and Bueding⁵ examined fifty children in the psychiatric division of the Belle Vue Hospital, New York, who had been admitted on account of conduct disorders, behaviour problems, psychoneuroses, and mental deficiency. None of them showed any of the generally accepted pathological signs of vitamin B₁ deficiency, nor were any of them suffering from any febrile or wasting disease. They came from a low economic stratum of the city's society and might therefore be expected to have received somewhat small amounts of vitamin B₁. The amounts of co-carboxylase found in their blood ranged from 4 to 13 μ g., average 7.5 μ g., per 100 c.cm. The findings of Goodhart and Sinclair⁴ in England of 4.5 to 12.0, average 7.0, μ g. per 100 c.cm. for twenty-six adults are very similar to those of the New York findings. Wortis *et al.*⁵ also found 0.71 to 1.21, average 0.96, mg. of pyruvic acid per 100 c.cm. of blood and 0.70 to 1.02, average 0.86, mg. per 100 c.cm. of cerebrospinal fluid in thirty-five children. The corresponding figures found in sixty adults were 0.77 to 1.16, average 0.98, mg. in the blood and 0.42 to 1.21, average 0.815, mg. in the cerebrospinal fluid. These workers do not consider that the total amount of bisulphite-binding substances in blood and cerebrospinal fluid can be taken as an indication of vitamin B₁ deficiency. Schlutz and Knott⁶ consider that a child's blood should contain 10.0 μ g. of co-carboxylase per 100 c.cm. They found that the blood of chronically ill young children (multiple abscesses, severe eczema, prolonged otitis media, and bronchial asthma) contained much less than this. For more acutely ill children the home situation seemed to be a factor determining the co-carboxylase content of the blood. These workers are strongly of the opinion that the level of this factor in the blood may, in general, be maintained equal to that of normal healthy children by careful dieting or by vitamin B₁ therapy.

TREATMENT OF HYPERTENSION BY RENAL EXTRACTS

There is much evidence that the kidney can not only initiate hypertension but can also produce a substance which tends to counteract it. Some observers believe that hypertension depends on the ratio of ischaemic to normal renal tissue. For example, when hypertension is produced in animals by rendering one of the kidneys ischaemic the removal of the other kidney causes a further rise in blood pressure. Experimental injection seems to show that rennin tends to call forth a substance which inhibits its action. Grollman⁷ and Page and his co-workers⁸ have attempted with some success to extract such an inhibitory substance, and the latter have recently published a report of cases of hypertension treated with renal extracts. When first tested on

¹ *Biochem. J.*, 1939, 33, 1109.

² *J. Biol. Chem.*, 1940, 133, 585.

³ *Ibid.*, 1940, 135, 77.

⁴ *Biochem. J.*, 1939, 33, 1099.

⁵ *Amer. J. Dis. Child.*, 1941, 61, 226.

⁶ *Ibid.*, 231.

⁷ *J. Biol. Chem.*, 1940, 134, 115.

⁸ *J. exp. Med.*, 1941, 73, 7.

dogs or rats previously rendered hypertensive, the extracts produced no immediate fall in blood pressure; in fact there was a sharp rise at first, probably due to the presence of rennin. After two to four days' treatment there was a consistent fall which lasted for several days even if treatment was stopped. Renal insufficiency actually improved with the fall in blood pressure and the condition of the animals also improved so long as the extract was given. In one instance the fall in pressure was from 200 to 130 mm. In human beings the results were similar. After two days' treatment five patients with malignant hypertension, who were previously stuporose, were alert and sitting up in bed. All had retinal changes (two were almost blind), and the vision was partially restored with visible improvement in the appearance of the retina. Radiographs and electrocardiograms showed improvement in the cardiac condition, and in some cases the urea clearance increased. Blood pressures fell, for instance, from 240/150 to 180/110, but rose again when treatment was stopped. Two of the patients died (one had a urea clearance of 5%; the other refused further treatment). In the remaining three the improvement was maintained at the time the paper was written. Patients with essential hypertension of the so-called benign type responded similarly. Headache, when present, disappeared and dyspnoea improved. The fall in blood pressure varied in different patients; in one case a pressure of 229/119 fell to 157/78. The amount of kidney necessary to make the extracts was about one kilogramme or rather less per patient per day. Some general and local reactions occurred, such as pain in the back and a sensation of constriction in the chest, with pyrexia in some cases. These became rarer as more purified extracts were used. It is too early to say that the problem of the treatment of hypertension is nearing solution. The work needs confirmation, and the patients' subsequent progress will have to be carefully studied. This work, however, is more encouraging than anything which has been published for a long time on the treatment of hypertension.

IS THE SAFE PERIOD SAFE?

Is the safe period safe? It has been sponsored from Germany and Japan and blessed by Rome, but even this evidence of a tripartite agreement has failed to allay the many fears that still exist among anxious neutrals. Knaus has accumulated relevant data for many years and claims that its analysis supports his belief that there is a period of infertility in the monthly cycle of a woman. The evidence of physiological experimentation which he offered to support his views has been challenged by many workers, but has been approved recently by no less an authority than Reynolds in his book *The Physiology of the Uterus*. Whatever controversy may centre round the question of this experimental work, the fact remains that Knaus produces evidence that cannot be contested of the efficacy of the safe period when applied in practice. From time to time evidence is offered from other quarters to suggest that the term "safe period" is a misnomer, and as more and more conflicting data are published the general practitioner finds it increasingly difficult to advise his patients on this subject. Recently John Pryde,¹ in a contribution to the study of human fertility, recorded data from two cases in which a total of 576 acts of intercourse without contraception had occurred during calculated safe periods with no resultant pregnancy. In each case the first act during a fertile period was followed by gestation. A clinical study of the problem has also been presented by Stephen Fleok, Elizabeth Snedeker, and John Rock.² Their paper was

based on the records of the Rhythm Clinic of the Free Hospital for Women in Brookline, Massachusetts. At this clinic patients are supplied with calendars on which they record the dates of menstruation and coitus. On the assumption that the fertile period extends from the nineteenth day before the earliest likely first day of menstruation until the ninth day before the latest likely first day, each calendar has the days of this theoretical fertile period crossed out a month in advance. Every month immediately menstruation ceases the calendars are returned to the clinic, where they are checked and the safe period for the ensuing month is marked. A preliminary selection is made at the patient's first visit to the clinic to exclude those who would be unsuitable for the practice of this method of contraception, and applicants are rejected if there is gross menstrual irregularity or if pregnancy already exists. The authors analyse the records of 207 patients who were accepted. There were twenty-one unwanted pregnancies in this series, but no fewer than fourteen of these occurred when advice given was not carried out, and one followed a mistake in calculating the safe period and may be classified as a "typist's error." The six remaining pregnancies could not be explained. The patients asserted that instructions had been followed in detail, and it is therefore necessary to admit that there is at least a 3% risk of failure, even if all precautions are taken in the application of the method. The conclusion reached was that the safe-period method constituted a workable form of contraception for a selected group of women, but was not reliable enough to be advocated in those cases in which for medical reasons it was essential that pregnancy be avoided. In view of these findings the doctor may with reason be hesitant in advocating the use of the safe period to those of his patients who wish to avoid pregnancy at all costs. On the other hand, he has ample clinical evidence to support him in advising his patients of the fertile period, of which advantage should be taken when sterility exists for no determined reason.

We much regret to announce the death of Sir Frederic Still, K.C.V.O., M.D., consulting physician for diseases of children at King's College Hospital, and consulting physician to the Hospital for Sick Children, Great Ormond Street. Sir Frederic had been chairman of the Editorial Committee of the *Archives of Disease in Childhood* from the time of its establishment in 1926 by the Council of the British Medical Association. We also record with regret the death of Major-General Sir William Pike, K.C.M.G., D.S.O., F.R.C.S.I., who was D.M.S. of the Fourth Army in 1917.

The second section of the Birthday Honours List, for members of the Services, includes the promotion of Air Marshal Harold Edward Whittingham, Director-General of the R.A.F. Medical Service, to be K.B.E.

The Royal Medico-Psychological Association will hold its one hundredth annual meeting on Thursday, July 17. The business meeting will be held at 11, Chandos Street, W., at 12 noon, and the afternoon session, during which papers will be read on the subject of "Ear, Nose, and Throat Disease in Mental Disorder," will begin at 2 p.m. at the Barnes Hall, Royal Society of Medicine.

The forty-first annual meeting of the Canadian Tuberculosis Association was held in Toronto on June 6 and 7 in conjunction with the annual meeting of the Ontario Laennec Society, and it was followed by a meeting of the American Association of Thoracic Surgeons.

¹ *British Medical Journal*, January 4, 1941.

² *New Engl. J. Med.*, December 19, 1940.

CHEST SURGERY IN WAR

This is one of a short series of articles based on lectures given at the British Postgraduate Medical School, Hammersmith

CLOSED WOUNDS OF THE CHEST, AND THE PHYSICIAN'S PLACE IN A CHEST TEAM*

BY

J. A. NIXON, C.M.G., M.D., F.R.C.P.

Intrathoracic Injuries

We may now pass to a consideration of the intrathoracic injuries pure and simple. The distress caused by an open thorax is usually very great, and until the opening has been closed it is difficult to estimate the extent to which the symptoms are due to injury of the thoracic contents. Auscultation and percussion will add little or nothing to the information obtained by seeing the hole in the chest wall. Active haemorrhage may be visible externally and be recognizable by the colour of the blood, which continues bright and arterial. The leakage of a haemothorax which is not increasing from fresh haemorrhage is usually darker and resembles venous bleeding; moreover, the blood does not clot outside the body as fresh blood does. Injuries to the thoracic duct cause rapid and uncontrollable wasting. With closed thorax the examination of the chest resolves itself into a combination of the ordinary methods (inspection, palpation, percussion, and auscultation) with radioscopy and radiography.

Inspection.—The presence of surgical emphysema almost always means the presence of either partial or complete pneumothorax. If the heart's apex beat is visible an alteration of its position may depend on the heart's being pushed over by air or fluid, or on its being pulled over by collapsed lung. Visible distension of one side of the chest may depend on air or fluid. An overdistended chest will generally be immobile. The degree of movement in a chest is not, however, always proportionate to the intrathoracic injury. On the one hand there may be, for instance, a considerable amplitude of respiratory movement with a large haemothorax if the lung remains partly expanded; and, on the other hand, a chest which has been struck without material intrathoracic damage may remain immobile for two or three days even though the lung is not collapsed, and even in the absence of haemothorax or pneumothorax. Cases of this kind are seen in which the injured side remains resonant, slightly retracted, without inspiratory or expiratory sounds, but with normal vocal fremitus and normal radiographic appearance. This condition persists for one or two days and recovers completely. In cases of collapsed lung (without haemothorax or pneumothorax) the side may appear greatly retracted, with indrawing of the interspaces on inspiration.

Palpation.—Surgical emphysema is the first sign to be felt for. If extensive it obliterates or distorts every other physical sign except the position of the heart. Displacement of the heart may be determined by palpation. Exocardial friction fremitus may be felt. It does not always indicate haemo-pneumopericardium or pericarditis: sub-sternal surgical emphysema may cause a similar friction fremitus. Fractured ribs or a missile lying under the skin may be discovered by palpation. An ecchymosis on the chest wall should be carefully palpated, as it is often due to a missile which has penetrated as far as the skin

without making its exit. Tactile vocal fremitus is not always diminished and is occasionally increased over haemothorax. It is not even invariably lost over pneumothorax. The value of palpation can scarcely be over-emphasized.

Percussion.—Percussion is apt to be misleading when the chest has been injured. The resonance of the normal chest depends to some extent on the tension of the chest wall, in the same way as the resonance of a drum depends on the tension of the drum-head. If the chest wall becomes abnormally lax (as when ribs are extensively smashed) the resonance and the pitch of the percussion note are thereby altered. Surgical emphysema will yield a resonant note even over a large haemothorax. Resonance may be impaired over a collapsed lung even if there is no haemothorax. The level of dullness does not indicate the size of a haemothorax. Alteration in the position of the mediastinum may be detected by percussing out the anterior limits of resonance of the uninjured lung. The position or size of the cardiac dullness may be found changed. The liver dullness or stomach resonance is sometimes found to rise unduly high in chest wounds owing to relaxation or paralysis of an apparently uninjured diaphragm. This may mean that the diaphragm is paralysed or that the lung above it is collapsed. Particular attention should be paid to percussion of the base of the opposite (and apparently uninjured) lung. Abnormal dullness of this base may be due to an abnormally high diaphragm, to consolidation, collapse, or compression of the lung, or to a haemothorax. A missile may have passed through both lungs. The diaphragm may be pushed up by subphrenic injuries or by tympanites and cause abnormal dullness at the pulmonary base or bases.

Auscultation.—The positive sign of good air entry with normal vesicular breathing is the most valuable of all auscultatory sounds. It is evidence that the lung in that area is expanding. Absent and altered breath sounds are less reliable. Breath sounds may be diminished or totally absent in haemothorax and pneumothorax; they may be equally absent in any case in which the lung is not expanding—for example, when a bronchus is blocked or when the respiratory movements are too feeble (as in shock) to produce any audible sound. Altered breath sounds do not follow the same general rules in injuries as in diseases of the lungs. Bronchial breathing is not uncommon over haemothorax, whilst it may be absent in haematoma of the lung if the haematoma is superficial and wide in extent. Bronchial or amphoric breathing is often heard over pneumothorax even when closed. The coin-sound is sometimes absent even in a large pneumothorax.

Mucous and Crepitant Rales.—It is very difficult to assign particular values to mucous rales and crepitations in the same way as has hitherto been customary in disease. When it is remembered that, in the majority of cases where the lung has been struck, three changes almost invariably occur which are capable of producing mucous or crepitant rales, the difficulties of exactly interpreting these physical signs will be appreciated. The three constant changes are collapse of air vesicles, haemorrhage into the alveoli and bronchioles, and haematoma of the lung. Whatever other accidents may have occurred these three may be confidently assumed to be present when a missile has struck the chest with enough force to penetrate

its wall. Mucous rales will give practically no information of diagnostic value. Crepitations are occasionally useful, particularly in two conditions. In collapse of the lung (either homolateral or contralateral) widespread coarse dry crackling is a valuable physical sign. In compression of the opposite lung by a large haemothorax or pneumothorax on the injured side fine crepitations are often heard over the base of the compressed lung. On the second or third day (and at any later time) the appearance of crepitations where none were previously heard may indicate the occurrence of pneumonia or bronchopneumonia, or that extremely rare condition gas gangrene of the pulmonary tissue.

Friction Sounds.—Pleural friction must be carefully watched for. It is often the first sign of intrathoracic infection. But a small haemothorax almost always at an early stage produces friction which is of no great moment. Pericardial friction is not uncommon, but pericarditis is not necessarily a fatal or even a serious complication of gunshot wounds of the chest. A heart beating in surgical emphysema of the substernal tissues may give rise to a friction sound indistinguishable from pericarditis or to a remarkable churning sound mistakable for haemo-pneumopericardium. An adjacent pneumothorax will give to the normal heart sound an exaggerated resonance or reverberation, and if friction is present either from pericarditis or surgical emphysema, or from haemo-pneumopericardium, the noises which may result are astonishing, although with experience they become unmistakable. As a rule the exocardial friction sounds which appear immediately after wounding are due to surgical emphysema, and are very loud and coarse. They begin faintly over a limited area and spread gradually with increasing loudness. Hernia of the stomach or intestines may cause gurgling sounds to be heard in the chest, but these sounds are not diagnostic of a lacerated diaphragm. Intestinal gurgling is sometimes transmitted very distinctly through a pneumothorax when the diaphragm is intact, and it is also heard when the diaphragm is raised abnormally high. It is very difficult to interpret changes in the heart sounds and rhythm correctly. Bruits which are mistaken for endocardial murmurs are produced by displacement of the mediastinum with dislocation or torsion of the heart and great vessels. Irregularities in rhythm may be similarly caused. Speaking generally, a heart which has been hit, with or without penetration, takes on a rapid and irregular action, especially if struck on the posterior aspect or near the auriculo-ventricular junction. I have, however, seen in one case a shrapnel ball lodged in the ventricular muscle near the apex, and in another a fistulous opening through the chest wall into the right auricle, yet in neither was there any interference with the heart's action. But as a rule true delirium cordis indicates that the heart has been struck by the missile. Physical signs suggesting involvement of the pericardium or heart do not constitute a contraindication to operation. They are exceedingly fallacious.

Succession Splash.—It may be possible to elicit this sign in haemo-pneumothorax. It is never justifiable to attempt to do so in the early stages, and with x rays at hand it is never necessary.

Metallic Tinkling.—I thought that I had never met with this sign in gunshot wounds of the chest, but recently I found a note of it in one of my cases at Heilly (in 1916).

Voice Sounds.—Modifications of vocal resonance are apt to be misleading. The most constant and reliable sign is aegophony, which I have not met with except when there was fluid in the chest. It is usually best heard at or near the upper level of the fluid, and may be localized to a very restricted area there. Diminished vocal resonance

does not always accompany even a large haemothorax it may be considerably increased. Occasionally the vocal resonance is increased without any obvious intrathoracic change even on x-ray examination. I do not know what is the explanation of this sign occurring in a chest which has been hit or penetrated. I have often met with it in the first few hours, and have not been able to attach any importance or diagnostic significance to it. Possibly it is due to a partial deflation of the lung that is not sufficient to produce the physical signs of collapse. In pneumothorax the voice sounds and the cough may acquire a characteristic metallic ring. This metallic ring is also sometimes heard with the inspiratory souffle in a closed pneumothorax, and indicates that a large opening communicates with the pneumothorax from the bronchus.

Auscultation is made very difficult when surgical emphysema is present. If the surgical emphysema is considerable and obvious, it will be recognized at once that auscultation can be of little assistance. Often, however, the emphysema is not evident, and the auscultatory sounds become very puzzling, particularly when the surgical emphysema is mediastinal, substernal, or subpleural, and does not extend to the subcutaneous tissues. Under all circumstances auscultation should reveal the approximate position of the heart, and this is a point which requires to be determined in every case of gunshot wound of the chest.

Value of Radiography

It is impossible to treat chest wounds adequately without radiographs. From the time a case comes within reach of surgical assistance to the time the patient is finally discharged as cured, and even long after if untoward sequelae are suspected, radiographs are constantly required. At the outset it is only with radiographs that the probable track of a missile and its position, if retained, can be ascertained. The position of the heart and diaphragm, their movements, damage to the lung, collapse of the lung, haemothorax, and pneumothorax can only be accurately determined by radiographs interpreted in conjunction with physical signs. Radiography alone is insufficient: the cases must also be radioscopically examined and the parts be seen in movement with the fluoroscopic screen, in a sitting-up position if possible. It must be remembered that pieces of clothing can never, and fragments of bone only rarely, be revealed by radiographs.

Some Other Considerations

One of the most reliable signs of a haemothorax becoming septic is an increased respiration rate and even apparent dyspnoea without any corresponding change in physical signs or increase in the amount of fluid. Air in the pleural cavity plays little or no part in preventing a collapsed lung from expanding unless there is a valve pneumothorax constantly pumping air into the pleural cavity. The rapidity with which a collapsed lung can re-expand if free from adhesions is not generally known. I had accidental proof of this during the last war. A patient on whom complete thoracotomy had been performed was by mistake radiographed within two hours of his operation. The lung, which had been fully collapsed at the operation, was found both by screening and by a photographic plate to be almost completely re-expanded. The thoracic wound had been hermetically closed and covered with glue.

"Pleural shock" is a terror to some minds. But the pleura is not a delicately sensitive membrane. Opening the pleural cavity and handling the lung can be done with impunity if care is exercised not to allow displacement of the mediastinum and contents.

If the mediastinal contents are gently held in place with tenaculum forceps a patient under local anaesthesia experiences very little discomfort and no shock when the thorax is opened, the cavity explored with the hand, and the lung even "delivered" outside the chest for examination and repair. If, however, the heart is allowed to swing out of position grave shock may occur immediately. I have seen a patient whose heart was pinned in position by a small fragment of metal which attached the pericardium to the diaphragm almost die on the operating table when the heart was released and allowed to swing to the opposite side of the chest, although a total pneumothorax had caused him little discomfort either at the time of wounding or after the thorax had been widely opened at the beginning of the operation. It is very striking to find how little is the distress caused by sudden pneumothorax when the heart is retained in position by old adhesions. In 1921 I saw an example of this in a soldier who was wounded in 1915; his pneumothorax, dating from that time, was discovered only by accident in 1921. His heart was held in position by adhesions which were probably present before he was wounded. In cases showing extreme distress relief is instantaneous when, after opening the chest for thoracotomy, the heart is gently drawn back into position.

The heart is a strange organ. It appears to resent blows on its posterior aspect more than on the anterior; it also resents anything like torsion during an operation. If the heart impinges on a foreign body during its beating the rhythm and rate may be totally disordered even when the heart itself is quite uninjured. Never diagnose haemopericardium until you have seen the pericardium exposed either during life or after death.

Breathing exercises are apt to be overvalued. With a well-cleaned pleural cavity a lung expands perfectly without exercises. The toilet of the pleura is what matters. Lockwood and I eventually abandoned exercises altogether, as they only fatigued the patient uselessly. Mr. Tudor Edwards in his memorandum E.M.S. Gen./326 says he is doubtful if blowing exercises have the slightest value in the re-expansion of a lung bound down by pleural adhesions. I have often demonstrated what happens radioscopically. The good lung overdistends, the mediastinum bends convexly into the damaged side, and the harder the patient blows the greater is the mediastinal displacement.

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The thirty-fourth annual medical report of the King Edward VII Sanatorium, Midhurst, is almost entirely statistical. It analyses the admissions and discharges (142 and 172 respectively) of the past year and also the after-history of the Midhurst cases since 1906. Of the 149 patients discharged in the first year of the sanatorium's existence, 27 were still alive in 1940. The more astonishing thing is how few are lost sight of—something under 5%. The treatments given are also analysed; thus during the last fifteen years artificial pneumothorax has been attempted in 303 cases, and has been successful in 240. Of these 240 patients, some of them dating back to 1925, 182 (or 76%) are known to be still living. Eighteen patients out of 15 severe cases and 23 less severe in which thoracoplasty was done were known to be working or fit for work, 6 to be well though not working, and 5 to be keeping in fair health. On the outbreak of the war, half the sanatorium was taken over by the Ministry of Health for the treatment of surgical chest cases among the officers of the three Services. These cases are not discussed in the present report, but it is proposed at the end of hostilities, or earlier if the number of cases requires it, to give a full analysis of the cases treated.

THE PREPARATION AND COOKING OF
GREEN VEGETABLES

The following note on the preservation of the vitamins and salts in the processes of preparing green vegetables for the table has been drawn up by the Medical Research Council's Accessory Food Factors Committee.

Conservation of Vitamins

Vitamins are lost or destroyed in the preparation and cooking of greenstuffs by many of the methods now in common use. As it is of special importance at the present time to secure the maximum nutritive value from all the foods available, it is desirable to employ methods of preparation and cooking of foodstuffs which conserve their nutrients to the utmost.

The following generalizations summarize our knowledge of the behaviour in greenstuffs of the vitamins most likely to be affected in the course of preparing green vegetables for the table. Some simple rules based on these generalizations are given and cooking methods for greenstuffs are recommended.

Fat-soluble vitamin A is unlikely to suffer damage; water-soluble vitamins B and C are the most likely to be lost on preparation and cooking. This is so for the following reasons:

(i) Because they are water-soluble, they are dissolved out by soaking or cooking water, they also run out in the watery juice.

(ii) Raw vegetables contain enzymes which are active in destroying the vitamins, particularly if the raw foodstuff is left lying about after being bruised or cut up. These substances which destroy the vitamins become more active as the temperature rises during cooking up to a point at which they themselves are destroyed. This point of destruction is only a few degrees below boiling temperature.

(iii) The water-soluble vitamins are themselves also destroyed by heat to an extent which depends on the length and severity of the heating.

(iv) The water-soluble vitamins are found to diminish in amount in foods left standing after they are cooked.

(v) Salt or sugar added to vegetables before cooking lessens the amount of destruction under conditions described in (iii) and (iv) above.

(vi) Vitamins B and C are more stable in the presence of acid, which is sometimes added as vinegar. The addition of alkali (carbonate or bicarbonate of soda) will, on the other hand, hasten the destruction of the vitamins.

Practical Rules for treating Green Vegetables

- (1) Obtain as fresh as possible.
- (2) Keep in a cool damp place in order to reduce wilting.
- (3) Take precautions to avoid damage due to crushing or bruising during transport or handling.
- (4) If vegetables are soaked use salt water (two teaspoonsfuls to one pint).
- (5) If vegetables are to be shredded or finely chopped for salads, prepare immediately before serving.
- (6) Use the smallest possible amount of water for cooking.
- (7) Have water boiling before adding vegetables.
- (8) Add salt to water before adding vegetables.
- (9) Add vegetables gradually or in small amounts at a time, in order to prevent water going off the boil.
- (10) Cook vegetables no longer than is necessary to render them tender.
- (11) Plan cooking arrangements so that vegetables are dished up and served immediately after they are cooked. On no account allow to stand for a long time on a hotplate.
- (12) If there is water left after cooking, drain off and use in the preparation of soups and gravies; alternatively, if successive batches are being cooked on the same day, use the same water again, adding more if necessary.

Methods resulting in Least Loss of Vitamin C

Method 1.—Boil for the shortest time in a small quantity of boiling salted water. Use water left over for boiling other batches and for addition to soups and gravies.

Method II.—Slice the fresh vegetables into ribbons about 2 to 3 inches long by 3/4 inch wide and cook briskly for half to one minute in a small quantity of hot oil or dripping to which salt has been added (two teaspoonsful oil and half teaspoonful salt to an average-sized cabbage). Add a small quantity of boiling water (half to one cupful for above) and stew for about ten minutes in a closed container. Keep the lid on so that no steam escapes. When the vegetables are cooked only a very little water should be left. This method is used throughout the Far East and India. In Europe the nearest approach to it is the French method of "casserole" or "conservative" cooking, by which the vegetables are placed in a closed fireproof dish with a little water and fat and cooked in the oven or over a low flame for 15 to 25 minutes.

In hay-box cookery vitamin C is destroyed, so that this method should not generally be used for cooking green vegetables, which are particularly valuable in the diet for their vitamin C content.

Steaming of vegetables even with the best equipment is not as satisfactory as the methods described above.

Conservation of Salts

If the precautions described above are carefully taken, it can be relied on that effective conservation of the valuable salts present in green vegetables will also be secured.

INVALIDS, AND BREAD FORTIFIED WITH CALCIUM

The following statement concerning the effect upon invalids of bread made from flour "fortified" by the addition of calcium salts has been issued by the Medical Research Council:

The exigencies of the present situation have forced upon the people of the country a diet which requires, if health is to be maintained, the addition of a supplement of calcium salts. The need for this supplement is brought about in two main ways: (1) the wartime diet tends to be deficient in available calcium, especially since restrictions have been imposed upon the sale of milk and eggs; (2) the high content of cereal foods in the diet increases the amount of calcium it is necessary to ingest: this is partly because most cereals are deficient in calcium but also because the presence of phytic acid in cereals often prevents the body from making use of the calcium they contain. The Ministry of Food has asked the Food Rationing (Special Diets) Advisory Committee whether the addition of small supplements of calcium salts to flour would be in any way deleterious to invalids. In reply the committee expressed the opinion that "there is neither medical nor scientific evidence that the consumption of bread made from flour fortified by the addition of appropriate quantities of calcium salts is harmful to patients suffering from any type of disease." This opinion was based on the following considerations.

It has been proposed by the Accessory Food Factors Committee of the Lister Institute and of the Medical Research Council that 14 oz. of calcium carbonate be added to each 280 lb. of 85% extracted flour and 7 oz. of calcium carbonate to each 280 lb. of white flour. Expressing these quantities in other terms, it can be said that 1 lb. of the "fortified" 85% extracted flour and 2 lb. of the "fortified" white flour contain slightly less calcium than 1 pint of fresh milk. There can therefore be no objection to the use of this fortified flour on the grounds that it will result in the consumption by invalids of harmful amounts of calcium. It is, however, necessary to dispel a current misconception with regard to the qualitative aspect of this fortification. It has been suggested that the consumption of fortified flour might have a deleterious effect upon certain invalids, not because of the increased calcium content, but because the calcium added to it is in a form—the carbonate of calcium—different from that which exists naturally in food and that this carbonate of calcium is harmful.

This criticism appears to be ill founded. There is direct evidence obtained on human beings that the calcium of calcium carbonate is as available to the body as that of calcium phosphate. In an easily assimilable food, such as milk, calcium is in the form of a combination with a phosphoric acid, a common normal component of animal tissues; in calcium carbonate, calcium is also present as the salt of an acid of widespread occurrence in living tissues. In both cases the calcium is split off from the acid during the process of digestion and is absorbed into the body in the same form in each case.

A CORPS SCHOOL FOR THE R.A.M.C.

[FROM A CORRESPONDENT.]

For intensiveness it would be hard to beat a week's course which an enthusiastic class from No. 2 Corps R.A.M.C. has recently undertaken in a university town. Thanks to the co-operation of one of the colleges, about 30 R.A.M.C. officers and N.C.O.s have been accommodated in its rooms, the undergraduates being down for the vacation. It was never pretended that more could be done in a week's course than open up and draw attention to a number of subjects which officers should study.

This is not a question of medical subjects pure and simple. The trained R.A.M.C. officer is much more than a medical man in khaki, his patients the men in the Army; he is in his degree a military expert, with a sufficient knowledge of modern methods of fighting, the use of different types of weapons, the technique of supply and transport, and a hundred other matters to make him a well-adapted unit in the many-sided organization of which he is a part. He should be able to read maps, should be trained in drill, should have acquired a soldierly carriage and demeanour, and should have a note of authority in his voice, without which he cannot expect to command obedience, especially when circumstances are trying and danger is imminent.

Therefore, although there were lectures in this course on such subjects as surgery in the field, wound shock, and sanitation, there were lectures also bearing the titles "Signals," "The Armoured Division," "Administration," "Security," "Supplies." Such themes as messing and cooking and office routine were not neglected.

Each of the six mornings of the course began with a short spell of physical drill under the leadership of an instructor. The rest of the morning was given up to four lectures, each lasting some forty minutes, with opportunities for questions at the end. These were given by R.A.M.C. officers of experience and staff officers who had obviously taken great pains to prepare their material. After lunch in the college hall the class had an hour of squad drill, stretcher work, or Thomas's splint drill; then came two more lectures, and after tea the class met in syndicates to discuss problems set by the D.D.M.S. of the Corps in an indoor "tactical exercise without troops." Then mess in hall, and still another lecture, perhaps on a wider or more "popular" subject.

A Specimen Day in the Course

Take a specimen day—the Thursday of the course. After physical training the four morning lectures are on "Fire Signals," by a Fire Officer; "Military Law," by the Commandant; "Routes and Convoys," by the M.A.C. Officer; and "The Field Ambulance," by the A.D.M.S. of the Division. In the afternoon squad drill and triangular bandages, and then two lectures, one of them on "Flies and Vermin," by the officer commanding the Field Hygiene Section. In the evening, instead of a popular lecture, solutions are given by the D.D.M.S. to the problems set in the tactical exercises. This is one of the most instructive events of the week, and a vivid picture is built up of the details with which medical officers should be familiar in battle. Medical tactics are discussed and points emphasized by question and answer in a two-hour session.

This Corps School is the direct descendant of the No. 6 Corps School which was started in 1916 by Major-General Sir Harry Thompson and continued in the following year as the First Army R.A.M.C. School of Instruction (B.E.F.). The syllabus is much the same and the general policy identical. The chief instructor and late Commandant of the old Army School is now D.D.M.S. of the Corps. The Commandant is an R.A.M.C. officer with recent war experience, and the Adjutant did good work as a regimental medical officer in Flanders last year. During the week's course these officers were accessible at all times to answer questions and explain any points that had arisen out of the day's lectures, and this was perhaps even more useful than the set programme.

On the last morning, after a lecture on physical medicine by the Commandant, the course ended with a demonstration of the carrying of casualties and a visit from the Corps Commander, whose personal interest in the work of the R.A.M.C. has been at all times most stimulating. Later arrangements included a class lasting one week for N.C.O.s, and a short study week for senior R.A.M.C. officers.

AWARDS FOR GALLANTRY IN CIVIL DEFENCE

The award of the George Medal to Dr. Hannah Billig, Stepney, to Dr. Bernard Doyle, and to Mr. S. Woolfson, District A.R.P. Warden, Stepney, and to Dr. Allison Jean McNairn, assistant medical officer, City General Hospital, Plymouth, is announced in a *Supplement* to the *London Gazette* dated June 27. The announcements read as follows:

Dr. BILLIG: "During an air raid Dr. Billig, although herself injured, left shelter to attend to casualties in the street. Bombs dropped within twenty yards of her, but for four hours she continued to give treatment to the injured. She showed great bravery and attention to duty, regardless of her personal safety and injuries."

Dr. DOYLE and Mr. WOOLFSON: "During a severe air raid a large building was hit and caught fire. Dr. Doyle and District Warden Woolfson entered that part of the building which was alight and wrecked and found two men trapped. Two high-explosive bombs which rocked the blazing building dropped within twenty yards of the rescuers, but they continued their rescue work and both victims were removed to safety. More high-explosive bombs fell nearby and two men of the rescue party were buried. One of these men was quickly removed, but the other was pinned down by half a ton of masonry. Dr. Doyle was again called to give treatment, and whilst so doing more bombs were dropped, but in spite of this Dr. Doyle stayed with the casualty until he was removed to hospital. Woolfson remained at the scene of the incident the whole of the time aiding the rescue work, and did not leave until all casualties had been removed from the building. Both men showed great courage in very dangerous circumstances."

Dr. MCNAIRN: "When the hospital was hit Dr. McNairn was buried to the neck in debris. She was extricated, and despite shock and injuries, assisted in the rescue work and gave medical assistance to injured patients and air-raid casualties admitted to the hospital. She would not have treatment for her own injuries until all other cases were being cared for, but despite severe pain continued to give aid."

NATIONAL BABY WEEK

The twenty-fifth National Baby Week opened on Tuesday, July 1, and messages of encouragement have been received by the National Baby Welfare Council from its Patron, Queen Mary, from the Minister of Health, and from Sir Wilson Jameson, Chief Medical Officer to the Ministry of Health. The function of the Council (whose offices are at 29, Gordon Square, W.C.1) is to educate public opinion on matters connected with the welfare of mothers, babies, and little children. Queen Mary writes: "I am sorry that the jubilee celebration of the twenty-fifth National Baby Week should have fallen in time of war. Nevertheless I am glad to have this opportunity of paying a warm tribute to what has been achieved by the National Baby Welfare Council during the past 25 years. I know that the Council are now doing their utmost in helping to solve the many new and urgent problems in the care and well-being of mothers and small children arising out of the difficulties and tragedies of wartime conditions. To one and all who are striving in this vital cause I send my congratulations upon this jubilee anniversary and my best wishes for continued success in the years to come." The July, 1941, issue of *Mother and Child*, official organ of the National Council for Maternity and Child Welfare (Aldwych House, Aldwych, W.C.2), is a special Baby Week Number. It includes a commemorative editorial by Dr. Eric Pritchard, chairman of the executive committee 1917-39 (who also writes on milk dilutions and deficiency symptoms), a paper by Dr. Leslie Housden on the relation of mothercraft teaching to family allowances, and a record of progress in the campaign for immunization of children against diphtheria.

There will be no more "white bread" available in the Union of South Africa for a long time. The Union has had to import so-called "hard wheat" from Canada to make up for the deficiency in the grade of home-produced wheat for bread-making, and the wheat cannot now be imported owing to the requirements of shipping for war purposes. The Government has therefore decided to introduce a standard loaf in which only whole wheat is used. Dietitians maintain that this bread is more nutritious than white bread or the brown variety made of unsifted flour.

Local News

ENGLAND AND WALES

Epsom College

The President, Lord Leverhulme, took the chair at the eighty-eighth annual general meeting of Epsom College, held on June 20, at 49, Bedford Square, London, W.C. In moving the adoption of the Council's report he congratulated the headmaster and his staff, the secretary and bursar and those associated with him, on the way in which the work of the school and the Foundation had been maintained. He pointed out that some public schools had necessarily had to be evacuated to quieter parts of the country, and thought that the present generation of Epsomians in passing through the school would count themselves fortunate in future years that their public-school lives were passed amid surroundings familiar to all old Epsomians. The President expressed the Governors' deep gratitude to Dr. John Fawcett for his services during the past six years as treasurer. In proposing as his successor Surgeon Vice-Admiral Sir Reginald Bond, he said that it was fitting that the College should have a distinguished member of the Senior Service in this office now. The Governors unanimously adopted the Council's Report and received the announcement of foundation scholarships and pensions awarded by the conjoint committee which met in May last.

IRELAND

Medical Research Council of Ireland

The Medical Research Council of Ireland, of which Prof. R. P. Farnan is chairman and Prof. J. W. Bigger honorary secretary, states in its fourth annual report that during 1940 the policy was followed of continuing as far as seemed wise and feasible the support of workers already appointed, and not many fresh appointments were made. Such a policy, of course, risks discouraging research-workers who might under favourable conditions be assisted and developed, but as experience in research is gained only slowly and with difficulty it is considered that it would be unwise to sacrifice what has already been achieved. The necessity for encouraging research workers is emphasized. In a country like Ireland the reputation of the medical profession outside its boundaries depends very largely on the research work done by its members, and the value of an improved reputation of the Irish medical profession alike to the progress of the State and to the Irish doctors who have to seek work abroad is self-evident. The hope is expressed that when the Council again approaches the Minister for Local Government and Public Health (as it did in 1938) it will be found that the Government and the community realize the importance and worth of its activities, and that it will be possible for the Minister to place an adequate capital sum at its disposal, or at least a larger income and for a longer term of years than the £5,000 a year for five years which is at present granted. New grants were made during 1940 to three whole-time and two part-time workers, as well as five grants-in-aid, and grants were renewed to five whole-time and four part-time workers. Special attention is drawn to the work done by one grantee, Dr. R. A. Q. O'Meara, on diphtheria antitoxin. This work was initiated on account of the high death rate from diphtheria in Dublin. From Dr. O'Meara's work it was concluded that diphtheria toxin has two components, which he has named substances A and B, and that the type of toxin responsible for hypertoxic diphtheria is that in which a high proportion of substance B relative to substance A is found. During 1940 a limited amount of antitoxin rich in antibody to substance B became available for clinical trial at Cork Street Fever Hospital, Dublin, and of sixteen cases of infection with the *gravis* type of organism so treated, the cases being chosen because of their extreme severity, only one died. The dose of this antitoxin found to be effective clinically is only from one-third to one-eighth that of a commercial antitoxin.

Belfast Tuberculosis Scheme

It was announced on June 16 by the Ministry of Home Affairs for Northern Ireland that the Belfast City Council had been relieved of its powers under the Tuberculosis Pre-

vention (Ireland) Act, 1908; that its Tuberculosis Committee had been dissolved; and that two commissioners had been appointed to take control. These steps followed an inquiry by Mr. J. Dunlop and Dr. E. Armstrong into the administration of Whiteabbey Sanatorium and Graymount School. The Ministry found that the medical superintendent officer of health, Dr. C. S. Thomson, was deserving of censure; that the city treasurer, the steward clerk, and Sister S. J. W. Houston were deserving of severe censure; that Dr. P. S. Walker, the medical superintendent, and Miss J. M. Lamb, the matron, should be retired from their respective offices; and that the official stocktakers should not be re-employed. As a result of the action of the Ministry in dissolving the Tuberculosis Committee of the City Council, the Belfast Corporation on June 20 appointed six members to investigate the various municipal departments, and the Lord Mayor announced that Dr Walker, whose retirement had been ordered by the Ministry, had resigned his post owing to ill-health.

Correspondence

Crush Injuries

SIR.—In the article on "Crush Injury with Impairment of Renal Function" (March 22, p. 427), Dr. D. Beall and I stated that we had been unable to find any account of similar cases in the literature. This surprised us, since such injuries are not uncommon in any war conducted along modern lines; in certain civil occupations (e.g. mining) similar damage seems also possible. We have since discovered references to it by a more thorough search of the German literature.

The first description is that of Colmers (1909), who described among 83 casualties from the Messina earthquake 19 suffering from "acute pressure necrosis." Unfortunately, the German expedition arrived on the scene fourteen days after the accident, when all the acute cases had died, and in only one case is there a history of bloody urine and oliguria.

Then, in 1916, Fränkelthal described three soldiers who had been hurled and showed oedema, bloody urine, and, post mortem, ischaemic muscle necrosis. Little attention was paid, however, to the kidneys. Other pathologists then described similar material, many in journals now inaccessible or in "inaugural dissertations." Among these, Hackradt (1917) from Bors's laboratory described tissue from a nine-hour burial with oedema of the leg, and blisters, and bloody urine containing albumin and casts, the patient dying on the fifth day. Necropsy showed muscle necrosis and tubular degeneration in the kidneys with blood casts. Bredauer later (1920), from the same laboratory, described three further cases.

It was left to Minami in 1923 to summarize the chaotic literature and to investigate more completely material from three cases that had been already briefly described by Lewin (1919) from Pick's laboratory. His description, though incomplete, tallies exactly with our own—e.g., Case II, buried by a grenade explosion for an unknown time, on the second day showed a painful swelling of the left thigh; on the fourth day scanty bloody urine and tenderness in the kidney region; on the fifth day 200 c.c.m. of urine only, less pigmented, was found; and on the sixth day, when death occurred, the urine was still scanty (but now yellow) and contained red cells and hyaline casts. Necropsy showed grey muscle necrosis and oedema of the lungs. The kidney showed normal glomeruli, degeneration of the coiled tubules, and pigmented masses and ribbons in the collecting tubules and in Henle's loops. Minami also pointed to the analogy with paralytic myohaemoglobinuria of horses, intending, if he could obtain fresh material, to identify the pigment spectroscopically.

By the end of the last war the syndrome was well recognized by Germans, and included in the textbooks of war surgery; in Great Britain, however, it appears to have been both unrecognized and undescribed; nor have I discovered any reference to the German findings. In six of the standard textbooks on war surgery published here and in the U.S.A. there is no mention of it, nor is there in the (yet) few books on that subject published here recently.

Examination of the reasons for this gap in our medical preparedness is almost as important as the finding thereof.

First, while we were out, as the Germans were, fighting on fronts contiguous with our own system of hospitals, yet we

had an efficient pathological service working in France. This developed most highly, however, the bacteriological aspects the enemy, steeped in the Teutonic tradition of morbid anatomy, not only had his crushed and buried patients dying on German-occupied soil instead of at a French base or in mid-Channel, but had the energy to investigate such material. We should be able to learn a great deal from the systematic examination of such traumatic deaths which, until the war had tended towards the perfunctory. Necropsy should be done on air-raid victims whenever possible.

Secondly, the surgeon under wartime conditions is often too busy to give detailed consideration to anything beyond what is absolutely necessary to the well-being of the patient. This is where co-operation between surgeons, physicians and research workers becomes of the utmost importance. Clinical, chemical, and pathological observations adequate enough to make any rational deductions regarding treatment are in many of these conditions far beyond the capabilities of any single, even full-time, worker. The advantages of group research are thus obvious.

Finally, German medicine can never be entirely ignored by us without loss, even though, since the advent of Nazism, its general standard has been in rapid decline.—I am, etc.,

Department of Medicine, E. G. L. BYWATERS.
British Postgraduate Medical School,
June 27.

REFERENCE

1 Minami. *Virchows Arch.* 1923, 243, 247. The other references are given in this paper.

Sulphadiazine and Sulphanil-guanidine against Gas Gangrene

SIR.—Some months ago (*Journal*, 1941, 1, 263) you kindly published a paper by myself describing experiments on the use of sulphouamide compounds to prevent infections by gas-gangrene organisms in experimental wounds of guinea-pigs. This work showed that the local application of these compounds would prevent fatal infection by *Cl. welchii* or *Cl. septicum* in a large proportion of cases; of the three main sulphonamide compounds now in use, sulphanilamide, sulphapyridine, and sulphathiazole, the last named was the most effective. Since this paper was written, two new compounds have been introduced in America—namely, sulphanil-guanidine and sulphadiazine. An investigation has therefore been made to discover whether either of these exerted any greater effect than the three just mentioned. The technique was identical with that previously used. With *Cl. welchii*, six experiments were made using five different strains; generally the infecting dose of organisms was greater than 1,000 M.L.D. All the controls died, mostly in the first twenty-four hours. In the group treated with sulphathiazole, 20 out of 26 (i.e., 72%) survived for more than ten days; in the group with sulphadiazine 13 out of 30 (i.e., 43%) survived; in the group with sulphanil-guanidine 14 out of 33 (i.e., 42%) survived. The virulence of the infection varied a good deal from one experiment to another, so that these totals require a little qualification.

Briefly, in all the experiments the guinea-pigs treated with sulphanil-guanidine were definitely worse than those with sulphathiazole as regards both survival rate and clinical condition. Five experiments were made with sulphadiazine: in three experiments sulphadiazine appeared as effective as sulphathiazole, but never more effective, while in two experiments it was markedly inferior. With *Cl. septicum* two experiments were made, one with over 10,000 M.L.D. and one with less than 1,000 M.L.D. Sulphadiazine appeared to be about as effective as sulphanil-guanidine, while sulphanil-guanidine was inferior on both occasions. From these experiments it is concluded that sulphanil-guanidine is definitely inferior to sulphathiazole in protecting animals against *Cl. welchii* or *Cl. septicum*, while sulphadiazine is no better than sulphathiazole and is probably inferior. This work provided no evidence that it would be advantageous to substitute either of these compounds for sulphathiazole as a local application to wounds.

As regards the rapidity of absorption of these two compounds, sulphanil-guanidine, which is fairly soluble, seemed to be removed from the wound quickly and so remains very macroscopically visible in the wounds of guinea-pigs which died after one to two days; this finding is of interesting contrast with its reputed slow absorption from the bowel, which is

the basis of its use in bacillary dysentery. Sulphadiazine, which is less soluble than sulphathiazole, appeared to be absorbed slowly, and when the wounds were reopened on the third day considerable quantities of the compound were always discovered.—I am, etc.,

National Institute for Medical Research,
London, N.W.3, June 24.

F. HAWKING.

Unabsorbable Suture Materials

SIR,—I have been greatly interested in the recent correspondence in the *Journal* on the subject of unabsorbable sutures. For the past twenty years I have used nothing but linen thread (No. 60) for ligatures in the operation of radical mastectomy and have seen no ill effects result. Formerly I used thread exclusively for ligatures in thyroid operations, but an occasional subcutaneous sinus occurred. I therefore substituted fine catgut for ligation of bleeding points superficial to the deep fascia and continued with thread for the deeper ligatures with complete success.

For clean wounds in safe areas thread ligatures have the following advantages over catgut: (1) Thread can be boiled and its sterility is therefore guaranteed. Unfortunately an occasional "batch" of catgut appears to be far from sterile. (2) The tensile strength of thread is comparatively constant while that of catgut varies. With a little experience it is easy to sense how much strain thread will stand and, as a result, ligatures are unlikely to snap. (3) The surface of thread is rough while catgut is smooth and slippery. Consequently thread knots hold more effectively and "slipping" of a properly applied thread ligature is practically impossible. (4) Economy. In operations where a hundred or more ligatures are commonly necessary the cost of thread as compared with catgut is measured in terms of pence instead of pounds.—I am, etc.,

R. J. McNEILL LOVE, M.S., F.R.C.S.

London, W.1, June 26.

Treatment of Osteomyelitis

SIR,—Mr. H. J. McCurrich's letter (June 14, p. 906) regarding chronic osteomyelitis following war wounds raises several important points in the treatment of this surgical problem.

Once the condition is established in certain situations, one of which he mentions, the problem of treatment is indeed great. Some cases following the last war had infection eradicated by wide guttering operations, notably in the hands of the late Naughton Dunn, but, as Mr. McCurrich points out, it is not uncommon for a man to have a discharging sinus for twenty-five years. Having seen many cases of this type I am firmly convinced that, to improve results, we must concern ourselves more with prevention than cure, by recognizing in the initial stage those wounds which are likely to become the seat of a chronic infection. If this is done, more radical methods can be employed in the primary stage of treatment than would be possible some years later.

As an instance I cite the case of a man wounded in the shoulder in the evacuation from Dunkirk. The head of the humerus and part of the glenoid were shattered and numerous metallic fragments scattered in the region. When he reached me the wound was almost healed and surgical intervention was not indicated. Radiographs now show a number of metallic fragments embedded in a shapeless mass of bone at the upper end of the humerus. I do not think that the function of the arm would have been any worse had all these bony and metallic fragments been cleaned out in the first instance, but I do know from previous experience that a chronic infection is likely to supervene in later years, when it will be impossible to do a radical operation short of a fore-quarter amputation.

The upper and lower ends of the femur are notorious for their ability to hold infection in spite of all treatment, and the answer to Mr. McCurrich's question regarding amputation is that each case must be judged on its merits, and amputation performed before it becomes a life-saving operation. Many patients continue for years with a small dressing which is much less of a disability than an artificial limb.

The suggestion of a centre or colony for these patients is surely already met in the Ministry of Pensions Hospitals, where a large percentage of the cases treated are of chronic bone infections.—I am, etc.,

Liverpool, June 14

W. R. D. MITCHELL.

Marking of Gas-contaminated Clothing

SIR,—In many areas the handling and cleansing of gas-contaminated clothing is the duty of the district engineer, but I expect that some medical officers of health and first-aid post medical officers have taken an interest in the collection and marking of the clothing that may be handled in the cleansing stations attached to hospitals and first-aid posts.

The original suggestion was that the clothing could be marked with metal disks fastened to the garments and then collected in string bags, which could be similarly marked. It is now necessary for cotton and woollen garments to be kept separate, and it is suggested that a tape or disk be pinned to each garment. In this district we have worked out a scheme by which every garment has a tape label attached to it by a stapling machine. This altogether does away with the need for safety pins, which in practice will, in my opinion, prove unsatisfactory. The stapling machines can be efficiently handled by men or women even wearing the clumsy gas protective gloves. The scheme requires that a stapling machine, two rubber stamps, a length of tape, and a pair of scissors be supplied to each side of the cleansing station. When the station is at work every garment will have firmly fixed to it the initial of the station, the date of contamination, and the owner's number stamped upon a small tape. After decontamination it should be a simple matter to return the clothing to its rightful owner.

The advantages are that this scheme offers a simple and efficient method of marking clothing and saves innumerable safety pins.—I am, etc.,

W. F. CORFIELD,

Medical Officer of Health, Colchester.

June 27.

Diabetic Coma in Young Diabetics

SIR,—I have read with interest Dr. Leslie Cole's article on diabetic coma in a series of young diabetics (June 14, p. 882), and, while I find myself in agreement with much that appears in it, there are one or two points on which further information would be of value, and one therapeutic procedure advocated which, I think, is not without possible danger. In the description of Case 6, in which severe ketosis, as judged by urinary examination, was absent during the early stages, no mention is made of the presence or absence of acetone in the breath. I have seen several such cases, one quite recently, in which the kidneys appeared to be unable to excrete ketone bodies, but in which a strong odour of acetone in the breath left the diagnosis in no doubt. In such cases it is wise to examine the serum qualitatively for ketone bodies by Rothera's test, as this may give a strongly positive result.

Dr. Cole rightly stresses the importance of fluids and saline in the treatment of diabetic coma, the administration of which in large volumes in desperate cases was advocated by Lawrence in an article in the *British Medical Journal* of April 12, 1930, and thereby presumes the knowledge that peripheral circulatory failure is an, if not the most, important cause of death in this condition. He omits, however, in his series, to give any records of blood pressure before or during treatment, which is unfortunate because, from the point of view of prognosis and treatment, the level of the systolic pressure is of greater importance than that of the blood sugar, whose chief value is its guide to insulin dosage.

Lastly, under the heading of treatment, Dr. Cole advocates giving "usually not less than 50 units [of insulin] repeated every one or two hours according to the clinical and biochemical progress." In my experience in severe cases of coma the progress either clinical or biochemical made in intervals of one or two hours is often not significant enough to allow of its being safely used as a guide to insulin dosage, especially if such progress is apt to be the combined result of the treatment of dehydration and ketosis, a fall in blood sugar in the early stages of treatment being the outcome of an increase in blood volume as well as insulin action. But even if the progress of the case could be adequately estimated from hour to hour the practice of giving insulin at such frequent intervals is both unnecessary and unwise. Doses as large as 50 units do not exert their maximum action for at least three hours, and, consequently, if injected every one or two hours, constitute repeated additions to an amount of insulin which has not had time to show full evidence of its

action; the cumulative effect so produced not only detracts from the value of blood-sugar determinations as a guide to subsequent dosage but, in hands less skilled than those of Dr. Cole, may easily in children result in severe hypoglycaemia.—I am, etc.,

The Diabetic Department, WILFRID OAKLEY,
King's College Hospital, June 17

Chronic Sick in Bombed Towns

SIR.—The Minister of Health in reply to a question put by Sir E. Graham-Little on the subject of the "chronic sick" in bombed towns stated (*Journal*, June 21, p. 950) that he could not give "the total number of chronic sick still housed in public health and public assistance institutions," etc., "without elaborate and detailed inquiry from a large number of different authorities." The answer given by the Minister is, of course, obviously evasive, as anyone can tell from personal experience of Government Departments, especially in wartime. In other words, if the Minister really wanted to know the total number and to disclose it to the public he would soon find himself and his staff in very hot water. However, in order to help him to grasp the gravity and urgency of this question I can tell the Minister that the figure for London is about 5,000.—I am, etc.,

Criccieth, June 21.

FREDERICK MENZIES.

SIR.—Permit me to "confirm by my testimony" the existence of the disgraceful state of affairs in regard to chronic sick patients which has aroused the just anger of Sir Frederick Menzies (June 7, p. 868).

Last October I was a medical officer at a hospital for chronic sick in London—and I should explain that the term "chronic sick" has a precise, defined meaning. It means a patient who is bedridden owing to an incurable illness and is not necessarily synonymous with "senile," as might be inferred from a recent reply given in Parliament by the Minister of Health.

In that hospital we had several hundreds of such patients (over 95% of whom were unable to get out of bed) and, in spite of the fact that we were doing no air-raid casualty work, those patients, strung out on three floors, were left there night after night while bombs missed the building by 20 to 30 yards.

Two questions arise:

(1) *Ought early evacuation to have taken place?*—On balance of reasonable probabilities the building was going to be hit. This was clear to us and clear to the local police authorities, who were gravely perturbed (as I happen to know) by the plight of such a large number of helpless patients. The suggestion that it may be necessary, in the welter of competitive and even Gilbertian priorities alluded to by Mr. Ernest Brown, to leave in the vaunted "front line" such unfortunate people is an unworthy one and one which would have appalled our fathers, who had a firmer grip of the spirit of Christianity than we have.

(2) *What of the future?*—In spite of the apathy of what a modern writer has called "our deplorable Press," the problem of disposal of the chronic sick will solve itself.—I am, etc.,

Portsmouth, May 25.

J. C.

Paralysis accompanying Herpes Zoster

SIR.—The note on paralysis accompanying herpes zoster by Mr. G. I. Wilson (June 21, p. 930) suggests that this combination is not excessively rare. I think it never has been very rare, but I believe Ramsay Hunt was the first to describe it under the name "syndrome of the geniculate ganglion." There is an admirable illustration of the condition in Aldren Turner's *Textbook of Nervous Diseases* (my edition is 1910, p. 88). Another point in Mr. Wilson's note is that his patient exhibited a generalized vesicular eruption resembling chicken-pox. This is not chicken-pox but *herpes generalisatus*—a phenomenon not uncommon in old people who suffer from herpes zoster. Stelwagon in his *Diseases of the Skin* mentions this form of herpes, giving some references. I have seen five instances of the condition occurring in the seventh or eighth decade of life.—I am, etc.,

Bristol, June 21.

J. A. NIXON.

Bilateral Renal Colic due to Sulphapyridine

SIR.—I think it might be of interest to add to recent publications on this subject an observation of a case of bilateral renal colic due to sulphapyridine.

A private aged 36 was from May 1 to May 10, at the reception ward of his unit, treated for pleurisy. On May 15 he was taken ill again, and on the following day was admitted to our hospital, where the diagnosis of pneumonia of the right upper lobe was confirmed. Mild cyanosis and occasionally vomiting were noticed while on routine sulphapyridine treatment. On May 18 he complained of diffuse pain in the right hypochondrium and kidney region, radiating into the right testicle. The violent pain was controlled only after injection of morphine and atropine. On May 19 the patient experienced severe colicky pains on the left side, followed by complete suppression of urine. The total amount of urine passed in the following twenty-four hours was 3 c.cm., and this had the appearance of blood. Intensive treatment and immediate stopping of sulphapyridine was followed by rapid improvement. An x-ray film did not show the presence of calculi and there were no stones or gravel in the filtered urine, which however contained albumin for a few days. The urinary output was almost normal by May 21. The total amount of sulphapyridine given amounted to 20 grammes.

When the first attack occurred we thought of a fortuitous association of renal colic with pneumonia, as it is well recognized that lebric conditions may aggravate latent nephrolithiasis. By the following day the latter diagnosis had to be reconsidered in view of the occurrence of renal colic on the other side, with no history of previous attacks. It was felt that sulphapyridine was the responsible factor, and this view was confirmed as rapid improvement followed the discontinuation of this drug.

This short record of a case of bilateral renal colic due to sulphapyridine is an addition to the considerable number of publications of more or less serious toxic effects of members of the sulphonamide group. In my opinion more careful consideration whether treatment with these preparations is necessary should be given to all cases prior to their administration. It appears to me that the use of sulphapyridine and sulphanilamide—our most potent weapons in the fight against serious infective conditions—should be limited to those diseases where their administration is strictly indicated, or where other measures are likely to fail. The habit of using them in order to be "on the safe side" should be deprecated, and the possibility of sensitization by previous administration should be borne in mind. A common source of overdosage could be avoided if colleagues in charge of military units or in private practice would not transfer patients to a hospital without a short note regarding the amount of sulphapyridine or sulphanilamide given, and the patient's reaction to this treatment.—I am, etc.,

An E.M.S. Hospital, June 5.

EMANUEL KOST.

Medical Planning Commission

SIR.—We students in Edinburgh have been following with interest the letters and articles appearing from time to time in your columns regarding the above Commission. Like many of your correspondents we view with concern the composition of the Commission, including as it does not one medical student or recently qualified man. With as much concern we note the apathy with which medical students as a whole have so far acknowledged the presence of this Commission. We were delighted to read Mr. Kennish's letter in your issue of May 10 (p. 738), and tardily hasten to support his views; indeed, we would speak more strongly on the matter and, while fully realizing that the presence of a Medical Planning Commission does not necessarily mean that a plan will be formulated or, if formulated, will be adopted by the Government or medical profession, would point out that, even though the reports to be prepared may not be binding, they will be used as a basis for any future reorganization.

As a result, owing to the exigencies of war, a real wrong will be done to thousands of younger men, who, because they are serving with His Majesty's Forces, cannot give time or thought to the matter, or, because they are still students, cannot take an active part in planning the future of their profession. Realizing that to add more and younger men to the Commission might make it unwieldy, we have outlined the following alternative scheme for consideration.

1. That the reports of the Medical Planning Commission committees, *before* being presented to the Co-ordination Committee, be sent to medical schools, universities, and Home Commands.

2. That each of these medical schools, universities, and Home Commands form local committees, either separate or combined, depending upon size and distribution. Membership would be representative of teachers, younger members of the profession who form the majority in the Forces, and students.

3. These local committees could now, before receiving any report, review the present arrangements in this country, on the Continent, in Scandinavia, etc., as gathered from books in medical libraries and foreign medical men in this country, and so be able to give detailed constructive criticism to reports sent to them by the committees of the Medical Planning Commission.

4. The members of these local committees would be able to discuss matters informally with their colleagues, and obtain information on aspects of the profession with which they normally have little to do.

5. These local committees should make their detailed comments within one month of receiving any report. These reports could then be finally reviewed by the Co-ordination Committee of the Medical Planning Commission.

6. The extra time and work involved is comparatively slight for a scheme concerning the future health of the nation, and the criticism would be representative, wide, and considered.—I am, etc.,

Edinburgh, June 6.

J. A. WATT.

The British Medical Students' Association

SIR,—The statement of Mr. H. S. Souttar at the first session of the Medical Planning Commission that he had asked for a memorandum from the British Medical Students' Association calls for a description of that body.

Until May, 1940, the medical students of this country had no organization to represent them. It is true that before the war there was a committee of the National Union of Students, but that was concerned largely with organizing interesting but fruitless annual meetings. The outbreak of war provided many and great difficulties for London medical students, and to attempt a solution of these problems (chiefly those concerned with evacuation and A.R.P.) the London Medical Committee was formed. It was this body which last year called a general meeting of medical students at Manchester, which set up the British Medical Students' Association. The medical commission at the Congress of the National Union of Students held in Cambridge on April 2 to 6 was attended by over 160 students, and a further council meeting is to be held in Cambridge on July 4 to 6 to synthesize reports from the constituent teaching hospitals into a memorandum to be placed before the Medical Planning Commission. This conference will also be addressed by outside speakers, including Dr. Trueta on "The History of War Surgery," and Dr. K. Sinclair-Loutit on "A.R.P. and Students."

Points arising from discussion at the Cambridge Congress include: (1) changes in the medical curriculum; (2) students' A.R.P. obligations; (3) student health; (4) the future organization of medicine.

1. Changes suggested in medical teaching are: (a) A general course of biology should be introduced as a preliminary to the preclinical subjects. The Americans call it an orientation course, and its object is to give a picture of life in many different forms, rather than a detailed knowledge of a few types. (b) Closer integration of anatomy, physiology, and biochemistry, which, so far as possible, should be regarded as one subject. (c) A more realistic clinical curriculum with more stress on minor ailments and less on major surgery, which for most practitioners is less important; and a sounder grounding in general psychology. (d) More preventive medicine. This involves a new conception of medicine, a conception of disease as being due to biological and sociological causes. It involves an inquiry into the social and economic environment as part of every diagnosis. It involves a greater knowledge of social agencies—e.g., of rehabilitation, insurance, compensation.

2. Students should be used in A.R.P. schemes, preferably in their medical capacities. Teaching standards should be maintained as far as possible, in spite of evacuation. We believe that to achieve this the present hospital system should be made more flexible, that beds in municipal hospitals should

be available for teaching purposes, and that evacuation of hospitals should be carried out *before* a big raid rather than after it. The big town hospitals should be used only as casualty clearing stations.

3. Student health is naturally a subject of great interest to us. Reports from one hospital of seven cases of tuberculosis (one fatal) are worrying. We have to find out what can be done to reduce the incidence of disease among students. It is entirely up to students to do this.

4. The B.M.S.A., like most medical bodies, desires certain changes in the present system of medical organization. Although we are not finally agreed on the form such changes should take, the feeling, as clearly expressed at the Cambridge Conference, was that doctors have a service to render to the community and that they should not waste their time and energy competing among themselves as to who shall render it. Our aim must be to see that our present knowledge of preventive and curative medicine shall be applied for the benefit of everybody.

The medical profession may not be used to encountering a student organization of the nature of B.M.S.A. Student organizations have so often been regarded with suspicion or contempt and have not been given the opportunity to contribute to the solution of common problems. The invitation of the chairman of the Medical Planning Commission is, therefore, very welcome to us. It is as incorrect to imagine that students do not appreciate the achievements of their elders as it is to think that those achievements have solved all our problems. We have not only the disadvantage of inexperience, but the advantage of it. Some of the present trouble may perhaps be attributed to the fact that power has been in the hands of those whose former idealism has naturally become somewhat tarnished by the experiences of earning a living. We do not pretend that our wisdom is greater than theirs, but we do say that it is worthy of consideration.—I am, etc.,

Cambridge, June 24.

DAVID PYKE.

Ship Surgeons and the Medical Personnel on Transports

SIR,—I am much interested in Dr. James Prendergast's letter on "Ship Surgeons and the Medical Personnel on Military Transports" (June 14, p. 904), and would like to support the plea for a better understanding of the role of the ship's surgeon and a more stable position for him.

The position of the sea-going doctor has improved over many years by dint of perseverance on the part of the British Medical Association and the general recognition that the services rendered are very much more than those of merely fulfilling Board of Trade regulations. Although perhaps the more studiously minded are not attracted to the life, yet there are many medical men who go to sea who are not only keen on the sea but are also greatly interested in their profession and jealous in safeguarding its interests and upholding its fine traditions.

It is therefore a slur on the profession as a whole that the word "warned" should be used in the Voyage Regulations to which he refers, and this certainly should be altered. His reference to the S.M.O. and assistant M.O. on military transports is obviously to the point, and when one realizes that there is in addition the ship surgeon, who must sail with the ship, and probably a number of other military medical officers, it does seem apparent that there is an overlapping of duties and an easy opening for friction, not to mention the waste of medical man-power, when, as Dr. Prendergast says, there is a demand for doctors in so many places. It is not logical to call in foreign doctors to our aid when superfluous posts are being filled by our own men.

My interest has been roused in this subject because I have sailed in transports as a military M.O. and have also been a temporary ship surgeon.—I am, etc.,

London, S.W.1, June 13.

G. T. CREGAN.

Ether Convulsions

SIR,—Convulsions due to novocain poisoning are rare. I have seen but one mild and three serious cases in well over ten thousand instances where local anaesthesia has been employed. The rarity of the phenomenon, and the exact similarity in every particular of novocain convulsions and ether convulsions, may have resulted in Mr. Charles Wells's (June 21,

p. 945) overlooking the possibility of the novocain's being the cause of the convulsions in the case he quotes. The similarity of convulsions of ether and novocain is heightened by a most important practical observation. In the *Journal* of August 17, 1940 (p. 222), I drew attention to the dramatic way in which these terrifying spasms cease after injecting intravenously a small dose of evipan. In a recent case of novocain convulsions exactly the same pleasing sequel resulted. When I recorded the observation in the *Journal*, I did not know to whom to attribute this marvellous life-saving measure. I have since ascertained that the credit of advocating evipan in ether convulsions is due entirely to Mr. Dickson Wright.

I am unable to subscribe to Mr. Dickson Wright's theory of the causation of ether convulsions—that is, overheating of the body. I could prove readily that in the cases of novocain convulsions I have observed any element of overheating of the body was absent. In the case of convulsions due to ether, as Sir Robert Kelly has pointed out, by the time ether vapour has traversed the tubing leading from the apparatus it is most improbable that the vapour is much over room temperature. Thus, overheating of the body and of the anaesthetic agent is far from proven as the cause. I suggest that a common factor should be looked for in these two types of convulsions. I think it will be found in some chemical agent, common to both ether and novocain, acting on the brain stem of certain susceptible individuals.—I am, etc.,

London, W.1, June 22.

HAMILTON BAILEY.

Reactions to Morphine

SIR.—The notes on idiosyncrasy to opium have interested me because of another idiosyncrasy I met recently, which I have never seen described.

The patient was a girl of 20, dying of pulmonary tuberculosis. Other attempts at sedation having failed, pil. morphi. hyd. gr. 1/4 was used. After a day or two her mother withheld the pill because it "made her eyes swell." As nothing else appeared to give relief another pill was taken, and I made a special journey to see the result. About eight hours later there was oedema of the right eyelids and over the right zygomatic process. The same effect was present on the left side to a less degree. Incidentally, the patient was lying on her right side. This phenomenon occurred every time the pill was given. Later, morph. sulph. gr. 1/4 was given subcutaneously, with the same result in shorter time.

I should be very interested to know if this effect has been observed before with any frequency.—I am, etc.,

Great Harwood, Lancs,
June 22.

WALTER CALVERT.

Benzedrine in Post-encephalitic Parkinsonism

SIR.—I am interested in Dr. H. Lovell Hoffman's article (*May* 31, p. 816) on the effect of benzedrine on the oculogyric crises of Parkinsonism. I have for some time been investigating the effects of benzedrine sulphate as a supplement to stramonium in post-encephalitic Parkinsonism. Though my numbers so far are not sufficient to justify publication of the results, the latter are encouraging as supporting the good results of other writers. Practically all the patients who were at a standstill with high doses of stramonium have improved with the addition of benzedrine sulphate. There has been in all cases so far considerable improvement in their lethargy, slowness, and stiffness, though the salivation has remained unaffected. The comments of some of my patients have been: "Feel that I could jump"; "Can do my housework as I should." It appears that some large-scale trials are warranted in this line of treatment of a most incapacitating disease.—I am, etc.,

Newcastle-upon-Tyne, June 12.

N. U. KHAN.

"Carriers" of Tuberculosis

SIR.—A further example of the apparent grouping of phthisis cases about a benignly infected person as described by Dr. James Maxwell (*May* 3, p. 665), will be found in the autobiography of Mr. Middleton Murry. Three cases are mentioned, two bearing well-known names.—I am, etc.,

Baxton, June 21.

GEOFFREY ROBINSON.

Obituary

ADAM BROWN KELLY, D.Sc., M.D., LL.D.,

Glasgow

It is with great regret that we announce the death of Dr. A. Brown Kelly, which occurred at his home of retirement in Helensburgh, Dumbartonshire, on June 22, in his seventy-sixth year. Glasgow mourns the loss of this most distinguished laryngologist and otologist, whose reputation was world-wide.

Dr. Kelly graduated at Glasgow University in 1888, studied in London, Berlin, and Vienna, received the degrees of D.Sc. in 1901, and M.D., with commendation, in 1904. He became a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow in 1920, and his position in the scientific world was recognized by his university when the honorary degree of LL.D. was conferred upon him in 1932. He was surgeon to the ear, nose, and throat department of the Victoria Infirmary, Glasgow, for many years, and after his retirement under the age-limit regulation was appointed consulting surgeon. He was also consultant in his specialty to the Glasgow Royal Mental Hospital. His eminence in laryngology and otology was recognized by many of the European societies as well as by those at home. He was a Fellow of the Royal Society of Medicine, an ex-president of the Laryngological Section, and president of the Laryngological and Otological Section of the British Medical Association at its meeting in Nottingham in the year 1926.



As to societies on the Continent and in America, he was a corresponding member of the Society of Laryngology of France, of the American Laryngological Association, of the Laryngological Society of Berlin, and the Rhinological Society of Vienna, and an honorary member of the Austrian Otological Society. He edited the *Transactions* of the Section of Laryngology and Rhinology of the 17th International Medical Congress, London. He contributed the article on "Examination of the Pharynx, etc." to the *Encyclopaedia Medica*, and the article on "Inflammatory Affections of the Pharynx" to Latham and English's *System of Treatment*. In 1912 an international collective investigation of ozena was organized by Prof. Alexander of Berlin. Dr. Kelly was the representative of Great Britain and the Colonies on the committee, and published in the *Journal of Laryngology, Rhinology, and Otology* three notices of the progress of the work, besides compiling a pamphlet of instructions for workers in the investigation.

It is not possible to notice all his very numerous papers contributed to both special and general medical journals. These papers and addresses, to the number of sixty at least, were presented by him afterwards, bound together, to the Library of the Royal Faculty of Physicians and Surgeons, Glasgow. He did some excellent work for the Library of the Royal Faculty; not only did he catalogue all its books dealing with his special subject but he presented steel shelves to display them in a special bay. A few selected titles of these papers will give some idea of the variety of his work. Papers on the nose include "Vasomotor Rhinitis," "Aspergillosis of the Nose and the Antrum," and "Epistaxis from the Ethmoidal Veins." His studies

of diseases of the antrum of Highmore included "Transillumination of the Antrum" and "Empyema of the Antrum in Infants." Pharyngeal diseases and abnormalities of the pharynx produced thirteen papers, all showing original and painstaking investigation. He suggested a method of recording diagrammatically movements of the vocal cords, and wrote on warfare neuroses of the larynx, and on neurological factors causing immobility of the vocal cords. Of the fifteen papers on the oesophagus, those relating to congenital stenosis and congenital shortening, and nervous affections of the oesophagus, are of special note. The Semon Lecture of the University of London, delivered in December, 1926, on "Nervous Affections of the Oesophagus," was a distinguished effort. In the presidential address to the Section of Laryngology of the Royal Society of Medicine in November, 1917, he made an eloquent plea for original investigation and research into the many unsolved problems of the specialty, and urged younger specialists to pursue their subject from the physiological and pathological standpoints. Dr. Kelly was an active scientific member of the British Medical Association. He was a frequent contributor to the discussions in laryngology and otology, particularly at Cheltenham 1901, Sheffield 1908, Newcastle-upon-Tyne, and Liverpool.

Dr. Brown Kelly evidently possessed the rare gift of scientific research, which he carried on up till a few weeks before his death. He worked in the pathological departments of the Victoria Infirmary, the Royal Hospital for Sick Children, and the Royal Infirmary, and has left a considerable amount of work completed, or nearly so. He was a quiet shy man, diffident when overlooked by others while working, and shunning the publicity of teaching students. Honours came to him unsought. He took no part in public medical life, avoiding office-holding. His only recreation, apart from pathological research, was orchestral music, for which he had a refined taste and appreciation.

Great sympathy is felt for his wife and his son and daughter. His son is in the Medical Service of the Navy. His daughter is well known in Glasgow for her skill and artistry in making pictures of pathological specimens.

Mr. LIONEL COLLEDGE writes:

The passing of Dr. Adam Brown Kelly at the age of 76 will bring feelings of profound regret to all laryngologists to whom the scientific study of their subject has any real meaning. As otology and laryngology have steadily established themselves as independent branches of medicine they have in their independence been drawn into a closer alliance. Laryngology is no longer the province of an assistant physician, nor otology of an assistant surgeon; and, although there are still laryngologists and otologists, many practitioners and even professors now combine the two functions. Brown Kelly always remained an unrepentant laryngologist, but he had a remarkable professional brother in Albert Gray, who confined his work equally to otology. They were not only contemporaries and hospital colleagues, but both spent much of their time in patient and accurate scientific observation and research; both were more than well acquainted with all the foreign work of importance and knew the men who produced it, for they both travelled; and with this broad outlook they were both men of sociable and approachable character and generous in hospitality. These two men of Glasgow for many years held a unique position in laryngology and otology, and always received the warmest welcome in London.

It was towards endoscopy and especially to the study of pathological conditions of the most baffling and elusive of all organs, the oesophagus, that Brown Kelly devoted himself in particular, and his observations on its abnormalities in childhood were made with characteristic care and deliberation. He is perhaps best known to laryngologists as the first, in conjunction with his friend Donald Paterson of Cardiff, to describe that curious form of chronic dysphagia in women, accompanied by anaemia and glazed tongue, which goes by the name of the Plummer-Vinson syndrome. Some have suggested that if this must have an eponym it should be the Brown-Kelly-Paterson syndrome, but he would have been the

last to make any such claim himself. This kindly, distinguished man will be missed wherever the laryngologists meet, but it is some consolation to think that he has not gone before he had reached a ripe age.

E. TYTLER BURKE, D.S.O., M.B.

Lieutenant-Colonel Edmund Tytler Burke, D.S.O., R.A.M.C. (ret.), died at Paignton, Devon, on June 14, aged 53. After leaving the Army he took up the study of venereal diseases and settled at Salford, where he was venereal diseases officer of the city and instructor in that subject at the University of Manchester.

He was born at Elgin on April 18, 1888, the eldest son of Mr. W. M. Burke, J.P., was educated at Perth Academy and at the Universities of Glasgow and St. Andrews, and graduated M.B., Ch.B.Glas. in 1914. He was an original member of the O.T.C. at Glasgow University. He joined the R.A.M.C. Special Reserve early in 1913 and saw much service in the war of 1914-18: in Gallipoli in 1915 as adjutant of the 40th Field Ambulance; later he was given command of the unit and promoted to major, serving in Iraq from 1916 to 1918, when he was promoted to lieutenant-colonel and served as A.D.M.S. of Forces in Northern Persia, and then in the Caucasus and as senior medical officer at Baku. He was mentioned in dispatches several times, received the D.S.O., and the Serbian Order of the White Eagle (with swords) and the Russian Orders of St. George and St. Vladimir (with swords). Besides his appointments at Salford, Colonel Burke was for some time assistant in the dermatological department of Manchester Royal Infirmary and assistant medical officer to the Northern Hospital for Women and Children, Manchester. In 1930 he became lecturer in venereal diseases at London Hospital Medical School and consultant venereologist to the public health department of the London County Council. He was a member of the British Medical Association and was vice-president of the Section of Venereal Diseases at the Annual Meeting of the Association held at Manchester in 1929. He was the author of many papers and pamphlets on his special subject.

"A. B. S." writes: Colonel Burke's interest in venereal diseases started with an early association with Dr. David Watson, and wherever his Army appointments carried, whether it was Netley Hospital, the Dardanelles, Mesopotamia, Persia, or the Caucasus, the treatment or prevention of V.D. was always uppermost in his agile mind. In 1918 while he was senior medical officer to the British troops in Baku and head of the local medical soviet his administrative abilities enabled him to organize very successfully the public health facilities, which had collapsed during the Bolshevik upheaval. His recent book, *Venereal Diseases*, has some truly revolutionary ideas. It has been said by many that Burke lived before his time, and the future alone will prove whether or no his interesting theories find acceptance. His method of assessing chemotherapeutic efficiency with his "chemotherapeutic index" has not yet met with the support in this country that it has found in America, while his statement that the gonococcus lives as a harmless symbiote in the urinary tract unless disturbed is bound to meet with powerful opposition; it is typical of Burke's fighting qualities and strength of character that he put these ideas into print.

CHARLES WILLIAM LAIRD, M.D.

Dr. C. W. Laird, Consultant Tuberculosis Officer to the Lancashire County Council, died on April 19 at Ormskirk, Lancashire, after a long illness.

Charles William Laird was born at Belfast in 1879. He had a distinguished career at Trinity College, Dublin University, winning many first-class honours and prizes in classics and modern literature. He obtained his B.A. with honours in classics in 1903, and first place at his final M.B. in 1908, with first-class honours in surgery, hygiene, medical jurisprudence and toxicology, and in pathology. At the Royal City of Dublin Hospital in 1907 he also won the Wheeler Gold Medal for first place in the examination in clinical, theoretical, and practical medicine. He took his M.D. in 1911, and the D.P.H. of the University of Liverpool in 1912.

After acting as house-surgeon at the Bootle Borough Hospital, Lancashire, Laird started his career in tuberculosis at the Whiteabbey Sanatorium, Belfast, where he was for a time

acting resident medical officer. He returned to Bootle and there held for over two years the posts of resident medical officer at the Corporation Hospital and assistant medical officer. After a further spell of sanatorium work at the Westmorland Sanatorium, Grange-over-Sands, he was in 1913 appointed one of the first consultant tuberculosis officers on the Lancashire County staff, and for a time also undertook jointly the duties of tuberculosis officer for the County Borough of Bootle. For twenty-eight years Laird was in charge of Dispensary Area 3—north, east, and south of Liverpool—containing some 200,000 acres and a population of 350,000, which included since 1924 the Rufford Pulmonary Hospital, of which he was the visiting medical superintendent. Here he did excellent work, especially with artificial pneumothorax and gold treatment. Courteous and cultured, Laird set a very high standard, never spared himself, and had as a reward the esteem and affection of all his colleagues and the medical practitioners of his area. He was a keen and good golfer, winning many prizes, and, as one would expect from an Irishman, he was an easy and excellent speaker. He leaves a widow and two sons, one following in his father's profession.

Dr. ALBERT G. W. PEARSON, a well-known and greatly esteemed West Hartlepool practitioner, died in a Newcastle nursing home on June 7 in his sixty-eighth year. Dr. Pearson graduated M.B. (with first-class honours), B.S. at Durham University in 1897. After holding house appointments at Birmingham, Sunderland, and Hartlepool, and some experience of practice at Rotherham in South Yorkshire, he established himself at West Hartlepool, where he became widely known as a skillful general practitioner surgeon and as honorary surgeon to the Hartlepool Hospital, where he had formerly been a resident. In 1925 he was joined in partnership by Dr. J. Lithgow. Dr. Pearson's entire life was devoted to his profession; he was a bachelor, and he took only a small part in public and social activities, but no call on behalf of his patients or his beloved hospital was ever disregarded. He was a man who liked to do good by stealth, and not content with giving ungrudging time and service to the hospital, he made it many substantial gifts of valuable equipment which, in accordance with his own request, received no publicity. Any spare time he had was devoted to his garden, but his real hobby, as one of his colleagues writes, was his work. The affection which a general practitioner can inspire by many years of quiet unostentatious work in his locality was illustrated at the funeral service at St. Paul's, West Hartlepool, when the entire staff of the hospital attended, as well as many representatives of civic life and of the professional and business community. Dr. Pearson was a member of the British Medical Association for thirty-five years.

Dr. WALTER ERNEST LLEWELLYN DAVIES, late of Llangitho, died at Llanidloes on June 18, aged 67. A native of Cardiganshire, he was educated at Taunton School and University College, Aberystwyth, and studied medicine at St. Bartholomew's Hospital, qualifying M.R.C.S., L.R.C.P., in 1901. He took the D.P.H. three years later, after serving as deputy medical superintendent at the Mile End Infirmary. He was then for a short time assistant medical officer at the Eastern Fever Hospital under the Metropolitan Asylums Board, and then assistant M.O.H. for the Borough of Stepney. He settled in practice at Llanidloes in 1907 and was for a time temporary M.O.H. and school medical officer under the Cardigan County Council; he was appointed district medical officer to the Llanidloes Union in 1915, and honorary surgeon to the local memorial hospital in 1922. Dr. Davies took an active part in public life, serving for two periods as mayor of Llanidloes, and he was High Sheriff of the county in 1929.

The death of Dr. SAMUEL J. BARTON, at the age of 89, removes a veteran member of the profession who was for many years prominent in the medical life of Norwich and the surrounding countryside. A student of Trinity College, Dublin, he graduated M.B., M.Ch. in 1873, and proceeded M.D. in 1885. Before settling in practice at Norwich Dr. Barton was for a time assistant physician to the Radcliffe Infirmary, Oxford. He joined the British Medical Association in 1889 and often contributed papers to the Norwich Medico-Chirurgical Society, of which he became a member after election to the visiting medical staff of the Norfolk and Norwich Hospital.

On retiring from active work he was elected consulting physician to that hospital and also to the Bethel Hospital, with which he had long been associated. He was for many years medical director of the Norwich Union Life Office. When the B.M.A. held its Annual Meeting at Ipswich in 1900, Dr. Barton held office as vice-president of the Section of Medicine. He was one of the oldest members of the Norwich bench of magistrates, and on June 24 a tribute to his memory was paid by the chairman and by practising solicitors of the court.

Medical Notes in Parliament

The Pharmacy and Medicines Bill, "to amend the Pharmacy and Poisons Act, 1933, to prohibit certain advertisements relating to medical matters and to amend the law relating to medicines" was presented in the House of Commons on June 26 and was formally read a first time. It is supported by Sir John Anderson, Sir Kingsley Wood, Mr. Johnston, Sir Donald Somervell, and Mr. Peake.

London Hospital Sectors

On June 25 Sir FRANCIS FREMANTLE inquired whether effect was to be given to Recommendations 33 to 35 of the Select Committee on National Expenditure with regard to the arrangement and administration of the London Sectors of the Emergency Hospitals Scheme. Miss HORSBROUGH replied that the extent to which effect could be given at the present time to the Select Committee's recommendations on the London Sectors was being considered in conjunction with the several officers and bodies concerned. Certain rearrangements had already been made which would reduce the number of Sectors by one as from the following week. Local authorities were being included in the discussions.

Mental Health Work among Children

Sir FRANCIS FREMANTLE asked on June 25 what arrangements were made for mental health work among evacuated children and in bombed areas, and whether assistance would be given to the Mental Health Emergency Committee for this work. Miss HORSBROUGH said mental health work among children was a normal development of the mental health services and in particular of the School Medical Service, with which child guidance clinics were associated in many areas. A number of hostels had been established for difficult children in reception areas. It was desirable that in every Region some of these hostels should be set aside for children requiring mental treatment and should be associated where practicable with child guidance clinics. A grant from Exchequer funds was made to the Mental Health Emergency Committee in respect of the year ended March 31. Application for a further grant was under consideration.

Pharmacy and Medicines Bill

According to a Ministry of Health memorandum, the Pharmacy and Medicines Bill, which has been introduced in the House of Commons, will repeal, from September 2, 1941, the medicine stamp duty and the accompanying licence duty payable by those who make or sell patent medicines. It will also regulate the sale of medicines and prohibit advertisements of remedies for certain conditions. The patent medicine duties now being given up yielded £1,400,000 in 1920-1, but at present yield only £840,000 a year. The duties are based on Acts dating from 1783 to 1812 which are full of anomalies and difficult to interpret and enforce. Under the present law doctors and chemists may sell "known, admitted and approved" remedies free of stamp duty. It has been agreed by the trade interests concerned in the sale of medicines that doctors and chemists shall have a trading privilege covering that class of remedies. The Bill accordingly provides that, while proprietary preparations not described in the *British Pharmacopoeia* or *British Pharmaceutical Codex*, and certain other types of medicine such as mineral waters and herbal remedies, should continue to be sold by unqualified retailers, all other medicines shall be sold only by doctors and chemists. The Bill also proposes that all medicines (except those made up to meet individual needs) must, on and after January 1, 1942, have on them a statement of their composition or of their active constituents. Advertisements of "remedies" for Bright's disease, cataract, diabetes, epilepsy or fits, glaucoma, locomotor ataxy, paralysis, or tuber-

Medical News

The Vegetable Drugs Committee recently set up by the Ministry of Health and referred to in the *Journal* of June 14 (p. 891) has on it the following medical men, under the chairmanship of Sir Weldon Dalrymple-Champneys: Major-General Sir Ernest W. C. Bradfield, F.R.C.S., Mr. J. M. Johnston, F.R.C.S., Dr. W. P. Kennedy, Dr. A. G. H. Smart, and Prof. L. J. Witts.

The Derry Gardens, Kensington High Street, W., will be open for the benefit of St. Bartholomew's Hospital from Monday, July 7, to Saturday, July 12, each day at 9.30 a.m. till 6 p.m., except Saturday, when they close at 1 p.m. Lord Horder opens on Monday, July 7, at 11.30 a.m., Lady Dawson of Penn on Tuesday, and Mrs. John G. Winant, the wife of the American Ambassador, on Friday.

A meeting of the Bristol Division of the B.M.A. will be held in the Physics Lecture Theatre at the Royal Fort, University of Bristol, on Thursday next, July 10, at 3.30 p.m., when there will be a symposium on "Casualty Surgery in Air Raids." All members of the Association and medical non-members will be welcome.

Benzyol cinnamate and chlorocresol (B.P. Third Addendum) are not chargeable with purchase tax unless put up for medicinal or veterinary use.

The honorary degree of Doctor of Science has been conferred at the McMaster University, Hamilton, Ontario, on Dr. Donald Church Balfour, director of the Mayo Foundation and past-president of the American College of Surgeons.

The Academy of Sciences of the U.S.S.R. has awarded the Pavlov prize for 1940 to Marie K. Petrova, professor of physiology in the Pavlov Institute for Physiology and author of valuable work on experimental neuroses.

The South African Institute for Medical Research in Johannesburg is about to undertake the manufacture of yellow fever vaccine under the direction of Dr. G. M. Findlay of the Welleome Research Institute of London.

There are 7,000 doctors in Australia, of whom 500 are women, 1,170 are men over 60, and 1,500 are engaged in essential services. About 250 are medically unfit, if mobilization became necessary, for which 1,200 doctors would be required, leaving only 2,250 for the civil population of 7,000,000.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to the EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Generalized Pruritus

"K. H. P." asks for suggestions in the treatment of a woman aged 75 with generalized pruritus, thick pigmented skin in a girdle below the breasts and in the axillae and groins (which are hairless), and large patches of warty growths on the forearms, thighs, and calves. She complains also of epigastric pain and vomiting. The symptoms have extended over the past six months and have resisted all anti-pruritic treatment.

The Pain of Herpes Zoster

"F. P. L." (Cornwall) writes in reply to "M.B., B.S." (June 7, p. 876), who asked for a remedy for herpetic pain: I had a very severe attack of herpes zoster two years ago. The pain was

unbearable at times in spite of aspirin, a compound preparation of aspirin and phenacetin, and Dover's powder; even half a grain of morphine by mouth gave little relief. I then got electrical treatment by some special short-wave apparatus which had proved very beneficial in similar cases to mine; but it gave me only partial relief. Finally ionization was tried. This acted like a charm, and after three applications the pain disappeared and I have had no recurrence since then. I should be glad if your correspondent would try it and let me know through the *Journal* if the result is as good as I found it.

LETTERS, NOTES, ETC.

'Coined Medical Words

Dr. S. W. SUTTON (Hook, Basingstoke) writes: Dr. W. A. Brend (June 14, p. 885), looking about for "a Greek cloak," suggests hyperphobosis (p. 887). May I suggest a slight amendment, because hyperphobosis would be a Greek blunder. It should be hyperphobesis. Let me reason from analogy. We are familiar with phimosi, which is a correctly coined word because the corresponding verb is *φίμω*. But the verb to fear is *φοβέω*, not *φοβώ*. If Dr. Brend will kindly look again at Liddell and Scott, he may see the word *ἀντιβόλησις* (antibolēsis), and the corresponding verb *ἀντιβόλῃω*. By analogy we should have phobesis and hyperphobesis from *φοβέω*. Kindly allow me another suggestion, Dr. Brend aptly refers us to Job iv, 13, 14: "Fear came upon me." In the Greek, fear in this verse is *φρίκη* (shuddering). While hyperphobesis is long and coined, phriké is short and classical.

Treatment of Burns and Blisters

Dr. J. PRICE WILLIAMS (Ambleside) writes: This deals only with a point in the first-aid local treatment of burns, and has nothing to do with the nature of any more thorough subsequent treatment. Dr. Louis Sheldon (May 31, p. 833) says "we prick all blisters." Why? There is no theoretical ground for thus interfering with the natural process of repair and the protection of the underlying raw and absorbent surface which the unbroken blister affords. The idea that the contents of the blister are immediately dangerous or likely to become dangerous in a few hours cannot be supported by any pathological evidence. As a result of practice (limited in amount but spread over a good many years) I am quite convinced that healing takes place much more favourably if blisters are left unopened until there is some definite indication that they have begun to "go wrong," and in the majority of cases of moderate severity that does not happen if the blister is cleaned externally and protected from injury. I gave up pricking blisters many years ago and have never had the slightest reason to regret it. What the surgeon in the hospital may decide to do is no concern of mine or of the first-aid surgeon, but I do maintain that the pricking of blisters as "first aid" is not only no help to him but may actually "queer his pitch" if a few hours elapse before he can tackle the case. I suggest that the pricking of blisters is meddling surgery, unless it is part of a thoroughly well-planned technique which can be carried out immediately, and is bad practice.

Simplified Formula for Baby Feeding

Dr. T. CRISP (Chorley) writes: I feel that the following simplified formula for baby feeding which I have used for twenty-six years will be of value to others. Children on this feeding have developed in every way satisfactorily—mentally and physically—and have also shown a high degree of resistance to disease. The first child for whom I ordered it was showing signs of rickets, which soon disappeared and he became normal in every way. During the first month, starting at seven to fourteen days from birth, take one level teaspoonful of oatmeal and pour on to it 2 oz. of boiling water; add 2 oz. of Grade A milk (or T.T.), one teaspoonful of cream, and one teaspoonful of sugar. Use a boat-shaped bottle and pass a steel knitting needle through both teats in order to permit the oatmeal to be sucked through the teat. During the second month the feed should be two level teaspoonfuls of oatmeal, 2½ to 3 oz. of boiling water, 2½ to 3 oz. of milk, one teaspoonful of cream, one teaspoonful of sugar. At the fourth month, one level tablespoonful of oatmeal, 4 oz. of boiling water, 4 oz. of milk, one teaspoonful of cream, one teaspoonful of sugar. At three to four months and onwards the child should be given pieces (too large to swallow) of raw turnip, raw apple, raw potato, or a chop-bone to suck or bite so that teething may be helped. From the first month a few drops of orange juice or grape juice may be given from an egg-spoon or even a few drops from the yolk of a soft-boiled egg. A female child who was tried on every artificial food that was recommended to the mother, continued to vomit, and was 1 lb. lighter at 10 months than she was at birth, took to this feeding and has since reached adult life and is in every respect a perfectly healthy young woman, showing not the slightest sign of the early starvation. The cream can be obtained by skimming the milk.

PROBLEMS OF THE CIRCULATION *

R. J. S. McDOWALL, M.D., D.Sc.

Professor of Physiology, King's College, University of London

The honour of presenting these lectures, which have been given by many of the most distinguished names in medicine, carries with it great responsibilities, but I have at least simplified the task of choosing a subject by taking one akin to that of Oliver himself, who endowed and gave the first Sharpey lecture. In these material days a word regarding the founder may not be out of place, for George Oliver set an example by showing how the practising physician may with great advantage occupy his leisure and contribute to the advance of knowledge. Although a practitioner in Harrogate, he found time to make a most remarkable number of original observations, many of which are little known. His most notable discovery was that of the action of adrenal extracts. This he achieved by administering them to his children by the mouth and observing with his arteriometer the diameter of the radial artery, which he found to be constricted. His results are described in his Croonian lectures to this College (Oliver, 1896). The injection by Schäfer of the substance into a dog was found to cause a rise of blood pressure, and subsequently Oliver and Schäfer (1894) worked out the exact cause of this rise. Their paper is a model to all beginners, and this work started Schäfer, up to that time essentially a histologist, on an experimental career. It is a strange sidelight on human endeavour to remark that the apparatus with which the historic observation was originally made is no longer in common use, even although nothing has yet been invented to give any better information regarding the state of the arteries in man.

But Oliver did not mention these observations in his first Sharpey lectures; rather he discussed the flow of lymph, for in this field his investigations were even more extensive and just as important, although less well known. By a remarkable series of simple experiments he concluded that there must be a return of fluid from the tissues other than by the lymph, and emphasized the necessity for a variability of capillary permeability to permit this. His conception was that the tissue fluid returned to the capillaries at their venous ends, and in this he anticipated our most modern views on the subject. Some may be familiar with his ingenious haemoglobinometer and baemacytometer, with which he made extensive studies of the blood in a large number of different states, and which preceded most of the apparatus now in common use for this purpose.

Problems of Adrenaline

When Oliver gave adrenaline to the world he gave also a host of problems which have absorbed the energies of a legion of physiologists, and which will outlast our time. Many of these are not only of fundamental physiological importance but are of great therapeutic significance. It is interesting to compare the position to-day with that given by Schäfer in his Oliver-Sharpey lecture of 1908.

Further studies of the action of adrenaline have shown that its action is not so simple as at first sight appeared. The original observation indicated that the rise of blood

pressure caused by the intravenous injection of extracts of the medulla of the adrenal gland was produced by a constriction of peripheral vessels, together with an increased action of the heart if the vagus nerves were cut, but if the latter were intact the rise of blood pressure was reduced by cardiac slowing, the result of increased vagus action. These facts are not disputed, but subsequent work has shown that the doses which produce these results are much beyond that ever secreted by the adrenal glands. Moreover, it has become apparent that the essential function of adrenaline is the transference of blood from one part of the body to another and that this is not necessarily accompanied by any rise of blood pressure, for adrenaline dilates certain vessels and constricts others. Further, with such small doses cardiac acceleration is the rule, although the vagus is intact; indeed, the action of the vagus is reduced. It is possible, for example, to demonstrate in several ways a marked dilatation of the vessels of the muscles and a constriction of the vessels of the skin with doses which do not raise the arterial pressure at all.

The activity of these small doses fits much more clearly into the picture of the function of adrenaline, especially when we consider the circumstances in which adrenaline can be shown to be normally secreted—namely, mental stress, severe exercise, and exposure to cold—and this has been still further emphasized by the most recent evidence that an adrenaline-like substance, if not adrenaline itself, is liberated in the region of sympathetic nerve endings. All this agrees with the general conceptions of the action of adrenaline, which has been very much extended since the time of Oliver. Now we know that, like the sympathetic nervous system, it prepares the body for and assists in the adaptation to physical exercise. Not only does it transfer blood to the muscles from the parts of the body less used in exercise, but it throws out of action the alimentary canal by inhibiting the secretion and movements of the intestine while constricting the sphincters, it dilates the bronchi, the coronary arteries, and the pupil, and causes the liver to liberate glucose. Moreover, there is evidence (Burn, 1933) that the amount of circulating adrenaline affects the sensitivity of the sympathetic.

The appreciation of this action of small as distinct from large doses is not without considerable clinical importance, and may dispel certain misconceptions. For example, the well-known statement that chloroform plus adrenaline is very apt to bring about cardiac fibrillation probably requires modification: the experiments certainly require repetition. The whole problem of the clinical dose of adrenaline also needs consideration. Actually the usual clinical dose of adrenaline (1 to 5 minims of a 1/1,000 solution) is enormous, but fortunately it is as a rule given hypodermically. It is not surprising that the administration of a similar dose injected intravenously may have very alarming results, especially if the increased vagus action manifests itself. At the same time there is no obvious reason why intravenous therapy and the use of carefully adjusted small doses controlled by blood-pressure readings should not be more extensively used to tide over emergencies, except that the benefit would be short-lived.

* The first of two Oliver-Sharpey lectures to the Royal College of Physicians of London.

Differential Action of Adrenaline

One of the most interesting problems is why adrenaline dilates some vessels and constricts others. This differential action is probably best seen in the effects of small doses on the volume of the skinned and unskinned limb. The skinned limb dilates, while the normal limb constricts (Hoskins, Gunning, and Berry, 1916). It is true that the removal of the skin cannot be considered physiological; but a study of the venous outflow produces similar results, as does also that of isolated vessels. When we consider the problem of this differential action several possibilities present themselves, and we must remember that the problem exists not only in relation to the circulation but in respect of the other inhibitory actions of adrenaline, such as the dilatation of the bronchi and the inhibition of the intestine. Since no dissimilarity in histological structure can be discovered between the vessels which are dilated and those which are constricted, the difference may be chemical or environmental. Bacq of Liège has put forward considerable evidence that in certain organs which are inhibited there is present an enzyme which converts the adrenaline constrictor response into a dilator one. These experiments are extremely difficult to repeat, possibly because the exact conditions needed are not well enough known. Another possibility suggested by experiments on isolated vessels is the calcium-potassium balance and the acidity, acting separately or together. It would appear reasonable to imagine that the environment of the vessels of the skin is in both these respects materially different from that in the more active muscles. On the other hand, it has been demonstrated (Cow, 1911; Argyle Campbell, 1911) that vessels taken from different parts of the arterial tree behave differently though treated similarly. The problem is still further complicated in that the adrenaline reaction is also affected by the tone obtaining in the vessels at the time. Thus the dilator response of the vessels of the muscles to adrenaline by denervation is abolished (Hartman and Fraser, 1918) and may be reversed by section, in the cat, of the abdominal sympathetic, causing a relaxation of its normal tone, which we believe is kept up by the liberation of adrenaline at the sympathetic nerve endings. The dilatation, however, will return in from two to ten days when the vessels have regained their tone (Dale and Richards, 1918; Hartman, Kilborn, and Fraser, 1918), and even in isolated vessels if special steps are taken to maintain tone, such as adding adrenaline and red blood corpuscles to the perfusion fluid (Dale and Richards, 1918) or by perfusing with a calcium-free fluid (McDowall and McWhan, 1937). It would appear, then, that the nature of the response to physiological doses of adrenaline depends on the state existing in the muscle at the time the adrenaline is applied. It seems not improbable that the problem of adrenaline reversal and differential action is closely bound up with that of the intimate nature of muscular contraction itself.

Origin of Adrenaline

Another problem in relation to adrenaline is its exact origin. We know its chemical constitution and its relation to tyrosine, and the evidence is very considerable (Burn, 1933) that dioxypheylalanine is an intermediate product, but we still do not know all the steps in its normal formation. The solution of this problem is obviously of great clinical importance, as it might become possible to supply the body with chemical substances which facilitate the formation of adrenaline and thus enhance many reactions which, in some persons, especially the debilitated, appear to be deficient. It may be that a study of the steps in the formation of the adrenaline-like substance in common

broom (Gorrill, D'Silva, and McDowall, 1935) may throw light on the subject.

The problem of the destruction of adrenaline is no less important, for by preventing it, in a way similar to the enhancement of the action of acetylcholine by eserine, we might be able to prolong its activity and thus greatly increase its value; for the rapid destruction of adrenaline is its greatest disadvantage in therapeutics. A considerable amount of work has been done on the subject, notably by Heard and Welch (1935) and by Richter (1940), which at present is only of academic interest, but which shows that enzymes are involved in the destruction of adrenaline, and that this destruction may be reduced by compounds containing the SH group. According to Gaddum (1939), ephedrine inhibits the action of the destroying enzyme.

In the Oliver-Sharpey lectures of 1939 Gunn indicated that the many substances which act somewhat like adrenaline depend for their action on a similar chemical structure. Such work shows that it is possible to design new substances which may have the same action as but are less easily destroyed than adrenaline itself. So far these are little more than laboratory investigations, but the results indicate that considerable progress of great clinical importance may be anticipated.

Thus it is quite fair to say that Oliver by his discovery of the action of adrenal extracts showed us a new and undreamt-of world, and at the same time made us aware of even more undreamt-of secrets.

Function of the Carotid Sinus—a New View

When the activity of the carotid sinus at the bifurcation of the common carotid was discovered by Hering in 1925 it was almost taken for granted that its function was the maintenance of the arterial pressure at a constant level, the more so as such a function had already been admitted for the aortic depressor nerve. The evidence on which this view rested at first appeared unequivocal. Briefly, it was this: The lowering of the blood pressure in the sinus or painting it with cocaine resulted in a rise of arterial pressure and cardiac acceleration, while a raising of the intrasinus pressure or mechanical stimulation of the area had the opposite result—namely, cardiac slowing and vasodilatation. A remarkable series of experiments, especially by Heymans and by Koch on the isolated sinus attached to the body only by nerves, seemed to put the matter beyond dispute.

A general study of the problem, however, especially in more intact animals, has indicated that it is not so simple as at first sight appears; indeed, already it has become evident that the above theory of the function of the sinus is certainly incomplete and may in part be quite erroneous. The experimental findings are not disputed, but when they are taken into consideration with many of the other known facts of the circulation, the so-called "buffer action" of the aortic and carotid nerves becomes not a little reminiscent of the "phlogiston" theory of oxidation and respiration, in which the significance of the facts, especially the role of carbon dioxide, became almost inverted.

A few general facts regarding the circulation are outstanding, and of these the most important is that the blood pressure rises normally in man and animals in spite of the carotid and aortic reflexes. This rise occurs typically in mental stress and in exercise, and is accompanied by cardiac acceleration. Moreover, the arterial blood pressure is maintained at a constant although higher level, after section of the carotid and aortic nerves, in spite of changes of posture and small amounts of haemorrhage.

If the effects of haemorrhage on the reaction of the carotid sinus are studied in animals in good condition most

unpredictable results are obtained. It might be expected that a fall of pressure in the sinus would bring about generalized vasoconstriction and the recovery of the blood pressure until all the vasoconstriction was used up, as it were. This is the general idea that may be read in most descriptions of the function of the sinus. Experimentally, just the opposite occurs. The blood pressure may fall 25% without the carotid sinus apparently taking any action in its recovery; indeed, the response to occlusion of the carotid may at first be even greater than before. The blood pressure may, indeed, be reduced by 30% before there is a significant fall in the responses of the sinus; while vagus restraint, which we believe is dependent on the depressor reflexes, although reduced, is still retained. A study of the currents of action of the depressor nerve indicates that if a fall of blood pressure is caused by placing the animal in the feet-down posture the electrical changes are reduced for a very short period but are resumed although the arterial pressure is low (Greenwood and McDowall, 1937). It would seem very doubtful whether the recovery from haemorrhage, at least from small amounts, involves the carotid sinus mechanism at all. All that can be demonstrated is that the reactions of the vasoconstrictor centre to falls of pressure in the sinus are increased. This is seen in the increased rises of arterial pressure which occur if the sinus is occluded and by the increased constriction of the spleen and the intestine.

Function of the Depressor Reflexes

We may ask, What, then, is the function of the depressor reflexes from the carotid sinus and cardio-aortic region? A clue would seem to be given by a detailed study of reactions of the aortic depressor or of the sinus, the nerve from the sinus being difficult of access. It is now evident that all procedures which reduce the restraining influence of the vagus on the heart reduce the reaction to carotid occlusion. Of these the most notable are a rise of venous pressure and the injection of small amounts of adrenaline, following which the response of the sinus to carotid occlusion is reduced and may even be abolished for a short time after the arterial pressure has returned to normal. Now, it has been amply shown that the normal vagus restraint of the heart is dependent on the depressor reflexes from the sinus and aorta, and that the most important cause of the acceleration in exercise is a reduction of vagus action. It is but a step to imagine that at the same time the vascular component of the depressor reflexes is reduced also, and that circumstances which reduce vagus restraint reduce general vasodilatation also. Thus as the heart beats faster the blood depots constrict and return more blood to the heart.

It appears, then, justifiable to assume that the function of the depressor reflexes is not to prevent a rise of blood pressure but actually to facilitate such a rise, just as the cardiac inhibitory reflexes through the vagus do not prevent normal cardiac acceleration but, by producing a low resting level, confer on the heart a larger range of activity.

Various other pieces of evidence go to support this view. Bayliss, for example, found that stimulation of the aortic depressor nerve resulted in a fall of both arterial and venous pressures—i.e., a greatly increased capacity of the circulation—while it may readily be shown that the reverse occurs on cutting out the sinus. Recently Barry and Longhnan (1941) have demonstrated that carbon dioxide causes a reduction of the activity of the depressor nerve relative to the activity of an ordinary pressor nerve.

It may well be asked how this view of the carotid sinus action was overlooked by Continental workers; but the explanation is clear. In their desire to obtain the maximum responses from occluding the sinus the aortic depressor

nerves were cut at the same time—i.e., all the depressor reflexes were cut off suddenly and simultaneously—with the result that such an intense increase of the peripheral resistance occurred that there was a cardiac failure and, according to Heymans in his monograph, an accumulation of blood in the arteries—a fact which is a little difficult to conceive. If, however, less drastic procedures are adopted it is easy to demonstrate that there is a rise of venous pressure and increased cardiac output—a view with which Heymans subsequently agreed.

In exercise, then, it may be considered that the reduction of the sinus reflexes not only promotes acceleration of the heart but at the same time constricts the blood depots and makes more blood available to the active muscles. Thus we may understand that the right auricular reflex of Bainbridge, by which an increase of venous pressure reduces vagus restraint, also has a vascular component, and experimental evidence of this has already been put forward (McDowall, 1934).

The acceptance of this view of the function of the carotid sinuses has some important clinical corollaries. We see, for example, why it is that mental stress, such as that of recruits for the Services undergoing medical examination, a rise of systolic but not of diastolic pressure is commonly found. This must be produced by an increased output of the heart per beat, and, for reasons just indicated, is easily explicable as a result of reduction of the activity of the depressor reflexes and of more blood being returned to the heart. It would seem, too, that the depressor reflexes, by controlling the blood depots, make available a large quantity of blood which is available not only for exercise but for areas demanding blood, as in inflammation. All this conception of the function of the sinus depends on the existence of a circulation of variable capacity.

(The second of these lectures will appear in next week's issue with a short bibliography.)

THE LOCAL TREATMENT OF BURNS

BY

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In dealing with patients suffering from burns two separate problems arise—the treatment of shock and the local treatment of the burnt areas. This paper is concerned only with the latter. Two recently introduced methods of treatment have been mainly employed, and these have been compared with each other and with other better-known methods.

The irrigation envelope introduced by Bunyan (1940) has been used for treatment of burns involving the limbs and the trunk, while the application of sulphanilamide powder and tulle gras as recommended by Matthews (1941) has been employed mainly for faces, but also for burnt areas on the limbs and trunk. In addition tannic acid and triple dye have been used. A brief description of the technique employed by us is given.

Technique

In all cases except two the burnt area was thoroughly cleaned under an anaesthetic as soon as the patient's general condition permitted. Soap and water or, in some cases, ether soap followed by spirit was used for this

purpose. Dead skin was cut away. These procedures were carried out with the least possible trauma, but preliminary cleansing was thorough. When the irrigation envelope was used any unburnt areas of skin to be enclosed in the bag were washed and, in the case of hands and feet, the nails were cleaned so far as possible.

The Irrigation Envelope.—After cleansing sulphanilamide powder was liberally sprinkled over the burnt area and the bag was then drawn on and fixed in position with adhesive webbing. Care was taken to avoid applying this too tightly in the case of limbs lest it should increase the oedema of the burnt area. The patient was then left for twelve hours, after which any oedema fluid that had collected was drained off and the first irrigation with electrolytic hypochlorite solution ("milton") carried out. This was used in the strength of 2½% of the actual solution supplied, made up with water, and when the envelope was nearly full a 5% solution was run in. The limb was immersed for twenty minutes or until pain was complained of. The irrigation was repeated two or three times daily. It has been found that the average life of a bag is two to three weeks, after which leaks appear. The application of a fresh envelope is often helpful, since it gives an opportunity for light mechanical cleaning of the burnt area, the removal of infected mucus with sterile gauze, and, in the case of deep burns, the removal of necrotic areas of tissue with scissors and forceps.

Sulphanilamide and Tulle Gras.—The cleansed area was thickly covered with sulphanilamide powder and tulle gras was stretched firmly over it in overlapping strips. A fresh application of powder was then made, and several layers of gauze superimposed and lightly held in position with a bandage or face-mask. The next day the gauze was usually moist with exuded serum. It was then removed and fresh powder applied to the tulle gras, followed by clean gauze. This is not necessary in every case, but the dressing should always be removed down to the tulle gras on the fourth day, as otherwise small areas of sepsis may be found to have developed unnoticed. If septic areas were seen the tulle gras over them was removed, they were swabbed with antiseptic solution, and fresh powder and tulle gras applied. In the case of uninfected superficial burns the tulle gras was removed after from five to seven days, when healing had occurred.

Tannic Acid and Triple Dye.—Tannic acid was used in a strength of 15 or 20%, being painted with a brush or sprayed on to the burnt areas after cleaning. Triple dye was applied with a brush. These processes were repeated until a firm crust had formed, when the tanned areas were left exposed to the air so far as was possible.

Depth of Burn.—In our experience the exact estimation of the depth of burning is very difficult to determine, since burnt areas are rarely involved to an equal extent over their whole surface. Moreover, what appears to be a superficial burn at the time of cleaning may subsequently prove to be much more severe owing to coagulation of protein in the deeper layers of skin. It is, however, easy after some days to distinguish surface burns which are superficial enough to allow regeneration of skin to take place from below, and deep burns in which the epidermis has been totally destroyed, so that regeneration can occur only by ingrowth from the healthy skin surrounding the burnt area. A surface burn, even if only of second degree, may, however, be converted to a deep burn as the result of sepsis, and must then be regarded as "a secondary deep burn."

The results of treatment are therefore arranged under three headings—superficial burns (first, second, and third degree), deep burns (fourth and fifth degree), and secondary

deep burns. We have records of 19 cases treated by various methods since October, 1940. Of these, 17 were originally superficial; 4, however, subsequently became infected, and are classed as secondary deep burns. One patient had superficial burns of the face and right hand and deep burns of the left forearm and hand, and his case is classified under both superficial and deep burns. There were thus three primary deep burns. Superficial burns were left to heal naturally by re-epithelization; but the treatment of deep burns, whether primary or secondary, was directed towards obtaining a clean surface suitable for skin grafting at the earliest possible moment. That inefficient treatment of superficial burns may, as the result of infection, lead to gross scarring and perhaps the development of a useless limb is well known, but cannot be stressed too much.

In comparing the progress of burns on two limbs treated by different methods it must be remembered that the more extensively burnt limb is also, as a rule, rather more deeply burnt. When hands and face are burnt while extinguishing an incendiary bomb the face is almost always less severely affected than the hands. Moreover, the face, except for the ears, tends to heal rapidly owing to its good blood supply, while the dorsum of the hand or foot, where the skin is only loosely attached to the underlying tissues and where the blood supply is poor, takes relatively longer. In addition, where the skin is thick, as in the palm of the hand, the depth of the burn will be relatively less than where it is thinner, as on the dorsum.

Superficial Burns

Of the 13 cases under this heading, the burns in 8 were acquired while dealing with incendiary bombs, 2 were due to an explosion in a gas oven, and 3 were caused by scalding with boiling water. Eight cases with burns of the face were treated with sulphanilamide and tulle gras, and these were healed within five to fourteen days, with one exception. This man developed a mild but persistent infection of the forehead and required sixty-four days before healing was complete. Eight limbs were treated in the irrigation envelope, and required from nine to thirty-two days for healing; extensively burnt hands—one of which was completely "degloved"; and two almost completely—took twenty-one, twenty-two, and twenty-three days to heal. Sulphanilamide and tulle gras were used on ten limbs that were less extensively burnt, and the time required for healing varied from twelve to twenty-eight days. Tannic acid or triple dye was employed on small areas in three cases, which required fifteen, seventeen, and thirty days before healing was complete. In addition, tannic acid was used in three of the cases of more extensive superficial burns, all of which became badly infected; these are further discussed under the heading of "Secondary Deep Burns." Details of the progress of selected cases are as follows:

Case 1.—A woman aged 29 was admitted on December 27, 1940, having received superficial burns on the right side of the face and anterior aspects of both legs from the effects of an explosive incendiary bomb. The blistered area on the right leg extended from just below the knee to the dorsum of the foot and covered an area roughly twice that of the left. There were no signs of shock. The burnt areas were cleaned under an anaesthetic and the blistered skin removed. The face, which was denuded from the nose to the left pinna, including the forehead on that side, was dressed with sulphanilamide and tulle gras. The right leg was placed in an irrigation envelope and the left was treated with 15% tannic acid. During the next two days some pain was felt in the tanned leg and the skin was sore to the touch around the tanned area. No pain was felt in the face or right leg. When the tulle gras was removed from the face on the seventh day the underlying skin had completely healed. On the tenth day the irrigation envelope was removed and new epithelium was found to have covered the burnt area. The tan was still adherent to the left leg and could not be removed until January 29, 1941, nearly five weeks after its application. (Figs. 1 and 2.)

This case shows well how even when tannic acid is applied to a small superficial burn, and when no subsequent infection develops, the time taken before epithelial-



FIG. 1.—Case 1. Showing complete healing of superficial burn on right leg after nine days' treatment in irrigation envelope. Tan is still adherent to smaller burnt area on left leg; this did not separate for nearly five weeks.



FIG. 2.—Case 1.

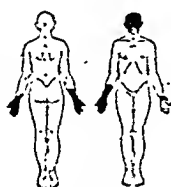


FIG. 3.—Case 5.

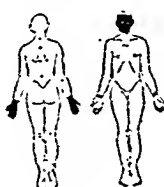


FIG. 4.—Case 8.

tion is complete under the tanned area is considerably longer than for a larger area on the opposite limb treated in the irrigation envelope. If, in addition, a surface overlying a joint is affected the immobility enforced by the tannic splint must greatly delay recovery of function.

Case 5.—A man aged 44 was admitted on December 8, 1940, with burns from an incendiary bomb involving the entire face and both hands and forearms (Fig. 3). There was complete "degloving" of the right hand, leaving a bleeding surface; the left hand was less extensively burnt. He was anaesthetized and the burnt area cleaned within five hours of admission; the face was treated with sulphanilamide powder and tulle gras, the right arm with an irrigation envelope, and the left hand with strips of lint soaked in 2% sodium bicarbonate. He subsequently suffered from shock and required a litre of plasma, given intravenously. Four days later both hands were forming new epithelium, especially the palmar aspect of the hand enclosed in the bag, but this hand was more oedematous than the left. There was no pain in either hand. Cultures taken at this time showed a scanty infection of the left hand with Gram-positive cocci and bacilli, while exudate from the bag grew *Staph. aureus* and haemolytic streptococci. The face was still oedematous. Nine days after admission the face was healed except for one or two scabs round the hair margin; the left

hand had become sodden and was dressed with sulphanilamide and tulle gras. After fourteen days the bag was removed from the right arm and the burnt area was found to be almost entirely covered with epithelium except for the flexor creases of the fingers and an area on the back of the hand. Movement was limited by oedema. A new bag was now applied. After sixteen days the left hand was healed except for small areas on the dorsum of the distal phalanges of the third and fourth fingers; movements were almost full. Three weeks after admission the bag was finally removed from the right arm which had healed. Movements of both hands were good but not yet full. When seen three months later both hands had full movement and power and were covered with healthy skin except for a small area with early keloid changes on the ulnar border of the left hand and on the right wrist.

The rapid healing of the extensively burnt right hand in the irrigation envelope, in spite of moderate infection, is noteworthy.

Case 8.—A youth aged 19, admitted on March 8, 1941. This patient was burnt as the result of an explosion occurring in a gas oven. The skin over the face and of both hands and wrists was blistered (Fig. 4). The loose skin was removed under anaesthesia, the face was treated with sulphanilamide and tulle gras, and both hands were fitted with irrigation envelopes. After nine days the bags were removed and the burnt areas of both hands were seen to be covered with a layer of mucopurulent exudate. On culture, *Staph. aureus* was grown. There was some oedema, preventing full flexion of the fingers and in all respects no obvious difference between the two hands was observed. A fresh irrigation envelope was now applied to the left hand, while the right was dressed with sulphanilamide and tulle gras, leaving the ends of the fingers and thumb exposed. From now on this hand was used for feeding and other minor activities. It was next dressed on March 20, twelve days after admission, and was then healed except for a small area on the dorsum. The left hand, in the irrigation envelope, was more oedematous and had not reached such an advanced stage of healing. On March 30, three weeks after the injury, the right hand was quite healed, and when the left was removed from the bag there was an extensive scab over the dorsum that did not separate until thirty-two days after the injury.

Although both hands were at first treated identically, after a week direct comparison was made between sulphanilamide and tulle gras and the irrigation envelope. In this case there was no doubt that more rapid progress was made with the former method, although both were satisfactory. From the moment the right hand was dressed, leaving the finger-tips exposed, the patient began to use it, whereas, in spite of frequent encouragement, the hand enclosed in the irrigation envelope was left passive except during irrigations. To this the rapid subsidence of the oedema of the right hand is attributed. Moreover, while only three dressings weekly were required for the hand treated with sulphanilamide and tulle gras, thrice-daily irrigations were necessary for the hand enclosed in the irrigation envelope.

Deep Burns

Two of these 3 patients were burnt in coal fires—one following an epileptic fit, the other after the destruction of her house by a bomb. The third case was due to explosion in a gas oven. All 3 had severe burns of one upper limb, including the hand in 2 cases. They were treated in irrigation envelopes until necrotic tissue had separated sufficiently to allow grafting to be carried out. The time necessary for this was forty, fifty, and twenty-eight days respectively. The epileptic patient also had deep burns of the face and breast; these were treated with tannic acid 20% and triple dye. Infection of these areas developed, necessitating painful daily dressings, which were in marked contrast with the painless treatment of the equally burnt area in the irrigation envelope. The bomb victim had a circular burn around the forearm and involving the palm of the hand—the skin and subcutaneous tissues were destroyed, exposing muscle tissue and the radius. Case 9, in which there were superficial burns of the face and right hand (Fig. 5), was ready for grafting after twenty-five days,

but the development of a sore throat caused this to be delayed.

Case 9.—A man aged 23 was admitted on March 8, 1941. He was involved in the same accident as Case 8, but was nearer the oven and was more seriously burnt. He was considerably shocked and required plasma transfusions. His face was treated with sulphaniilamide and tulle gras, and both arms were placed in irrigation envelopes. The left was much more extensively burnt than the right. After cleansing and removing burnt skin there was no apparent difference in the depth of the burns on the two hands, but in the course of the first week it became evident that the left hand and arm were burnt more deeply than the right. Whereas re-epithelization of the latter began

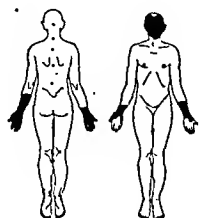


FIG. 5.—Case 9.

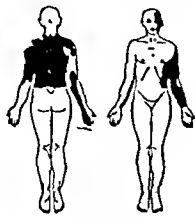


FIG. 6.—Case 16.

after four or five days, the epithelial tissues of the left forearm and hand then began to separate, leaving an area of granulation tissue. This extended round the forearm except for one area of unburnt skin beneath the wrist-watch and its strap, and involved the dorsum of the hand. Two weeks after admission the right hand was healing well, but necrotic skin was still separating from the left forearm. Twenty-three days after admission the right hand had healed except for an area the size of a sixpence over the fourth metacarpo-phalangeal joint. The left arm and hand showed some growth of new skin, especially on the palmar and ulnar edges of the hand and fingers, but most of the burnt area presented a raw granulating surface. Sulphanilamide and tulle gras were now applied to this limb, and twelve days later Thiersch grafting of both aspects of the forearm and the dorsum of the hand was successfully carried out (E. E. L.).

This case demonstrates the early difficulty in determining the depth of the tissue damaged by burning. The irrigation of the more deeply burnt limb in the envelope was valuable in assisting the separation of the necrotic skin and preparing a suitable surface for grafting.

Secondary Deep Burns

Two of these patients were burnt through the explosion of an oil bomb, one from a scald, and one in a manner unknown. Tan or triple dye had been used as the initial treatment in three of them. In one case the skin was blistered but not broken. This was removed and triple dye applied directly without further preliminary cleansing. The tanned area became infected, and was eventually grafted after thirty days (E. E. L.). The fourth case was admitted with superficial burns of the face, both forearms and hands, and the anterior aspects of the legs, due to the explosion of an oil bomb. These areas were cleaned with saline without an anaesthetic and dressed with foile and later with eusol and saline compresses. The legs were healed in seven weeks, and the face and arms in from eight to ten weeks, areas on the forehead and left elbow having been grafted a month after admission. The slow progress in this and the preceding case was almost certainly due in part to the inefficient initial cleansing. The history of Case 16, the most extensively burnt case in the series, is as follows:

Case 16.—A boy aged 14 was admitted on October 15, 1940, with extensive burns involving the back from neck to wrist, the left arm to the wrist, the right forearm and hand, and part of the left side of the face, as the result of the explosion of an oil bomb (Fig. 6). The skin of the back was severely blistered, but the burns nowhere appeared to be more than third degree. He was at first very little shocked, and cleansing under anaesthesia was carried out two and a half hours after the injury. 20% tannic acid was applied. Later in the day the blood pressure dropped to 85/65 and over two litres of plasma was given intravenously. In the course of the next week sepsis

developed under the tan on the back and on the left arm, and the tan itself began to strip off, being removed piecemeal. The temperature rose to 103° at night, and the pulse rate varied between 105 and 130. Eusol dressings were applied; but their removal was extremely painful, and more than two hours was spent over each dressing. Immersion in a saline bath was attempted, but this led to exhaustion and to an increase in temperature. Early in November liquid paraffin and brilliant green 1% were applied, and the burnt area of the back was left exposed to the air. This was followed by some improvement, and epithelization occurred over the centre of the back and the upper part of the shoulders. The rest of the back was covered with infected crusts, and the left arm and flank were painful and heavily infected. The temperature still rose to 100° at night, and the pulse rate varied between 120 and 130. The face and left arm where the tan had not been disturbed by sepsis were now healed except for the edge of the left pinna. At this stage (November 10) an irrigation envelope was applied and thrice-daily washings with dilutions of electrolytic hypochlorite solution (milton) were carried out. Considerable pain was experienced when the strength of this solution exceeded 1%, and it was therefore kept below this. During the first week the infected area became cleaner, epithelium spread in from the healthy skin edges, and numerous small islands of epithelium appeared in the middle of the raw areas. After a week the condition became stationary and then began to retrogress, the new skin becoming absorbed, the raw areas being bathed in pus an hour or two after each wash. The general condition was unaltered. On December 4 the bag was removed, the infected areas were washed for twenty minutes with 10% milton solution under gas-and-oxygen anaesthesia, and a fresh bag was applied. From this time healing continued favourably. A maximum final strength of from 2½ to 4% milton solution was reached in the bag at each wash. This was definitely painful, but seemed to cause no more pain than 1% had previously. Progress was accompanied by an improvement in general health, the temperature falling to a maximum of 99° and the pulse rate to the neighbourhood of 100. By January, 1941, the back had become largely epithelized, but there were fresh signs of reabsorption in some areas. The envelope was therefore removed and tulle gras and sulphaniilamide powder were applied. The condition improved, epithelization continued, and on January 24 areas on the left arm and shoulder were grafted (Thiersch and pinch grafts—E. E. L.). On January 30 the grafts were found to have taken well, but there was some infection of the ungrafted granulation tissue of the left flank. Diphtheroids, *Staph. albus*, and *Staph. aureus* were grown on culture. In spite of repeated applications of sulphaniilamide and tulle gras the infection spread, and large areas of newly formed skin broke down. Raw areas varying in size from a sixpence to a half-crown developed on both sides of the back. In spite of various antiseptic dressings it appeared as though the whole burnt area would shortly be involved and all the new skin reabsorbed. On February 17 the back was washed with 10% electrolytic hypochlorite solution (milton) in water under anaesthesia and a fresh irrigation envelope was applied. Within two days the temperature, which had risen again to 100° at night, fell, and the pulse rate dropped from 100 to 80. Rapid re-epithelization took place. This continued until March 11, when the bag was again removed, sulphaniilamide and tulle gras were applied to the remaining raw area of the left arm and back, and new Thiersch skin grafts were made. These again took well, and by mid-April the back was healed except for a few small areas. Complete healing had occurred early in May.

This case reveals a number of important points. While it is possible that the original application of tannic acid to the extensive burnt area actually saved this boy's life by diminishing the absorption of toxic products, the subsequent infection beneath the tan reveals one of the disadvantages of this form of treatment. During this time what had originally been a superficial burn was converted into an infected area involving the entire depth of most of the epithelium. The use of the irrigation envelope was at first followed by striking improvement in the local condition, great relief of pain for the patient, and considerable time-saving for the nursing staff. The improvement was not maintained, probably owing to the great dilution of hypochlorite used in the wash-outs. Further cleaning with stronger antiseptic and the use of a higher concentration of hypochlorite for the irrigations led to the re-establishment of progress locally and marked improvement in the general condition. Even so, however, organisms (*B. pyocyaneus* and *B. coli*) which were apparently "fast" to hypochlorite

eventually gained ascendancy and reabsorption again occurred. A change over to sulphanilamide and tulle gras was at once followed by improvement, but again organisms (*Staph. aureus*, *Staph. albus*, and diphtheroids) "fast" to sulphanilamide became established after some weeks, leading once more to retrogression. This was halted by reverting to the use of the irrigation envelope and hypochlorite. After the first few days this patient always complained of pain, often severe, during and for some minutes after irrigation.

It is probable that in a case of this type with an extensive, deep, and infected burnt area inevitably requiring some months for recovery, no single method of treatment would have been effective. A change was essential from time to time, and the most rapid progress was noticed to take place always during the two weeks immediately after such a change, whether it was due to hypochlorite or sulphanilamide; this was followed by a period of slower improvement, and then by definite retrogression. The use of the irrigation envelope in this very difficult case contributed materially to ultimate recovery.

Bacteriology

Irrigation Envelope.—Infection of the burnt area was always present to a variable extent, and even prolonged contact with 5% electrolytic hypochlorite solution was not sufficient to abolish it. Thus in one case swabs taken from the burnt area after the initial cleansing were sterile. Three days later occasional Gram-positive cocci were seen in a smear, and scanty colonies of *Staph. aureus* and haemolytic streptococci were grown on culture. Four days afterwards coliform organisms were also present. Smears from the leg of Case 1, taken three days after admission, showed leucocytes but no organisms; on culture *Staph. albus*, diphtheroid organisms, and *B. subtilis* were grown. In another case purulent exudate always collected in the bag overnight, and haemolytic streptococci and *Staph. aureus* were found a week after its application; a fortnight later haemolytic streptococci and *B. pyocyaneus* were grown, and a culture taken when the bag was finally removed before skin grafting, six weeks after admission, showed a heavy growth of *Staph. aureus*, *B. pyocyaneus*, and *B. proteus*. The difficulty of abolishing an established infection was further shown in Case 16, in which absorption of newly formed skin was observed to be taking place two weeks after the bag was first applied: about half a pint of pus was then collecting in the bag overnight. Smears showed a moderate concentration of organisms, and on culture haemolytic streptococci, diphtheroids, and *B. proteus* were grown. The bag was removed on December 4 and the back and arms were washed with 10% hypochlorite solution for twenty minutes. At the end of this time they appeared clean, and there were numerous capillary haemorrhages on the granulating surfaces. During the next five days three washings daily with 2% and 3½% hypochlorite solution were carried out. On December 9 there was no significant reduction in the number of organisms; and *B. proteus*, diphtheroids, and *Staph. aureus*, with occasional colonies of haemolytic streptococci, were cultured.

Sulphanilamide and Tulle Gras.—When sulphanilamide powder and tulle gras dressings have been applied to a well-cleaned surface, infection has been minimal but has not always been prevented. Thus in Case 5 a smear taken from the face five days after admission showed a moderate infection with organisms of the *B. coli* group, *Staph. albus*, and diphtheroids. Again, a swab from the back of Case 16 taken a week after the removal of the bag, during which sulphanilamide and tulle gras had been applied, showed a sparse growth of *B. coli*; after three weeks *Staph. aureus*, *Staph. albus*, and diphtheroids were cultured. In other

cases *Staph. aureus*, *Staph. albus*, and *M. tetragenus* have been cultured and proved resistant to further treatment with sulphanilamide. Both methods appear to limit infection, but with each of them, when infection becomes established, a change in the treatment is necessary to control it. Streptococci, diphtheroids, and *B. coli* were commonly grown from patients treated with hypochlorite solution, and staphylococci from those with sulphanilamide. Whichever method is employed the initial cleansing of the burn is of great importance.

Pain

Treatment with the irrigation envelope has been relatively painless. The majority of patients have had no pain throughout and have been able to tolerate irrigation with a mixture containing up to 1 oz. of electrolytic hypochlorite solution to the pint of water (5%) without more than a slight tingling. In some cases, however, pain has been complained of. This may occur during or after irrigation. In Case 16 a concentration of electrolytic hypochlorite solution of more than four ounces to twenty pints of water (1%) caused pain throughout treatment. Two other patients with burns on the hands also complained of pain during irrigation with 2½% solution; in one of these there was considerable oedema of the arm, probably due to too firm an application of the adhesive attachment, which was considered to be partly responsible. In the other no obvious cause was discovered, but it was subsequently found that half-strength eusol dressings were equally painful. In one case, although irrigation could be carried out painlessly with 5% solution, severe pain developed in the burnt area from half an hour to one hour after the irrigation was over. This ceased after three or four days of treatment. Treatment with sulphanilamide and tulle gras has been almost entirely painless.

Conclusion

Two new methods of treatment of burns have been investigated and both have been found to possess advantages over older methods. For superficial burns of the face or limbs the use of sulphanilamide and tulle gras has been especially successful, and rapid healing, with good function, has resulted. In some cases, however, infection, usually with staphylococci, has supervened, necessitating a change of antiseptic. This treatment is almost painless, and in many cases need only be carried out every few days. It is the most practical and efficient method for routine use in superficial burns of moderate extent. The irrigation envelope is useful for more extensive burns, and for deep burns in which separation of necrotic tissue must take place before grafting is possible. The burnt area can be readily inspected, and free and painless movement of limbs, fingers, etc., can be carried out during irrigation. The treatment is not always painless, and infection is controlled less well than with sulphanilamide. The application of the adhesive seal round the limb may increase the oedema of the burnt parts unless great care is taken. In some cases a change from one method to the other has been used with success. The irrigation envelope offers an alternative treatment of value in special cases. Both methods possess advantages over tan treatments: first, infection can always be limited and never develops to the same extent as often happens under an area of tan; secondly, the splinting effect of tan, with its harmful effects on the immobilized joints, is avoided. Nevertheless, in widespread burns of the trunk tanning methods may save life in the early stages.

Our thanks are due to Dr. R. D. Clay, who was responsible for all the bacteriological investigations.

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TREATMENT OF BURNS BY ENVELOPE IRRIGATION

BY

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While no single method for the local treatment of burns has been found universally satisfactory and acceptable, the technique described by Bunyan (1940) of sealing the affected part in a coated silk envelope and irrigating with electrolytic sodium hypochlorite merits a thorough and critical trial. In the past six months 16 cases have been treated by this means at the London Hospital and 8 by other methods. Two were caused by electricity; the rest were due to the commoner agents encountered in civil practice and to wartime incendiary bombs. When the burns were multiple, as was often the case, different methods were used on the separate lesions and comparisons made between them.

The two main problems in the local treatment of any burn are the prevention of infection and the prevention of pain. The latter is largely a matter of controlling the former. If infection is prevented a superficial burn will heal satisfactorily by any method and a deep burn will be the sooner ready for the essential skin graft. Though descriptions of cases and their treatment glibly describe the degree of a burn, I have only once seen mentioned the difficulty presented by this assessment (Mowlem, 1941). It is often impossible to decide on the depth of injury at different sites of the lesion for several days, when it is frequently seen that original estimates were incorrect.

In general, large superficial areas heal more slowly than small deep ones, and the time required for the last few areas to heal, especially over the dorsum of finger-joints, is most tiresome. Many cases after a time advance extremely slowly, and a change of treatment is required to hasten progress. Healing is usually most rapid on the face, less so on the upper extremity, less still on the lower extremity, and slowest of all on the dependent flexor aspects, notably behind the knee. It is more rapid in the young than in the old, and in women's faces than in men's, where the growth of beard may lead to considerable discomfort and delay. It is particularly necessary to shave the scalp if forehead lesions are anywhere near the hair margin. The only delayed healing of a face burn was due to this omission.

Theatre toilet, though universally accepted in principle as essential, seems to be regarded as of less importance in practice; especially is this so in burns of moderate degree and extent, which are treated in out-patient departments. This is a great mistake, for one night spent in hospital following an efficient cleansing under anaesthesia may save many visits later as an out-patient. A stoker with burns of face and hand caused by his furnace "blowing back" was treated as an in-patient with no theatre toilet. A few days after he left hospital his substitute was admitted with almost identical burns from the same faulty furnace. With similar treatment, following cleansing under anaesthesia, he left hospital healed in two-thirds of the time.

Lastly, how does one honestly maintain "full aseptic precautions" in cleaning up a burn in the theatre, especially an air-raid casualty?

Technique of Bunyan - Stannard Envelope Method

The principle consists in enclosing the affected part in a transparent coated silk envelope, irrigating with electrolytic sodium hypochlorite three times daily through vents provided, and using the envelope* as the only dressing between irrigations.

* These envelopes, made for different parts of the body in a variety of shapes and sizes, may be obtained from William Stannard & Co., Leek, Staffs.

Numerous modifications and improvements have been made since the method was first used to overcome various difficulties as they arose. A case of burns of the hand, wrist, and forearm is now treated in this hospital as follows:

When any necessary treatment for shock has been given the patient is anaesthetized in the theatre. An assistant first washes and swabs away loose debris with normal saline and rests the limb on a sterile towel. The surgeon, prepared as for an operation, "with full aseptic precautions," next cuts away with scissors any blistered areas and removes with forceps such injured tissue as can be removed with a minimum of force. No scrubbing is employed, as it adds further trauma to already damaged tissues. The limb is then suspended freely over a bucket and hosed or syringed with a 20% solution in tap-water of "milton" at 105° F. for 10 to 15 minutes, until thoroughly clean.* A suitable-sized envelope is then drawn over the limb, and the upper open end sealed well above the limit of the lesion by two overlapping turns of special webbed adhesive strapping. Variban has been substituted here when the recommended strapping was unavailable, but is less satisfactory. The patient is then returned to the ward.

About six hours later the first irrigation is given in the ward. The limb is supported on a mackintosh pillow so that the elbow is higher than the hand. The lowest vent of the envelope is doubled over on itself and closed with a special clip. As a substitute a spring-backed paper-clip with edges guarded by slit rubber tubing works admirably. For added security to the seal a rubber ribbon is tied firmly around the envelope just distal to the strapping. From a large container with delivery tube and glass nozzle, 2½% milton—i.e., 1½ oz. milton to 1 pint of tap water—at 105° F. is directed through the upper vent into the envelope and over the lesion. When the envelope is sufficiently filled to cover the lesion completely the upper vent is doubled over and clipped. The patient is then encouraged to move his fingers and wrist in the fluid for three to five minutes, before the fluid is drained into a bucket by releasing the lower clip. The process is now repeated once, and the complete performance takes about twenty minutes. After the second emptying the rubber ribbon is untied and the limb must hang down, with all vents open, to drain for twenty minutes. The process is repeated the following morning with 2½%, but thereafter 5% milton is used three daily.

Provided a rubber ribbon is tied below the seal during irrigation to take the hydraulic pressure, the more elaborate methods of sealing first used are quite unnecessary. In one case no seal at all was employed, the envelope being held in place between irrigations by a piece of tape tied around the limb, and this proved both satisfactory and comfortable.

For the first case treated here—in a home-made envelope which leaked—normal saline was used. Considerable oedema persisted, and the burn and surrounding healthy tissue became increasingly macerated. After a week milton was substituted, and the oedema disappeared in two days. The maceration followed less rapidly.

This maceration did develop, however, especially of the cornified palms of labourers, in subsequent cases when using milton. It is now almost completely overcome by adequate postural drainage after each irrigation and by leaving all vents open between-whiles. Although this latter theoretically admits secondary infection, which the envelope method was designed to occlude, in practice it does not seem to occur. If a tendency to maceration is still found, resting the limb on hot-water bottles to increase evaporation will almost certainly overcome it. This has not been necessary here since the early cases. The distension of the envelope with oxygen after each irrigation to prevent maceration was suggested, but it did not seem to be of any value, and, in any case, attention to drainage is all that is usually required.

If the lesion is thoroughly hosed with 20% solution at the initial cleansing a degree of anaesthesia appears to be produced. After the first early morning one, using 2½%, subsequent irrigations with 5% do not give rise to any complaints. Though a few say it stings—and this stinging

* Milton is an electrolytically prepared solution of sodium hypochlorite, stabilized at 1%.

sometimes begins even half an hour after irrigation—the majority of patients welcome the procedure as painless and comforting.

An electrolytically prepared hypochlorite was chosen, as saline remains after the liberation of its nascent chlorine; whereas chemically prepared varieties, such as eusol or Dakin's solution, have more irritant end-products. Milton was thus used, as it filled requirements, and was supplied to hospitals at the special price of 3s. 6d. to 5s. a gallon, according to quantity. However, since the first few cases, when Milton was used, the hypochlorite employed has been prepared electrolytically in the hospital dispensary. With an apparatus made entirely by the chief dispenser, Mr. C. H. Sykes, a 1% solution of electrolytic sodium hypochlorite is prepared by switching on the current and switching it off when a bell rings. This has been found to remain completely stable after six months, and is diluted in the theatre or ward to the strength required. The cost is about 6d. a gallon. The only further essential is the non-interference by enemy action with the electric supply.

The initial disadvantage of leakage and wetting of the bed through an imperfect seal has disappeared since using a rubber ribbon; but, at seams especially, and also by permeation through the envelope, a certain amount of fluid still gets through. In a "good" envelope this may not start for nearly three weeks, but sometimes it begins as early as the fifth day. It is quite controllable by a mackintosh sheet under the part, but when the fault is eliminated by technical improvement in manufacture the method becomes entirely free from "mess"—except perhaps in the theatre at the initial cleansing. (I believe this difficulty, due mainly to delay in obtaining materials, has now been overcome.)

When filling an envelope enclosing a leg, the lower part is bellied out by the entering fluid, which draws the upper part painfully tight across the limb until raised off it by the envelope's becoming completely filled. If a length of Gooch splinting is placed beneath the limb and the free edges are drawn up on either side and suspended from a bed cradle, a trough is formed outside the envelope which prevents this.

With an extensive deep burn, progress becomes delayed after a time—as with many chronic conditions. This time of delay presumably varies with individuals; sufficient long-standing cases, however, have not been treated to do more than suggest that, with the envelope method, the first four to six weeks is the period of most rapid improvement. If, when envelopes are changed on account of leaking, the lesion is again hosed down with 20% solution, healing appears to be accelerated.

Only limb burns have been treated here by this method, though a case is still being awaited which can be enclosed in an envelope extending from breasts to mid-thighs and allowing easy use of a bed-pan by an ingenious gusset. It has so far only been successfully fitted and filled on an uncomplaining student.

A few cases of infection have been treated, but these are not discussed in this paper.

— Comment on the Method

Infection.—As bacteriological controls here have been so incomplete, the subject of infection can only be discussed clinically—i.e., when granulations are pale pink and no pus is present, infection is assumed to have subsided or not to have occurred, as the case may be; though cultures from the surface would almost certainly show organisms. In not a single case treated from the onset by the envelope method has severe infection occurred. With a theatre toilet it has been subclinical; without this cleansing it was only slight, and rapidly subsided. This is a very

important advantage; for whereas with any other method preliminary cleansing in the theatre is essential, with an envelope the healing time is not so disastrously prolonged if this still highly desirable cleansing has to be omitted. And in certain circumstances this omission may be inevitable. Where infection is already present an envelope is the most satisfactory method of cleansing. Repeated dressings of any nature should be done not less often than two-hourly—which is very time-consuming, and is disturbing to the patient—or they stick, and their removal is painful and destructive. This can be avoided by covering with tulle gras; but cleansing is then very much delayed, as the gaps in the mesh soon became blocked by exudate. Hypochlorite compresses clean more rapidly than saline, which produces maceration by the tenth day at the latest. This is the great disadvantage of the saline bath. The envelope sticks not at all or very slightly, is the least painful method, thrice-daily irrigations are adequate, and progress can easily be watched without disturbing the lesion or the patient.

Pain.—This is virtually absent. After the first early morning irrigation patients seldom mention more than a slight stinging. This is rather the exception, and has not persisted for more than a day or two. In three cases in which both hands were burnt, one was treated with an envelope, the other by ointment dressings—and in each instance preference was volunteered for the envelope.

A patient treated by Mr. Alan Perry had the whole of his hand coagulated by a severe electric burn. It was enclosed in an envelope and irrigated for thirteen weeks, four envelopes in all being used. During this time part of the palm and all the digits except the little finger sloughed away, but after the first few days there was no complaint of pain or any sign of secondary haemorrhage.

A girl aged 16, whose nerve had completely gone following burns of both lower limbs from thighs to feet, was treated by triple dye jelly. Despite initial theatre cleansing, one leg and then the other became infected, and although this was suspected—even leading to re-examination under anaesthesia on the fourth day, when no pus was found—it was not until the ninth day that the pellicle showed definite signs of infection beneath. From then onwards the whole areas of both legs became infected. One was treated in an envelope, the other with Milton compresses over tulle gras. The patient became almost unmanageable, and begged for the second leg to be enveloped. After this had been done she settled down in a few days, and took the greatest interest in watching the progress of her condition through the transparent envelopes.

There is no doubt that patients have preferred the envelope to any other method used on them—though, with a number in a ward at once, mass suggestion certainly plays a part. The only real complaints have been of soreness from the strapping seal.

Use.—This is a further great advantage in treating hands. From the second day they can be used, painlessly, for coarse movements through the envelope, such as feeding, holding a book, or doing the hair. For superficial burns of the hands no movement should be lost. For deeper burns the patient continues to move the hand while waiting for sloughs to separate—at first only in the fluid, but in a few days at all times. Where loss of tissue—e.g., tendons—means inevitable impairment, movement of course suffers; but otherwise, movement never having been lost, the tedious process of regaining it does not arise. The only disadvantage of using the hands too enthusiastically would appear to be the earlier leaking of the envelope.

Nursing.—The staff are saved a great deal of time if several cases are being treated by the envelope method. One preparation does for all, and there is no scrubbing up between cases. While one patient is moving the fluid over his lesion the envelope of the next is being filled. With a solitary case, rather less time and preparation are involved in "dressing" the burn.

Cost.—This depends on the size of the area to be treated, as the larger this is the larger the envelope and the more solution required. For an arm, however, the hypochlorite as prepared in our hospital dispensary would cost 3½d. a day. To that is added the cost of the envelopes: no other dressings are required.

Analysis

The 24 cases involved 51 areas; these were treated as follows:

(a) *Ointment dressings* were used only for clean burns. If an area of infection developed it was quickly controlled by compresses, before it became deep or extensive. All faces except one were dealt with by this method, and 14 cases in all.

(b) *Saline Compresses.*—This method was used in 8 cases, one of which, a burnt face, healed satisfactorily in nine days. In all the others it had to be abandoned, as maceration became too marked. The method is, however, useful for a few days to clear up a limited area of infection.

(c) *Electrolytic sodium hypochlorite compresses* in solutions varying from 5 to 50% were found more effective than saline in treating infected areas, of which 7 were encountered.

(d) *Flavine in paraffin* was used in only 3 cases. It appears to have little advantage over ointment for a clean burn, and is more messy.

(e) *Triple dye jelly* was applied to 6 areas after careful cleansing under anaesthesia. In every single case almost the whole area covered became infected, superficial burns became deep, and weeks were required to heal. One needed a skin graft and another may do so. Even if perfect healing had occurred, the method was messy.

(f) *Envelope Irrigation.*—This was employed on 13 burns from the start and on 8 after infection had supervened.

Summary and Conclusions

Treatment of burns by envelope irrigation with electrolytic sodium hypochlorite has been tried in 16 cases, and the results are compared with those in 8 cases treated by other methods.

When thorough surgical technique is impossible the envelope method will minimize the dangers of infection; and when infection is already present no other method will clean the wound so rapidly or so effectively. By its use treatment is almost painless—an advantage especially noticeable in infected cases. The method is cheap and convenient, making nursing simple.

Other methods will heal a burn or bring it to the stage of grafting within comparable degrees of time, attention, and discomfort, provided all goes well. The great value of envelope irrigation is that one can be quite certain that in no case treated by it, with or without theatre cleansing, will anything more than mild infection occur. Can this be claimed for any other method?

I should like to thank Mr. Neligan, Mr. Perry, and Mr. Dix for permission to publish these cases, and to record my appreciation of the enthusiasm shown by the nursing staff despite early difficulties.

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The Biochemical Society would like to give any possible assistance to foreign visitors to this country who are interested in biochemistry. The following notice, published in the last programme of the Society, may be of interest: "On behalf of the Society the Committee wish to extend a cordial invitation to biochemists and others interested in biochemistry, from the British Empire and countries abroad, to attend meetings and to take part in the discussion of papers. If such visitors wish to receive programmes of the meetings and advance abstracts of papers, they should send their names and addresses to the Secretaries." The Secretaries of the Biochemical Society are: Dr. F. G. Young, National Institute for Medical Research, London, N.W.3, and Dr. W. T. J. Morgan, Lister Institute of Preventive Medicine, Chelsea Bridge Road, S.W.1.

MUMPS MENINGO-ENCEPHALITIS

BY

A. W. FRANKLAND, B.M., B.Ch.

Captain, R.A.M.C.

In a recent epidemic of mumps among soldiers 234 cases were treated in hospital. For the most part only the more severe cases were seen, the milder ones obtaining treatment in their own camps. In a mumps epidemic with meningeal symptoms, coming as it did at the end of a severe epidemic of meningococcal meningitis, it was not surprising that quite a few patients with mumps were sent into hospital with meningitis as the tentative diagnosis. In only 5 of these cases were the symptoms severe enough to justify lumbar puncture. In all these cases a pleocytosis was obtained in the cerebrospinal fluid. Many more cases were sent in for lumbar puncture, but the diagnosis rested largely on the recognition that such a symptom can occur. It was soon apparent that it was not necessary to have either parotitis or orchitis: the meningeal symptoms in contact cases of mumps could be presumed to be due to the mumps infection.

That meningeal involvement occurred fairly often in a mumps epidemic has been known since the middle of the eighteenth century, but it was not until 1902 that Mondé described the findings in the cerebrospinal fluid. Gordon (1913) was able to produce an encephalitis in a monkey by intraspinal injections of saliva filtrates. Both Biruberg (1939) and Silver (1936) suggest that the frequency of symptoms from the central nervous system varies from epidemic to epidemic. Pleocytosis in the cerebrospinal fluid may or may not produce meningeal symptoms. It is stated that there is an increase in cells in the cerebrospinal fluid in 50% of cases of mumps, though some authors put the figure as low as 0.1%.

Table showing Illustrative Cases

Case No.	Age	Presenting Symptom	C.S.F. Cell Types	Cells per c.mm.	Complication	Days after Onset
1	26	Parotitis	Small mononuclear; occasional large mononuclear	230	None	—
2	35	Meningitis	All lymphocytes	375	Parotitis	1
3	35	Submaxillary swelling	"	525	Orchitis	6
4	32	Meningitis	Lymphocytes; occasional endothelial cell	1,078	None	—
5	22	"	All lymphocytes	928	Orchitis	11

No organisms were seen in any of these cases, and the cultures remained sterile. In two the C.S.F. pressure was raised, but both patients were very excited; the other cases were within normal limits of pressure. In Case 2 the fluid was not quite clear, while in Case 4 the fluid was definitely opalescent. In Case 5, no parotid swelling was seen, though a severe unilateral orchitis developed eleven days after the onset of meningeal symptoms.

If parotitis had been present the symptoms of a meningeal involvement were fairly easy to recognize. The onset varied from the first to the fourteenth day, though commonly it occurred about the fourth or fifth day. Headache, with a pyrexia generally over 100° and quite often over 102°, appeared, ushered in by nausea and vomiting. Some degree of neck rigidity was a constant finding, the patients complaining of pain in the head, neck, and back. In two of the cases head retraction was present. Bradycardia, Kernig's sign, and photophobia completed the picture of a meningeal reaction. The temperature, vomiting, and headache generally began to subside on the third day. Most patients were free from any symptoms except weakness soon after the fifth day. One patient, who was in hospital for a month, still complained of head-

ache in the mornings. He fainted the day after discharge and was readmitted with no abnormal signs but symptoms of headache and depression. After a period of three weeks' convalescence he seemed to be well again.

Treatment

It was only natural to give sulphapyridine to cases showing meningeal symptoms. If the cerebrospinal fluid is not clear there can be little justification for withholding a drug which may be life-saving. Only the first three cases in which the fluid was not clear received the drug, 9, S, and 6 grammes being given in the twenty-four hours. Vomiting, headache, and depression were made worse and recovery was delayed. Certainly those patients not receiving sulphapyridine recovered more quickly. Eventually treatment was mainly symptomatic—*aspirin* and *phenacetin*, with copious glucose and fruit drinks. A wash-out of the stomach on the third day with bicarbonate and an enema seemed to give much relief.

Comments

Mumps is a virus infection probably spreading via the blood stream and therefore able to affect any part of the body, with a predilection for the parotid gland. In the epidemic described the number of cases of mumps with complications was high. The percentage of all cases of patients developing meningeal symptoms in the epidemic was difficult to judge, but of those admitted to hospital 30% had signs and symptoms of meningeal involvement. It is possible that the particular virus was of a neurotrophic type. The meningeal symptoms have been described as due to the parotid gland compressing the internal jugular vein. This can be discounted because not all cases have a parotitis. In the cases described no polymorphonuclear leucocytes were seen in the cerebrospinal fluid; it is therefore to be expected that sulphonamides will not alter the course of the disease. A guinea-pig received some of the cerebrospinal fluid from Case 5 intracerebrally: no rise of temperature and no apparent ill effects ensued.

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TREATMENT OF IMPOTENCE: A COITUS-TRAINING APPARATUS

BY

J. LOEWENSTEIN, M.D.

For the purpose of this paper I understand by impotence solely the *impotentia coeundi* caused by disorders of erection, accompanied, nevertheless, by normal ejaculation and normal orgasm. This is the most common form of impotence. The greater number of these cases are psychologically determined. The much rarer cases of organic impotence are not taken into consideration here, although they, too, are sometimes partially determined or accompanied by psychological factors. The treatment of psychological impotence is of course mainly a psychological one. It is carried out by the usual methods of persuasion, suggestion, and analytical treatment. Sometimes physical, medicinal, or hormone therapy is applied in addition, but all these methods are efficacious mainly through influence on the mind. In the same way, treatment by a training apparatus (according to Dr. Spiegel) which will be discussed below displays its therapeutic efficiency only through its effect on the mind and will.

This apparatus aims at supporting the insufficiently erected penis at its immissio. Accordingly, it is only a mechanical expedient without any therapeutic value of its

own. It gains this value only when its application is organically fitted into the framework of an individual psychological treatment.

Psychological Impotence

Psychological impotence consists essentially in inhibitions which hamper the normal process of erection in the spinal cord so that the erection necessary for the immissio fails to occur. These inhibitions mostly consist either of conscious ideas or of unconscious and suppressed complexes and conflicts, the nature of which is disclosed by analytical treatment. But common to all cases are the fear of the failure of erection and the associated idea: "I am impotent." The erection is essentially a psychological process, and no other process is so liable to be disturbed by inhibiting ideas as that of erection, particularly in neurotic individuals. The bare idea of failure and the ensuing self-observation may be of such a strong inhibiting nature that erection fails to occur. Each new fiasco will enhance the autosuggestion: "I am impotent." In mild fresh cases without parathatic superstructure this inhibiting autosuggestion may be overcome by a reassuring explanation alone. In more serious and inveterate cases the impairing basic complexes and conflicts have to be made conscious and resolved by analytical work. If this is attained to a sufficient degree, not only are the original inhibitions removed but, as a rule, also the idea of insufficiency, together with their autosuggestive consequences, so that normal erection will take place.

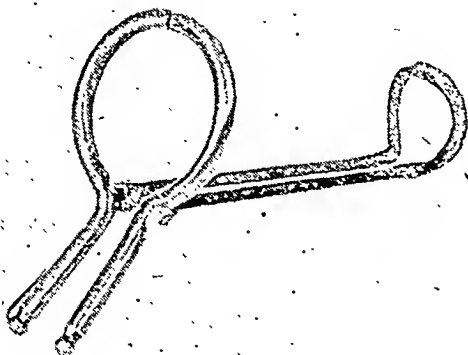
Sometimes, however, there happen to be cases which take quite a different course. In spite of good results of the analytical treatment, the patient fails again in an attempt to cohabit, because the habitual self-observation and mental tension hinder erection. Such renewed failure will, of course, further enhance the autosuggestion of incurable impotence and will not only nullify the past psychotherapeutic treatment but even endanger any future attempt. There will scarcely be a psychotherapist who has not experienced such disappointments while treating cases of impotence.

The Apparatus in Use

In order to overcome this embarrassment a coitus-training apparatus has proved to be very efficacious. It consists of twin splints made of thin wire which support the underside of the membrum, ending at each end in a ring. The ring at the pubal end rests upon the symphysis, while the opposite one grips the sulcus glandis, so that the glans remains beyond. In order to adjust it there are hinges at the upper side of the rings. The apparatus is to be fixed to the flaccid penis, and this takes no more time and trouble than, for example, putting on a condom. The two splints are held together at the pubal end by a small rubber ring, which makes it possible for the apparatus to adapt itself to all changes in the circumference of the penis. It is extremely light and easy to handle, and it does not hurt or irritate the male or female partner. Besides, it is so inconspicuous that the female partner does not necessarily notice it. The photograph, reproduced half-size, demonstrates this apparatus.

When the psychological treatment of a case is drawing to its close and the psychotherapist has gained the impression that the erection proper will function but, on the other hand, is afraid of interference caused by autosuggestive influences, the patient is handed the apparatus with the necessary instructions. The conviction is imparted to him that with the help of the apparatus he will be able at any time, regardless of erection, to accomplish a coitus, and that a failure is excluded. It is very likely that the patient will soon report a perfect success. Either the erection of the supported penis was in itself vigorous enough, so that the patient was able to accomplish the

cohabitation unperturbed by the apparatus, or the erection was imperfect, which, however, did not prevent insertion of the flaccid membrum into the vagina and accomplishing the cohabitation. In either case the patient is to be advised to use the apparatus for some time, in order to give him a sense of absolute security and to prevent a recurrence.



After a training of several weeks the patient's self-confidence will become so strong that he can dispense with the apparatus for good. (For want of space it is not possible to report case histories. Yet it may be mentioned that this paper is based upon the results of 36 cases.)

It is necessary to stress the point that the patient must not receive the apparatus before the psychological treatment is finished. Application of the apparatus at any earlier stage would not only impair the effect but endanger recovery, because the unsolved complexes would still retain their hampering influence on the reflexes. It stands to reason that the apparatus cannot replace psychological treatment, and if prescribed indiscriminately it will often be a failure and the last stage of the patient be worse than the first.

A further indication for applying the apparatus may be given by certain cases of homosexuality. One of the dominant features of this disorder is sometimes a fear of being impotent with women. In such cases it is not too difficult to resolve the unconscious complexes and inhibitions and so prepare the soil for heterosexual activity. Yet again the check to erection through the habitual counter-suggestions constitutes an obstacle that may be overcome by the training apparatus.

A final remark may be offered about the impotence of the elderly male. Potency does not usually disappear at once, but gradually. There is a long period of decreasing and changing potency. It is obvious that during this period many opportunities arise for the development of psychological inhibitions. Therefore it is always necessary to inquire for psychological causes when an elderly man complains about a considerable decrease of his potency. Naturally, the first surprising failures, which sooner or later are bound to occur, will lead to the horrifying idea: "Now my potency is gone for good and all." This idea will not easily leave the despairing or resigned man. I need not repeat the further psychological reactions which ensue and render the whole situation more and more hopeless. It is not right—as is often done—to provide the patient with a few consoling phrases about the laws of Nature and then leave him to his own devices. For these are the very cases in which psychological treatment and the prescription of the training apparatus are indicated, sometimes preventing tragic complications.

Of course, failures may occur. Their cause is not always a badly fitting apparatus or awkwardness on the part of the patient. Sometimes, in spite of the apparatus, erections do not reappear. These are the cases in which the most thorough and painstaking analysis fails because

an original inferiority of the sexual organs meets the hampering psychological influences. If this inferiority of the sexual organs is diagnosed previously, the application of the training apparatus is contraindicated as well as treatment of the impotence by any other means.

Summary

In the last phase of the treatment of impotence full success may sometimes fail to appear because the patient's habitual self-observation and counter-suggestion impair erection. In such cases the described coitus-training apparatus is to be recommended in order to complete the psychological treatment. Its application is indicated only within the framework and at the end of a psychotherapeutic cure.

Medical Memoranda

Tetanus Treated with A.T.S., Avertin, and a High-calorie Diet

The following case seems to be interesting enough to merit publication.

CASE REPORT

A male farm hand, aged 22 was admitted to the Hospital of St. Cross, Rugby, on October 5, 1940, suffering from well-developed tetanus. There was a history that six days previously, while returning from church on Sunday morning, he had felt very cold and "could not walk home quick enough to get warm."

The following day his jaws were stiff and he felt "sore in the back." No notice was paid to the symptoms, and he continued at work. On Tuesday his back was more troublesome and his jaws ached, but milking and other duties on the farm were fulfilled as usual. On Wednesday he was persuaded to remain in bed until after the midday meal. He now complained of much stiffness in the back, but in the evening it was still possible for him to stoop down to lace up his boots. Less discomfort was experienced when he was active; consequently he walked about the kitchen to obtain relief. On Thursday there was no improvement, but medical attention was not considered necessary until the following day. Even then the patient described his condition as "not very bad"; he could eat his food and smoke cigarettes, and at night slept well. On Saturday his medical adviser examined him again and made inquiries concerning recent injuries. The patient then recalled stabbing his left small toe with the prong of a fork fourteen days previously. The accident had occurred as he was cleaning up the rick yard. At the time of the injury the boot had been removed, but only a trifling scratch was visible; the wound was thus ignored and forgotten.

On admission to hospital a slight superficial injury to the left small toe was found; risus sardonicus was noticeable; the masseters were contracted, the forehead wrinkled, and the abdominal wall rigid. Sweating was profuse and breathing difficult, and spasms shook the patient, arching the back. The tongue was also bitten. He was put into a small darkened ward by himself. Morphine sulphate grain 1/4 was injected hypodermically and 3,000 units of A.T.S. was given intradermally and intramuscularly. There was no skin reaction, so 160,000 units of A.T.S. was administered intravenously, followed by a full anaesthetic dose of avertin per rectum.

Six hours later 40,000 units of A.T.S. was given intravenously. The following day more avertin was given at 7 a.m. and 5 p.m. The masseters were slightly relaxed and sweating was decreased. The tongue was sore, pain in the back was severe, and muscular contractions were distressing. Fluids were taken hourly.

The following day brought no change: the patient was continually moaning with the pain caused by the contractions, and he was extremely anxious concerning his condition. During the night 4 drachms of paraldehyde with 6 oz. of water had been given to promote sleep, but a full anaesthetic dose of avertin was necessary early the following morning. All through the day spasms occurred irregularly and the patient was extremely restless, attempting to roll out of bed.

50,000 units of A.T.S. was given. A dose of paraldehyde was necessary at midday and avertin at night.

On the fifth day after admission to hospital spasms were less severe and more infrequent. Food was being well taken until evening, when spasms became frequent and intense. The patient complained of pain at the right angle of the jaw. A dose of avertin at night brought two hours' sleep, so 4 drachms of paraldehyde was given at 3 a.m. The condition of the patient was worse and spasms were still causing distress, consequently 20,000 units of A.T.S. was injected round the site of the injury and intramuscularly, and 60,000 units intravenously. A further dose of avertin caused some relaxation. Only slight improvement was noticeable the following day, and a dose of avertin was necessary to prevent restlessness at night.

There was improvement in the general condition the next day and avertin was not necessary as a sedative; muscular spasms were slight and caused no pain. The patient now made an uninterrupted recovery and was discharged on October 24.

During treatment nursing attention was paid to pressure points and an airway was placed between the teeth to prevent the tongue being bitten. Between spasms the patient could take food naturally. Egg and milk, glucose orangeade, egg custard and cream, with nourishing beverages, were given *ad lib.* One drachm of potassium bromide was given daily throughout.

My thanks are due to Dr. J. W. Wheeler for permission to publish this case.

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A Case of Double Tubal Gestation

The following case is rare enough to merit being placed on record:

CASE REPORT

The patient, a 4-para aged 30, was admitted to Maryfield Hospital on March 18, 1940. All her previous labours had been without complication. On admission she had vaginal bleeding which began on February 9. Her two previous periods had been normally spaced, but for the five or six months before then they had been coming on every three weeks. She complained of pelvic pain between the periods, the pain being accentuated with the onset of the flow. On March 20 she was examined under a general anaesthetic, and swellings were felt in the lateral fornices. The uterine cavity measured 3½ inches. Curettage was done, and the scrapings were sent for pathological examination. The report received was as follows: "The rather atrophic endometrium shows no evidence of decidual change. Small polypoid growths are present on the surface, and in the interstitial tissue plasma cells are present in fair numbers, indicating a degree of endometritis."

On March 20 the abdomen was opened: some free blood was found in the peritoneal cavity; both Fallopian tubes were distended and markedly pathological, and both were removed. We received the following pathological report: "This is a case of double tubal pregnancy. The larger Fallopian tube contains a gestation sac within which is a foetus of about the seventh or eighth week. The smaller tube is filled with a mass of blood clot in which chorionic villi are present. The embryo was not found. The appearances of this tube are those of a tubal mole." The right tube was the larger one and contained the foetus.

Various textbook writers mention the occurrence of intra-uterine and extra-uterine pregnancy at the same time, of multiple pregnancy in one tube, and of coincident pregnancy in both tubes. Also there may be a consecutive tubal pregnancy in the same patient. Eden and Lockyer state in their *Textbook of Gynaecology* that simultaneous binovular tubal pregnancy is the rarest form of all. They say that up to 1927 at least 42 authentic cases of ovarian pregnancy had been collected, while they had found only 28 cases of proved simultaneous pregnancy in both Fallopian tubes. They also refer to a particularly interesting case seen by Trenb of Amsterdam who found quintuplets in one tubal gestation sac.

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Reviews

BACTERIOLOGY

General Bacteriology. By D. B. Swingle, Professor of Bacteriology and Dean of the Division of Science, Montana State College. (Pp. 313. 10s. net.) London: Chapman and Hall. 1941.

Of recent years a succession of textbooks has been published in the United States which deal with bacteriology as an independent science, and with its medical as only one of several important applications. Such a work is *General Bacteriology* by Prof. D. B. Swingle, who deplures, as other authors have, the manner in which the subject is usually taught to medical students. The average course in medical bacteriology is in fact confined to the study of pathogenic bacteria only, to those characters by which they can most readily be recognized, and to such aspects of their behaviour as bear on the phenomena of infection. It would of course be far better to approach the subject in the first instance as a pure science, to present a general instead of a particularized view of what bacteria are and what they do, before dealing with the special characters of pathogens. It need scarcely be said that what stands in the way of such an approach is not so much a wrong attitude on the part of teachers as the lack of time in an already overcrowded curriculum. Another factor is the disinclination of students to revert to long hours of laboratory work having no direct application to medicine, when clinical work has captured their interest, and qualification and practice are their only goal. If the subject is to be taught in this way it should be done in the first year, as a part of instruction in biology; the teacher of medical bacteriology in the clinical years would then find a foundation on which to build. If such a reform ever comes about such a book as this would suit the first-year student. It deals successively with classification, morphology, and bacterial metabolism in a general way, and then gives some indication of the functions or other importance of bacteria in various environments—air, soil, water, sewage, foods, and industrial processes. The few final chapters on pathogenic bacteria and the phenomena of infection are too rudimentary for the student of medicine and in places actually misleading, as in the brief description of a tuberculous lesion, which is said to be an example of "hypertrophy."

The book is profusely illustrated, particularly with line drawings, some of which are over-simplified. Each chapter concludes with a series of "review questions," often of disarming simplicity and rather obvious or redundant; the prize for these qualities goes to "What is meant by 'bacterial flora'?" and "In what ways are human excreta more objectionable than soil?"

MEDICAL ASPECTS OF BOXING

The Medical Aspects of Boxing. By Ernst Jokl, M.D. (Pp. 251; illustrated. No price given.) Pretoria: J. L. Van Schaik, Ltd. 1941.

"Pushing the thumb into the lateral region of the neck is a well-known rough-house trick with which the average clinician is naturally not too well acquainted." So states Dr. Jokl, the author of this fascinating book, which contains a very great deal with which the average clinician is not acquainted. This single quotation may give some idea of why the textbook may be claimed to be unique of its kind. Dr. Jokl has already contributed much to our knowledge of sports injuries, and between 1930 and 1933, in collaboration with Dr. E. Guttman, carried out what was probably the first comprehensive investigation of the neuropsychological aspects peculiar to the injuries

resulting from boxing. His interest in boxing has, to say the least, been keen: he has attended a great many fights, examined hundreds of boxers, interviewed fighters and trainers, been present at necropsies on those killed in the ring, and studied the, as yet, not very large literature, of which a good bibliography is given at the back of this volume. If as a result of his observations he reaches the conclusion that the dangers of boxing are such that its introduction and establishment in educational institutions are to be condemned, that it is the essence of brutality and a dangerous and undesirable form of physical education in which head injuries are unavoidable and may lead to sudden death, dementia pugilistica (punch drunkenness), or other serious complications, he at least sustains his thesis by an overwhelming collection of carefully sifted evidence. The knock-out blow delivered to the chin, which suddenly renders a well-trained athlete a quivering mass of unstrung flesh whose weight alone determines its attitude and position in space, has always fascinated the inquiring mind. The mechanism of this and its possible causes are here fully discussed and make interesting reading.

Throughout the text the author is to be congratulated on a minimal use of technical terms, so that with but little reference to a medical dictionary the non-medical reader, interested in sport, may obtain much information. At the same time it must not be considered that it is by any means a superficial and lightly presented compilation. The clinical, physiological, and pathological questions of boxing injuries are discussed fully and well, and an idea of the wide scope of the author's observations may be gathered from some of the section headings—for example, "physiology of concussion," "solar plexus knock-out," "groggy boxers," "Can a boxer increase his resistance power towards head punches by training?" "fatalities in the ring," "punch drunk," and legal aspects. Apart from intracranial effects, the lesions which boxing may produce are many; thus the punching arm may be rendered ineffective by musculo-spiral or ulnar contusion or by direct muscle damage, the kidney may be ruptured or even the duodenum torn across, and these and other injuries are exemplified.

This is a particularly important monograph which should be of value to neurologists, physicians, surgeons, and medical jurists as well as to the large group of persons, both within and outside the medical profession, who are interested in sports injuries.

A DOCTOR'S POT-POURRI

In Search of Complications. The Autobiography of a Doctor. By Eugene de Savitsch, M.D. Foreword by Arthur Kroek. (Pp. 362. 12s. 6d. net.) London: Robert Hale Ltd. 1941.

Dr. de Savitsch entitles his autobiography *In Search of Complications*, but in his earlier life complications seem to have been encountered without any searching for them. His description of the Russian revolution as seen through the eyes of a boy of 13 is a tragedy of the fecklessness and reasoning optimism of the White Russians face to face with grim horror. He escaped with his mother through Siberia to a Yokohama interlude of comedy. When the scene changes to San Francisco the drama becomes a roaring farce rivalling the pen of Eric Linklater. But the farce peters out in privations leading to a tuberculosis sanatorium. Then he is given a chance of becoming a laboratory assistant at Colorado University, and displays an unexpected aptitude for research, especially, as might be expected, on tuberculosis. In this way he comes under the influence of Dr. Sewall, who though devoted to research complains that doctors "accept the laboratory as an oracle when all it was meant to be was a test tube," and encouraged our author to become qualified in medicine

while continuing to earn his own living. He is not so shocked by the manners and customs of the dissecting room at Colorado as the reader will be who has not been inured by an experience of the Russian revolution. Sewall advised him to transfer himself to Chicago and work under Prof. Carlson, whose dynamic personality strongly influenced him. We may hope, however, that in the descriptions of Chicago hospital practice he has given rein to his talent for extravaganza. After qualification he worked at the Pasteur Institute (at which he gives some sly digs), and acquired a high opinion of French surgery. Thence to Vienna, the conditions of which city, both medical and social, immediately before the *Anschluss* are graphically described. After a spell of research work, interspersed with big-game shooting, on the Belgian Congo, the force of his first teacher's opinion asserted itself, and he took to ordinary clinical practice. It is good to read his praise of the general practitioner and interesting to note his fear of the control of medicine by the State.

Some of the medical topics are too fully discussed for the general reader and at the same time too elementary and popular for a medical audience. It is curious to learn, by the way, that in Dr. Savitsch's day the freezing microtome was a novelty in Colorado. The swift transitions "from grave to gay, from lively to severe," though a little breath-taking, add to the individuality of this highly entertaining book. Moreover, a man who after such giddy ups and downs can say, "I feel that adversity has paid full dividends," can claim to have achieved a philosophy of life.

Notes on Books

Watts and Co. are publishing a series of sixpenny pamphlets under the general title of "The Thinker's Forum." No. 9, *The Art of Astrology*, by "GEMINI," goes briefly into the origin of this ancient pseudo-science, which began as a genuine effort to explain what was happening in the world and flourished long after mediaeval times. The authors then show with deadly effect how the story of astrology is littered with prophecies gone wrong; and, coming to modern times, they scarily the newspaper proprietors who play down to their readers by publishing horoscopes.

Prescription Writing and Formulary for Dentists, by Dr. RICHARD L. CIPES of New York, is a textbook written for dental students and practitioners to aid them in the writing of dental prescriptions. The volume contains a variety of information of general interest, such as data on the chemical sterilization of surgical implements, statistics on anaesthetic fatalities, etc. The publisher in this country is Henry Kimpton, and the price 20s.

THEODORE F. TUCKER's booklet *Sex Problems and Youth* is published by George Allen and Unwin at 5s. This sermon on sex, as Dr. Harry Roberts says in the foreword, is better than most in that it is quite frank and not prudently sanctimonious; and yet, high-sounding as it is, one has a feeling that it will be more impressive to those who are not in the toils than useful to those who are. It falls back a good deal on deflection and sublimation, both of which happen and are useful to some but not to all. It is a purely masculine treatise written for the male adolescent, and it is here perhaps, like many others of its kind, that it fails in its purpose. The author is never tired of stressing the duality of sex, yet while he says everything about the possible sufferings of the female he does not mention her responsibilities.

The next award of the Rolleston prize, now worth about £100, will be made in Trinity term 1942, and graduates or research students of the University of Oxford or Cambridge who have not been qualified for more than six years or matriculated for more than ten are eligible. The prize is for original research in animal and vegetable morphology, physiology, and pathology, and essays should be sent to the assistant registrar at the University Registry, Oxford, before March 31, 1942.

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TREATMENT OF BURNS

Until the outbreak of the present war there was fairly general agreement on the treatment of burns. Coagulation methods were in use in most parts of the world and were accepted as being superior to all previous therapeutic methods. But those happy days are over. The conformity of a few years ago has given place to non-conformity, and the non-conformity is now showing signs of sectarian division. How far is this sectarian outlook likely to be of real value and how far is it justified by the evidence? Until a few years ago there was little serious criticism of the tannic acid method, and much was heard of its virtues. Since the war the position has been reversed and the value of coagulant methods has been questioned. Wartime burns present many problems not met with in civilian life, but it is doubtful whether the sweeping condemnation that has been made of the coagulant methods is fully justified by the facts. The first-aid treatment of burns suffers from confused counsel, and in hospitals there are the several devotees of coagulants, tulle gras, pastes, saline baths, irrigation envelopes, cod-liver oil, and even carron oil. The sectaries speak with dissenting voices. The therapeutic position has been further complicated both by the recent employment of the sulphonamide group of drugs in combination with the other methods of treatment, and by the claims that some of the methods of treatment are not only ideal for burns but are also equally effective for traumatic and infective conditions.

In all this there is a danger that perspective is being lost. We have to remember that the introduction of tannic acid was followed by a considerable fall in mortality. This important fact must not be overlooked, for it suggests that at least the coagulant methods were based on a sound principle and represented a real advance on earlier methods. That principle was the elimination of toxæmia and of suppuration and its complications in a large number of burns. Glover and Sydow¹ have recently reported some instructive statistics in this connexion. In a series of 1,913 cases of burns treated with tannic acid the mortality was 11.3%, while in a series of 1,369 cases treated by other methods the mortality was 24.5%. These workers showed that the chief reduction in mortality occurred after the first twenty-four hours, and also that the early mortality had not been affected by any method of treatment. In their own series of 809 cases treated with tannic acid the mortality was 8.4%, and half of this occurred within the first twenty-four hours. Glover and Sydow, however, carry their argument a step further. They do not agree with Davidson that the coagulum should be left undisturbed, but recommend that between the fifth and the eighth day, when the coagulum shows signs of separating or lifting, the area should be covered

with continuous Dakin's dressings. The wound then becomes a granulating surface which is rapidly covered with epithelium or is ready for grafting. In this way the authors claim that they get the life-saving advantages of the coagulant methods together with the local and functional advantages associated with the early separation of the tan.

In last week's *Journal* there appeared two articles by Bunyan and by Hudson, and in the current issue two by Pearson and others and by Hannay, all dealing primarily with the envelope method of treating burns and wounds. In the development of the envelope method Bunyan and his fellow workers have shown great ingenuity and resourcefulness. But it must not be forgotten that the method was first introduced because of the disasters which sometimes follow the application of coagulant methods to burns of the hands and the face. Bunyan points out that the ideal dressing for a burn is one which can be kept on during the whole period of treatment and preferably without changing; it should be flexible, frictionless, and bland to the tissues; it should if possible be transparent so that progress can be continuously observed; and it should be watertight so that fluids applied to the area will be confined within bounds. Irrigation of the area is carried out by means of electrolytic sodium hypochlorite solutions of strengths varying from 1% to 50%, the strength depending on the actual condition of the wound surface. The hypochlorite solution is oxidizing and chlorinating in its effects, it is non-toxic, it encourages the transudation of serum and cells, and it exerts some bactericidal effect in strengths that are harmless to living tissues. Bunyan has now treated some 200 cases with the envelope irrigation method, but his paper contains no full analysis of these or of the mortality or end-results. It is pointed out that the method is being used in the treatment of septic fingers, infected tendon sheaths, cellulitis, osteomyelitis, varicose and other ulcers, dermatitis, etc. In the case of burns the position is summarized by Hannay as follows: "Other methods will heal a burn or bring it to the stage of grafting within comparable degrees of time, attention, and discomfort provided all goes well. The great value of envelope irrigation is that one can be quite certain that in no case treated by it, with or without theatre cleansing, will anything more than mild infection occur. Can this be claimed for any other method?"

The envelope method provides an ingenious means of irrigating many areas of the body; it is comfortable to the patient and avoids the necessity for frequent changes of dressing; it counteracts existing infection and prevents or minimizes secondary infection; and it permits exercise of the burnt member if this is desirable. All of these are of high importance in the treatment of war burns. But the method is still in its early stages, and much more experience will be necessary before it can be proved that it is so much better than other measures as to make it one of general applicability. Mortality rates must be the first criterion of success: the preserving of function must be considered as a secondary aim to the preserving of life—the desideratum is the method of treatment that will do both. It is at least encouraging to find that a number of active workers are bending their minds to the problem, and those who serve must in the meanwhile wait until the evidence has been sifted by controlled observation. The War

¹ *Amer. J. Surg.*, March, 1941, p. 601.

Wounds Committee of the Medical Research Council some time ago appointed a Co-ordinating Team on Burns; it has not been idle, and in due course we may hope that enough facts will be assembled for accurate inductions to be made.

LACTATION

Recent years have witnessed rapid and important developments in our knowledge and control of the phenomena of lactation of animals, but no corresponding advance can so far be claimed on the clinical side. The clinician may well derive some benefit and guidance from a study of modern experimental work. This is no easy matter, as the volume is truly immense and the subject complicated and often controversial. The available information has been ably weighed up by Folley in a review¹ which has the freshness of first-hand knowledge. With its help the modern concepts of lactational physiology may be summed up as follows.

The suitable development of the mammary gland is the first step in the chain of physiological processes which culminates in the ejection of milk. This growth of the gland is under hormonal control, and it has been found that in most animal species complete development of duct and alveolar systems results from simultaneous treatment with oestrogens and progesterone. There has been much speculation whether this action is direct or mediated by the pituitary. The latter view is supported by Turner's school, which believes that the hormonal stimulus acts on the anterior pituitary, and this in turn secretes two "mammogenic" hormones which promote mammary development. The most recent evidence² is at first sight rather against this important hypothesis. There is hardly any doubt, however, that the anterior pituitary plays a key part in milk secretion. Recent experiments point strongly to the existence of a specific anterior lobe lactogenic hormone or hormones (generally called "prolactin" in this country) essential for the initiation and maintenance of lactation in animals possessing the necessary mammary development. Anterior pituitary extracts which are lactogenic have also the curious property of causing the growth of the crop gland of the pigeon, and, indeed, the most widely used methods of assay of prolactin are based on this property. It is, however, becoming increasingly doubtful whether the crop-stimulating factor is the sole hormone responsible for the initiation of lactation or for the stimulating of lactation in the already lactating animal.⁴ The clinical implications of these findings are bound to be profound. Clinical results with purified prolactin preparations have so far been conflicting and, on the whole, disappointing; yet the administration of crude anterior pituitary extracts to cows in declining lactation has been attended by conspicuous success and may even prove of economic value. As the potency of the prolactin preparations used clinically was assayed by the pigeon-crop test, the lack of agreement about their value for women is not altogether surprising. Folley and Young point out with reason that a woman whose milk-yield it is desirable to increase is more akin to a cow in waning lactation than to a pigeon. They plead rightly that extracts which it is intended to use clinically should be

assayed for their galactopoietic power in mammals rather than for their ability to stimulate in birds the growth of a structure the secretion of which is not analogous to milk. A fruitful field is open here for the cautious and critical collaboration of the clinician with the research worker.

Other hormones take an active if less dominant part in the secretion of milk. They also affect its composition. In view of the importance of the thyroid in the regulation of metabolism, the effect of thyroxine on lactation is easily understood. In cows in advanced lactation thyroxine treatment causes a notable increase in the milk-yield and fat content and a smaller increase in non-fatty solids; indeed the hormone may be regarded as a true galactagogue. Extracts containing anterior lobe thyrotrophin stimulate also, as would be expected, the secretion of milk by the cow. While large doses of oestrogens are used clinically to inhibit lactation, it may not be generally known that small doses are galactopoietic. In the cow, for example, appreciable increases in the fat and "solids-not-fat" content of the milk are obtained by such treatment. It is probable that this action takes place through the intermediary of the anterior pituitary. Adrenalectomized animals do not lactate, neither does lactation take place in hypophysectomized animals unless prolactin treatment is accompanied by administration of corticosterone or of the adrenotrophic hormone.

Though the mammary gland is not innervated by true secretory fibres, recent work indicates that nervous influences are concerned in lactation to a greater degree than was formerly supposed. The farmer, for one, has never doubted that the cow, the sow, and the ewe can exercise a good deal of control over the flow of their milk, and to him the "holding up of milk" is an established fact. Hammond has reviewed lately the scientific evidence proving that "letting down" of milk is an active nervous reflex excited by stimulation of the teat, which causes a rise in milk pressure and is essential for the efficient emptying of the udder. In addition to this purely nervous effect the tactile stimulation of the nipple in the act of suckling or milking probably also causes another response, partly nervous and partly hormonal, through the anterior pituitary. Hammond's paper was published in a veterinary journal⁵ and may have escaped the attention it deserves from the medical practitioner. Much can be learnt from it about those first principles of maternal emotion common to man and beast, which make woman experience the "draught," and the cow to "let down" her milk.

Few will be surprised by claims⁶ that, besides hormonal and nervous mechanisms, certain specific nutritional factors are essential to the secretion of milk. These recent additions to the long string of confirmed and probable vitamins—vitamins L₁ and L₂, as they have been called—are apparently needed for lactation alone of all bodily functions, and would thus be true lactation vitamins. It may be a relief in these days of rationing to hear that this work has not so far been confirmed,⁷ and that, moreover, fair lactational success has recently been observed in animals receiving highly purified diets supplemented with all known vitamins in the pure state.⁸ The moral of this is that, provided the nursing mother gets enough of the recognized protective foods, especi-

¹ *Biol. Rev.*, 1940, 15, 421.

² *Proc. Soc. exp. Biol.*, N.Y., 1940, 45, 835.

³ *Ibid.*, 1940, 44, 398.

⁴ *Lancet*, 1941, 1, 380.

⁵ *Vet. Rec.*, 1936, 48, 519.

⁶ *Science*, 1938, 87, 372.

⁷ *Biochem. J.*, 1938, 32, 1938.

⁸ *Proc. Soc. exp. Biol.*, N.Y., 1940, 45, 625.

ally milk, greens, and vitamin D, she need not worry about these more remote letters of the alphabet. Milk contains three constituents which are found nowhere else in nature—lactose, caseinogen, and the characteristic milk fat. There has been much speculation as to their origin, and much ingenuity has been displayed in bridging the gap between blood and milk. How this was done is well described by Folley. Those with a biochemical leaning will read with interest this story of scientific detection, and will learn how radio-active elements acted with conspicuous success as blood-hounds. The tale of recent achievement in lactational physiology is truly impressive. It may be fallacious to argue from mice to men, but to apply the results of experiments on mice (and cows) to cautious clinical work is but common sense.

SKIN AND MIND

It has been well said that the skin, like the Freudian ego, faces two ways—inwards towards the body, and outwards towards the external world.¹ For this reason it forms a particularly suitable medium for the study of what have been called "psychosomatic" problems, or the effects on bodily function of emotional disturbances. It is surprising that it has not received more attention from dermatologists and psychiatrists, so that the psychological section of even the most ambitious of dermatological textbooks is not as illuminating as it might be. What should also commend the topic to the "dermatopsychiatrist" is the fact that the skin is unusually susceptible to emotional influences, both directly in the vasomotor and pilomotor reactions, and indirectly through the influence of disturbed gastric function on the skin.² Furthermore, skin reactions are visible to the eye, so that the effects of guilt and pride as inner sources of psychological conflict are intensified. The skin, in fact, becomes a kind of colour indicator of the state of the super-ego, so that it is not so fantastic as it sounds to say that in some cases rosacea may represent the perversion in a predisposed skin of the operation of a bad conscience. Occasionally, as in some cases of dermatitis artefacta, the skin receives assaults upon it which are dictated by a guilty mind seeking to expiate its naughty wishes. Stokes, more than most dermatologists, has realized the potentialities for clinical and pathological observation that are thus offered, and in his most recent publication he has reviewed the psychosomatic correlations of allergic conditions.³ The remarkable effect of hypnosis in some states of allergic sensitiveness, and its ineffectiveness in others, suggests a mentally rather than physically conditioned basis for some allergic phenomena. It can even be said that the allergic personality (for example, in the child with the eczema-asthma-prurigo complex), which is described by Rogerson⁴ as one of unusual intelligence, ambition, and aggression, has to be understood before the manifestation of allergy in an individual case can be fully comprehended. The frequent association of certain allergic phenomena with a particular type of personality suggests a basis for a theory of temperament, and is also important for practical clinical examination.

These are but examples of the possible relationships of mind and skin. Not only guilt, but anxiety in any form, anger, desire for sympathy or attention or escape, tension and conflict, desire and substitutive satisfaction, can all be reflected in pathological conditions of the skin. Disturbed relationships between parent and child, husband and wife, may all be mirrored there as physical signs, just as they so

often are in psychoneurotic symptoms. The immediate reaction of the essentially physically trained dermatologist to such observations is, as Stokes points out, "apt to begin with confusion and end with incredulity"—a sequence hardly to be marvelled at. Not only dermatologists, but physicians of all branches, would do well to recognize the wisdom of Stokes's admonition "to recognize that other specialties besides his own have their intricate observational criteria as objective and valid as his, and to avoid the role of obstructionist; and so advance the cause by tolerance, even if he cannot supply critical understanding and unqualified acceptance."

CONSANGUINEOUS MARRIAGES

It is now known that any effect upon the children of blood relationship between the parents is simply due to the tendency of relatives to share more of the same kind of genes. A recessive trait is more likely to appear among the children of cousins, because they are more likely to carry the same genes in heterozygous form. This aspect of the problem of consanguineous marriage has received much attention, though actual data have been scarce. In 1934 the Human Genetics Committee of the Medical Research Council decided to obtain the co-operation of hospitals in a large-scale survey. The principal objects were, first, to ascertain the frequency of consanguineous marriages; and, secondly, to discover whether any particular diseases were associated with an increased frequency of such parental relationship, thus indicating the action of recessive hereditary factors (which would have to be rare to produce any marked difference). Dr. Julia Bell has analysed 69,000 completed cards (a further 20,000 were usable for certain purposes only), and the results have recently been published.¹ The brief, though interesting, historical introduction is perhaps misleading in one respect. While it is true that eugenic fears were by no means unknown in the past, the compulsion behind the universal human taboo on incest is sociological, being the need for maintaining a harmonious family group. This is clearly shown in the very able report recently published by a Church of England Commission.² The incidence of first-cousin marriage among the parents of 49,000 in-patients in general hospitals was 0.61%, and a division by age showed that the rate has been declining in recent years. Among the smaller number of out-patients the rate was somewhat higher, and it was notably higher in special hospitals among both in-patients and out-patients with neurological diseases. The findings of a study of the connexion between the consanguinity rate and the occurrence of different diseases are, on such numbers as these, suggestive rather than conclusive. High on the list come steatorrhoea, dystrophia myotonia, congenital dislocation of the hip; muscular dystrophy, talipes in infants, leukaemia, exostoses, dermoids, arthritis, tics, diabetes mellitus (especially in the young), and paralysis agitans. Some of these are undoubtedly hereditary and recessive, and investigation of the others, as well as of some conditions too numerous to be mentioned here, would be a promising line of research. One remarkable finding was that, while cancer taken as a whole showed no undue consanguinity rate, the incidence among patients suffering from cancer of the cervix was 2.19%. Further data were obtained with the help of the Radium Institute of Sheffield and the Marie Curie Hospital in London, when the percentage incidence was found to be 1.74. This figure on the larger numbers—seven first-cousin marriages out of 403—is significantly higher than for the whole hospital

¹ *Brit. J. Derm. Syph.*, 1938, 50, 1.
² *Arch. Derm. Syph.*, Chicago, 1932, 26, 473.
³ *Psychosomatic Med.*, 1940, 2, 438.
⁴ *Quart. J. Med.*, 1937, n.s. 6, 567.

¹ *Ann. Eugenics*, 1940, 10, 370.

² *Kinship and Affinity as Impediments to Marriage*. London: Society for Promoting Christian Knowledge, 1940.

population. It is likely, therefore, that recessive genes play a part in determining susceptibility to cancer at this site. The figures in Dr. Bell's analysis were also used to determine the sex ratio for various diseases. The figures ranged from 86% of males with cancer of the tongue, mouth, and lip to 88% of females with affections of the thyroid gland. These two examples may not be surprising, even though the present generation does not smoke clay pipes, but a number of other figures depart widely from the conventional textbook statements.

THE DYSTROPHIES OF THE MACULA

The classification of inherited lesions of the fundus situated mainly or exclusively in the central area presents considerable difficulties. The ophthalmoscopic appearances and symptomatology vary within very wide limits, but at the same time it is difficult to make a clear subdivision. A long and detailed paper by Arnold Sorsby,¹ containing, moreover, many admirable illustrations, is therefore welcome. The personal observations include a description of members of eight family groups; there is a detailed review of the literature, and something like order is introduced into a complicated subject. There is a genetic discussion, too, and a more general genetic appendix by Hans Grüneberg. In the first place it is shown that the conception of a lesion confined to the central area is too narrow. There may be perimacular involvement and even peripheral lesions. Unfortunately no satisfactory histological evidence is available, and the author states that it is tempting to regard the macular dystrophies as the counterpart of retinitis pigmentosa, the one group of conditions being essentially a degeneration of the cones, the other of the rods. This would account on anatomical grounds for the distribution of the lesions in the macular dystrophies, the changes being most marked in the central region, though not entirely confined to it. In one of the cases described, however, retinitis pigmentosa was present also, and the author prefers to avoid too definite a statement. These retinal degenerations can be separated from two others: central choroidal sclerosis and angioid streaks, which are due to a dystrophy of the central internal limiting membrane. The central retinal dystrophies include a range of ophthalmoscopic appearances varying from fine mottling of the macula to intense pigment formation, hole formation, and exudative reactions. Best's disease, so far reported in one family group only, is not excluded, a notable feature in this instance being almost complete colour-blindness. Another curious condition which must be included is "Doyne's choroiditis." This very rare manifestation is characterized by the massive formation of white dots in the disk-macular area with subsequent atrophy. Haemorrhages and a honeycomb pattern may also be present. The symptoms of macular dystrophy, too, vary widely. There may be, as is well known, almost complete day-blindness, or an affection so slight that the sufferer is himself unaware of it. The condition is "not necessarily rapidly and relentlessly progressive." There is much variation in age of onset also, and some lesions may actually be congenital. The differential diagnosis, apart from the conditions already mentioned, must be made from congenital macular coloboma also. Some non-inherited conditions have to be distinguished: retinitis centralis serosa, traumatic lesions, and central chorio-retinitis. Amaurotic family idiocy presents no difficulty. The single clinical entity, if the author's cogent arguments are accepted, finds no parallel in a single genetic entity. It is certain that more than one main gene may cause the condition, for some cases show dominant inheritance (usually irregular—that is, with skipping of generations), while others are clearly recessive, as is shown

by a high incidence of consanguineous parentage and an absence of affected ancestors. There is no doubt also that the different genes may cause somewhat different manifestations and also tend to operate at different ages.

PREVENTION OF JUVENILE DELINQUENCY

In a normal peacetime year 28,000 boys and girls under seventeen years of age commit indictable offences which bring them before the juvenile courts and, of course, there are innumerable other cases which never come before the courts at all. On June 30 the National Association of Maternity and Child Welfare Centres and the National Association of Probation Officers called a conference in London to discuss the importance of mothercraft teaching as a means of preventing juvenile delinquency. Confronted with the problem of the "difficult" child, an uninstructed mother may very well take the line of least resistance, perhaps encouraged by a neighbour who says that he will "grow out of it," whereas in fact he grows into it, and when he comes to realize that he is not as other children he compensates himself under a sense of inferiority by behaving badly. As one of the principal speakers, a probation officer at Willesden, Miss Kennedy, pointed out, there is a close connexion between bad and unclean habits, and insecurity of environment and child delinquency. Miss Kennedy said that inquiries in reception areas had shown that there were many cases of hitherto normal children who, as soon as they were evacuated, developed bad habits and were moved from billet to billet. When at last they returned home they gave no more trouble—it had not been realized how greatly they had been upset by removal from familiar surroundings. Bad homes are very often responsible for the development of delinquent tendencies; the broken home, the home in which the parents quarrel, parents who fail to adjust their affections as between one child and another, and so forth—all these are factors which directly promote child delinquency. Another factor is failure on the part of the parent to attend to any signs of physical or mental defect in the child. A large number of children who develop delinquent tendencies are not mental defectives but borderline cases, and a child whose defect is merely physical is tempted into delinquency in order to compensate himself. Dr. Leslie Housden, the other principal speaker at the conference, described delinquency as a self-inflicted social disease for which the true remedy had still to be found, the authorities as yet having administered only palliatives without curing the disease. Just as delinquent children were not necessarily mentally defective, so their parents might have no trace of mental defect, and many who reported their children as unmanageable were intelligent people, but, dreaming of the ideal child, they had not seen clearly their own part in the formation of its character. Children, unless they are delicate and weakly, have a store of high spirits and muscular energy, the expenditure of which will be guided by the wise parent: merely to turn the child out of doors to "work it off," made the parent, in Dr. Housden's opinion, an accessory before the fact in the child's probable offences. Too often delinquents are not guided but scolded and abused, and he emphasized the need that parents should realize their responsibility for the creation of a good home atmosphere, which was the chief safeguard against delinquency. Mothercraft consisted of more than merely teaching girls how to feed, clothe, and care for their babies; it also meant their instruction in cleanliness and orderliness. It also taught the supreme importance of the mother's influence on the development of the child's character.

We regret to announce the death on July 8 of Sir William Willcox, consulting physician to St. Mary's Hospital, and for more than twenty years medical adviser to the Home Office.

CHEST SURGERY IN WAR

This is one of a short series of articles based on lectures given at the British Postgraduate Medical School, Hammersmith

SOME ASPECTS OF CLOSED WOUNDS OF THE CHEST

BY

J. G. SCADDING, Major R.A.M.C.

An attempt is here made to consider, necessarily from a main theoretical standpoint, the possible effect of advances in knowledge and technique in the treatment of wounds since the war of 1914-18.

Of such advances three are outstanding. They are: chemotherapy for the control of infection; increased understanding of the technique of artificial pneumothorax; and the development of thoracic surgery, including the elucidation of the principles of drainage of the pleura by closed methods.

Principal Dangers

The chief dangers of wounds of the chest are, in roughly chronological order, mechanical dangers, haemorrhage, and infection.

Mechanical.—Open pneumothorax, due to large gaping wounds in the chest wall through which air freely sucks in and out, or "traumatopnoea," is productive of great respiratory and circulatory distress; the necessity for early surgical intervention in such conditions is obvious. Consideration of these cases is outside the scope of the present discussion; but after surgical treatment of the wounds the thorax will often be closed completely, leaving the patient in a position comparable to that of one whose wounds have been "closed"—that is, not permitting the free ingress and egress of air—from the beginning. Closed pneumothorax, unless of large size and under tension, is not in general productive of distress or respiratory embarrassment: this, of course, is abundantly demonstrated by the large number of patients with therapeutic pneumothoraces, even bilateral ones, who are able to lead active lives. A closed pneumothorax in which the pressures are known and controlled may actually prove to be of benefit in the treatment of certain types of chest wounds. The only sort of pneumothorax without external "sucking" wound which is dangerous to life is that which is under tension because of a valvular pleuro-bronchial communication. This requires active treatment. Experience in 1914-18 showed that such a tension pneumothorax is a relatively rare complication of chest wounds.

Haemorrhage.—This may occur from the lung or from the chest wall. Bleeding from the lung may be into the pleura, giving rise to pneumothorax, generally haemopneumothorax; or into the bronchi, giving rise to haemoptysis of varying grades of severity; or into both pleura and bronchi. In either case this form of bleeding may be controlled more or less completely by collapse of the lung by pneumothorax. Bleeding from the chest wall may be either external, through the exit or entrance wounds, or into the pleura, causing haemothorax. Such bleeding can be controlled only by surgery, since the bleeding vessels—generally intercostals—cannot be compressed satisfactorily by any indirect method.

Infection.—Infection is the immediate cause of the late mortality in chest wounds. Its incidence and nature obviously depend to a large extent on the environmental conditions at the time of wounding. During the war of 1914-

18 conditions were so unfavourable that it is surprising that the incidence of infection was not much higher than that actually observed. The following figures may be quoted:

Open wounds, 49:	Infected	33	67 (17%)
Shell wounds without retained fragments:	Infected	6	(15%)
with retained fragments:	Infected	25	(24%)

Conditions favourable to the development of anaerobic gas-producing infections are provided by the presence of large masses of blood and fibrin clot in the pleura. Hence it is probable that early aspiration of haemothorax may lower the frequency of such infections; and while no statistics are yet available, there can be little doubt that prophylactic chemotherapy by sulphonamide drugs can reduce very considerably the incidence of infections in general. These considerations are important in relation to the question of the maintenance of pneumothorax in chest wounds involving the lung; for if the pleura becomes infected the presence of a large pneumothorax may determine the conversion of what might have been a small localized empyema into a large generalized pyothorax, the gravity of the prognosis and the difficulty of treatment being thereby much increased. Thus if infection is to be expected in from 20 to 40% of cases, as in 1914-18, the maintenance of pneumothorax may well be considered to be more dangerous than useful. On the other hand, if the incidence of infection can be reduced by chemotherapy and early aspiration the maintenance or induction of pneumothorax—the possible benefits of which have been outlined—becomes a matter for serious consideration.

Significance of the Intrapleural Pressure

The measurement of the intrapleural pressure is a very simple matter, and in cases of traumatic pneumothorax much useful information may be derived from it.

Any standard type of artificial pneumothorax apparatus incorporates a manometer with which such a measurement may be made; but if this is not available all that is required is a water manometer connected by rubber tubing to a needle. The manometer may consist of a simple glass U-tube, 30 cm. or more in length, with water standing at rest half-way up each limb: it should be remembered that a change in level in one arm of one unit is equal to a change in pressure of two units, since the change is accompanied by an equal one in the opposite direction in the other limb (Fig. 1). If the needle is by error introduced below fluid, the fluid may be sucked into and out of the rubber tubing; the latter should therefore be sterilized. If it is sterilized by boiling care should be taken that water is shaken out of it as completely as possible, since a small amount of water-blocking it will prevent the accurate reading of the intrapleural pressure. Though a special needle is a pleasant luxury any needle of reasonable gauge can be used. About 9 s.w.g. is the smallest practicable gauge, and for simple measurement of the intrapleural pressure in an already existing pneumothorax there is no advantage in using a specially stout-gauge needle. The needle should also be dry; this may be secured by taking it out of spirit and carefully flaming it. To measure the intrapleural pressure in a traumatic pneumothorax a convenient area in an intercostal space above the level of any fluid that may be present should be anaesthetized (though in emergency—e.g., tension pneumothorax—this anaesthetization may be omitted) and the needle inserted through this area into the pleura.

The intrapleural pressure is generally expressed in centimetres of water below and above atmospheric pressure; for convenience the symbols — and + are used to denote these

pressures, though strictly, of course, the term "negative pressure" is nonsensical. Thus $-x$ cm. of water is used to mean x cm. of water below atmospheric pressure. Also, the intrapleural pressure normally becomes more subatmospheric in inspiration and less so in expiration. The mean intrapleural pressure is generally taken as the arithmetical mean of the pressures in inspiration and in expiration. The normal mean intrapleural pressure varies from about -5 to -9 cm. of water.

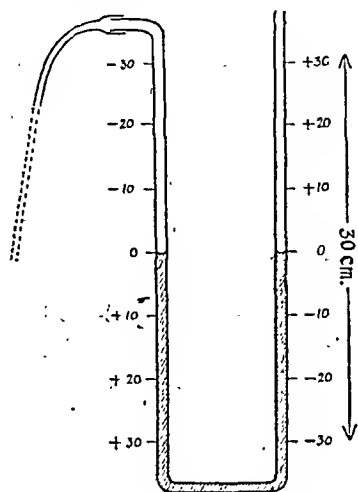


FIG. 1.—Simple water manometer.

The respiratory excursion of pressure varies greatly with such diverse factors as the depth of respiration and the gauge of the needle; thus with a mean intrapleural pressure of -6 cm. the manometric excursion may be -7 , -5 , or -8 , -4 , or -10 , -2 , etc.

As the size of the pneumothorax increases, the intrapleural pressure also steadily increases, at first becoming less subatmospheric, until in a large pneumothorax it exceeds atmospheric pressure, and in "tension" pneumothoraces mean pressures of $+10$ or $+20$ cm. may be attained. The level of intrapleural pressure at which the pneumothorax causes respiratory distress varies greatly, depending upon such factors as the mobility of the mediastinum and the presence and extent of pleural adhesions; most adults are not distressed with an intrapleural pressure equalling atmospheric, provided it is gradually attained, though with an abnormally mobile mediastinum even -2 cm. may be accompanied by distress. In judging the probable effect of a pneumothorax in contributing to symptoms of distress the measurement of the intrapleural pressure must be correlated with the physical signs, especially the position of the apex beat.

Other pathological conditions besides pneumothorax cause changes in the intrapleural pressure. Of these the most important from the point of view of chest wounds is atelectasis of the lung. Atelectasis causes a diminution in the intrapleural pressure—i.e., the pressure becomes more subatmospheric. The phenomenon is observed even in the presence of a pneumothorax: thus if the pressure in a pneumothorax which has averaged -4 cm. suddenly becomes -10 cm., the most likely explanation is that part of the lung has become atelectatic. Depending upon the mobility of the mediastinum, a contralateral atelectasis will cause a greater or lesser change of similar sort in the pressures in a pneumothorax.

Another variation in intrapleural pressure which is of importance in dealing with older persons is that occurring as a result of pulmonary emphysema. In this condition the normal mean pressure more nearly approaches atmospheric the more severe the changes in the lung. Hence in older men all pressures will be expected to be a little above—i.e., less subatmospheric than—those observed in younger men.

Surgical Intervention

It cannot be doubted that the following three conditions are urgent indications for surgical intervention:

Large External "Sucking" Wounds.—The closure of these is a matter of extreme urgency. As a first-aid measure an air-tight dressing must be applied, and surgical closure as early as possible is indicated.

Extensive External Wounds and Haemorrhage from the Chest Wall.—These are to be treated on the ordinary surgical principles of excision of wounds and control of haemorrhage.

Evidence of a Retained Foreign Body.—The influence of this complication on the incidence of infection has already been noted. Although an immediate recovery may be made without undue delay in cases in which there is a foreign body retained in the lung itself, experience has shown that in a large proportion of these cases chronic pulmonary suppuration—chronic abscess and bronchiectasis—develops subsequently.

Opinion may be divided, however, on the extent of the surgical intervention in these cases, on the application of surgical treatment to cases not showing these indications, and on the relative merits of complete closure of the chest after operation or drainage by a closed method.

With regard to the extent of surgical intervention, this must in practice depend very largely upon the available facilities, both of personnel and of equipment. Without the services of a specialist thoracic surgeon it would certainly seem wisest to confine surgical intervention to thorough attention to the three points mentioned above. In favourable circumstances more complete operations on individual cases and the extension of surgical treatment to suitable cases not showing these urgent indications may prove to be advisable. The extent to which such urgent surgery is likely to be required may be exemplified by the figures of Duval (1918), who was one of the first surgeons to advocate the application of the ordinary principles of wound surgery to chest wounds. He reported that of 161 cases he operated on 46 (29%); 29 (18% of the total) of these were urgent operations for haemorrhage or open thorax, and 17 were later operations for removal of foreign bodies or for "direct treatment of the lung wound." Of the 46 cases operated on 13 ended fatally. 102 cases presented no indication for operation; of these only 1 ended fatally. The statistics were complete, with the exception of deaths occurring at regimental aid posts.

With regard to the question of complete closure of the chest or air-tight (under-water) drainage after operation, the latter has become a routine with many thoracic surgeons for a few days at least after thoracotomy. The advantages of this procedure are that it acts as a safeguard against the development of pressure pneumothorax and that it drains away blood and pleural exudate. The disadvantages are that it often requires much attention for its smooth maintenance, and that it considerably diminishes the ease with which a patient can be moved—a matter that may be of great importance under war conditions. Also, the rapid re-expansion of the lung which a properly arranged under-water drainage secures may be actually disadvantageous if there is a wound of the lung itself; clearly this will tend to heal more readily if the lung remains collapsed for a few days. It need hardly be mentioned that in the presence of a free pleura any form of drainage except air-tight under-water drainage is highly dangerous. On the whole, then, it would seem best, after operative treatment of the limited sort mentioned above, to close the chest completely. This leaves the patient in the same position as regards after-treatment as one with a "closed" wound which has not required operation. Of course, these remarks on drainage do not apply to cases treated in special centres where more radical surgical treatment, even involving lobectomy, may be carried out.

(The article will be concluded in our next issue.)

MOTOR BARGE AS AMBULANCE SHIP

BY

J. EVANS, M.B., B.Ch.

Flight Lieutenant, Royal Air Force Volunteer Reserve

The following description of a motor barge converted to act as an ambulance ship may be of interest. The purpose of the craft is to rescue and evacuate casualties from ships in or around the Thames Estuary.

The craft is a twin-screw coasting barge with two 60 h.p. Diesel engines, having an overall length of 105 ft. with a maximum speed of 8 knots. When it was taken over the accommodation available for conversion consisted of a large hold about 45 ft. by 20 ft. This was divided into two parts, a ward and a treatment room.

Treatment Room and Reception Ward

The treatment room measures approximately 25 ft. by 20 ft. Lying athwart the ship at the forward end of this compartment are two wooden stands 6 ft. apart and raised 4 ft. from the ground. Each stand has two grooves to receive the stretcher handles. The stretcher cot is placed on these blocks and can then be used for minor operating or first-aid work. The instrument table is a long white-painted asbestos slab running parallel with the blocks and covering over the ballast. On the far end of this is a petrol stove for heating water. This compartment also contains a slow-combustion stove, an enclosed "elcan" closet, and a fresh-water tank, laid out as shown in the diagram.

The reception ward is about 20 ft. square and accommodates twelve stretcher cots of original design and twelve G.S. stretchers. The ward also contains first-aid tables and is fitted with a cupboard and splint rack. It is ventilated by four lights in the deck and two ventilators. The deck lights are provided with wire-protected glass.

Stretcher Cot

The stretcher cot mentioned above was designed by Lieut.-Commander Hall, R.N. It consists of a rectangular piece of canvas with four flaps into which a Service stretcher can be fitted, the four corners of the canvas then being laced up. At either end is a wooden spreader stitched in the canvas, and rising from this is a triangular flap of canvas with a large metal ring hole. These can be fitted to a large wooden spreader and attached to the topping lift. The wooden spreader at either end of the cot keeps the canvas apart so that when a patient is inside it forms a canvas box with stiff sides. In addition, canvas flaps cover the patient and can be laced. It should be pointed out that holes are left in the canvas flaps through which the stretcher feet and handles protrude. The stretcher cots are carried slung athwart the ship, six on each side of the compartment. Hooks to carry one end of each cot are fixed in a stout beam, which is secured to the bulkhead; the hook for the other end of the cot is fixed to a stout wooden upright 7½ ft. from the bulkhead. There is a separate upright for each cot, and when not in use these fold flat to the deck. The beam which carries the cot hooks at the bulkhead is grooved at intervals to take the handles of six G.S. stretchers, the other ends of which are carried on the top of the inboard uprights. Thus twenty-four patients can be carried: twelve in stretcher cots and twelve on G.S. stretchers.

Method of Operating

The ship is brought alongside the craft where the patient is, and in calm weather he is taken off on a G.S. stretcher in the normal manner. He remains on this stretcher until he arrives in hospital ashore. In rough weather the stretcher cot and its stretcher are put aboard the ship where the patient is and the patient is placed in the cot. The cot is then laced up and the patient swung aboard by means of a simple topping lift and boom operated by a small geared hand-lift. The cot is lowered through the deck of the ambulance ship into the treatment room. Here the patient is attended to and receives such first aid as is practicable before he is passed through wide double doors into the reception ward.

As a number of casualties may have to be taken aboard at one time the cot hooks and stretcher racks furthest from the door are used first. All the wooden uprights on each side of the middle gangway are laid flat, and there is thus ample room

to move stretchers or stretcher cots into position. Although only 1 ft. is allowed between stretchers the treatment of patients in the ward is fairly easy. The patient on the stretcher is only 4 ft. from the ground. The patient in the stretcher

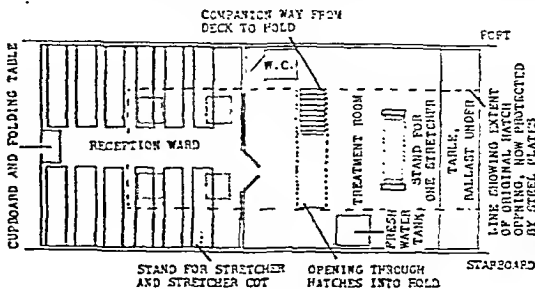


FIG. 1

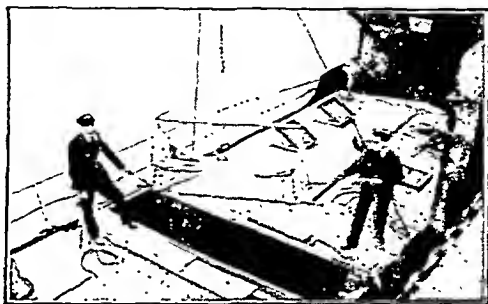


FIG. 2

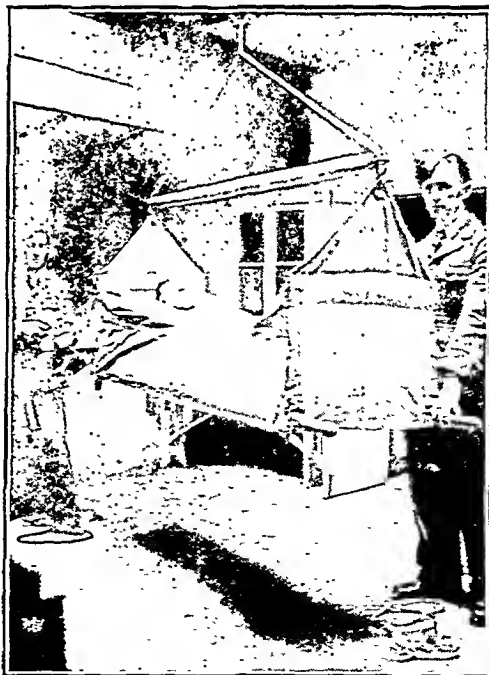


FIG. 3

cot is rather low, but he can be seen and dealt with without difficulty as there is plenty of space between the stretcher cot and the stretcher. Two Neil Robertson stretchers are carried in case it should be necessary to remove a casualty from a very confined space. Once this has been done he can be transferred

to a stretcher cot and slung aboard the ambulance ship. When all the patients are aboard and the ship is proceeding the hatch giving entry to the treatment room is covered in with tarpaulin.

The ship carries a crew of nine: master, mate, engineer, deck hand, corporal nursing orderly, and four nursing orderlies (airmen).

I wish to record my appreciation of the help given me in the preparation of this ship by my Commanding Officer, the representative of the Emergency Committee of the Port of London, and the Naval authorities.

REGIONALIZATION OF HOSPITALS AND HEALTH SERVICES

BY

Sir FREDERICK MENZIES, K.B.E., M.D., F.R.C.P.

At the first meeting of the Medical Planning Commission I observe that Viscount Dawson of Penn expressed the opinion that "the most important question to settle was the regionalization of hospitals and health services." Looking back over a period of more than forty years of continuous daily contact with the many and varied problems associated with the development of the hospitals and health services of London, I am profoundly convinced of the truth of the statement made by Lord Dawson. Few, if indeed any, members of our profession are so fortunately situated as the Chief Medical Officer of the L.C.C. Public Health Department for obtaining a continuous and comprehensive view of the many and varied problems concerning health and disease in a massed population of millions of people in all grades of society from the highest to the lowest, and this privileged experience was considerably extended when the L.C.C. became, by virtue of the Local Government Act of 1929, not only the largest hospital authority but also the largest public health authority in the world. In other words the organization for the prevention and treatment of disease became, for the first time, unified under one authority. Necessarily this great development brought the public health department into intimate contact with general practitioners, consultants, and specialists in all branches of medical science, voluntary hospitals and voluntary agencies of all kinds dealing with the health, happiness, social and economic welfare of the inhabitants of London. In addition it can fairly be claimed that every effort was made to extend all the facilities available for the improvement of undergraduate and postgraduate medical education. I relate these facts for no other reason than to emphasize that my opinion of the truth of Lord Dawson's statement is based upon some considerable practical experience of the trend of thought among laymen as well as medical men during the last twenty years and more.

Approach to the Problem

Another statement made by Lord Dawson at the same meeting is in my experience equally true: "War did not so much create new problems as bring to the forefront problems which had been for long in the stage of incubation." The last war (1914-18) showed the truth of this statement very clearly in connexion with the long-drawn-out struggle over the highly controversial subject of Poor Law reform. The report of the Maclean Committee, drawn up while war was still in progress, succeeded in reconciling the strongly opposed recommendations put forward in the majority and minority reports of the Royal Commission on Poor Law Reform (1909), and thereby paved the way for the introduction and passage of the Local Government Act, 1929—one of the most epoch-making Acts of Parliament during the last 100 years. In this connexion it is well worthy of notice that probably this Act of 1929 has had more to do with bringing forward the subject of "regionalization of hospitals and health services" than any other single factor, and that the duties and responsibilities placed upon county councils and county boroughs in connexion with hospital services by the same Act of Parliament may well prove to be the most important determining factor in promoting co-operation between public

health authorities and the voluntary hospitals, or alternatively the gradual elimination of the voluntary hospital system as we have known it up to the present time.

Therefore, it seems clear that all those who are genuinely anxious for the future development of our hospitals and health services upon sound principles will be well advised to approach the regionalization of these services in a statesmanlike attitude of mind in order to arrive at wise decisions. To be more precise, it means that those who are constantly preaching the virtues of the municipalization of all hospital services and those who are equally vociferous advocates of the "independence" of the voluntary hospitals must abandon for ever their silly shallow slogans and talk "horse sense" together.

Some Influencing Factors from the War

The Medical Planning Commission will also no doubt be fully alive to the fact that certain extremely important developments have taken place since the outbreak of war which must have a profound influence upon the subject of regionalization of hospitals in particular.

The first of these, to which very little attention seems to have been given in the medical press, is the practical effect or result of the enormous structural damage to hospitals of all kinds, voluntary and municipal, due to bombing. From reliable sources I have been able to collect a certain amount of useful information on this point and thereby to obtain a fairly accurate picture of the position up to the present time. I can safely say that the number of hospitals damaged, in greater or less degree, represents an actual loss of some thousands of beds, and with some practical knowledge of hospital construction and equipment one can form a reasonably approximate estimate of what it will cost to bring our hospitals back into the conditions which existed before September, 1939. It must suffice for the moment to say that the cost on a pre-war basis would amount to not less than £20,000,000, and that, if the war ended to-morrow, it would probably take four or five years at least to complete the work of reconstruction. Be it noted, however, that the war is not yet over and that much more extensive structural damage may yet take place before we can count the full cost of post-war reconstruction and re-equipment.

The next question which naturally arises is, Where is the money coming from to rebuild and re-equip? We may assume that the local authorities will be quite capable of looking after the financial requirements of their own hospitals, but, inasmuch as they will also be compelled to shoulder very heavy capital expenditure for housing, education, roads, etc., etc., it does not seem likely that they will be able to do much to help the capital expenditure involved in the reconstruction of the damaged voluntary hospitals. It looks, therefore, as if the great bulk of the capital expenditure in the case of the voluntary hospitals must come from the State. I submit that voluntary contributions will not suffice to meet the situation, because the amount of capital expenditure involved will be too great. If, therefore, it must mean grants of some millions of pounds from the State or the local authorities, or both, upon what terms and conditions are Parliament and the local authorities going to allow public funds to be ladled out for the benefit of voluntary hospitals? It seems to me to be obvious that in such circumstances much will depend upon what view is taken by the Government of the day upon the whole subject of "regionalization of hospitals and health services." We do know the views of the present Minister of Health and his predecessor, Mr. Malcolm MacDonald.

Another interesting aspect of this question of the reconstruction of hospitals, whether municipal or voluntary, is the fact that in connexion with the Emergency Hospital Service many thousands of hospital beds have been provided either by means of completely new hospitals on new sites outside our great towns or additions to existing hospitals wherever selected for this purpose. Many millions of pounds have been spent out of public funds for this purpose during the last two years. It is obvious that such hospitals cannot simply be scrapped after the war is over. They must so far as possible be dovetailed into existing hospital services or in some way linked up with a regionalization scheme.

Post-war Distribution of Population and Industry

This brings me to another much-discussed problem—namely, the geographical distribution of industry and population. We must assume that one of the outstanding consequences of the war will be that Lord Reith's department will put forward a new conception of town planning with all its implications in relation to housing, transport, education, health, and hospital services, etc. The subject is much too complicated and comprehensive to be more than merely hinted at here as something which "must be borne in mind," but, at least, we can say that it is a factor to be reckoned with in considering the regionalization of hospital and health services.

Finally, I would like to draw attention to the fact that "regionalization" is one of those questions which has been "for long in the stage of incubation." Anyone who has been intimately associated with national and local government problems during the last twenty years could not help seeing its gradual development. War conditions have succeeded in forcing it to the forefront much more rapidly than would otherwise have been possible in peacetime. We have seen evidence quite recently of its application to the fire services of the country, and we are all familiar with the "Civil Defence Regions" which have been in operation since the outbreak of war. We shall see it ere long in the formation of new local government areas. Again Parliament may decide after the war that these war-time regions shall become permanent, and that the time is ripe for the decentralization to such regional authorities of many of the powers and duties now exercised by Parliament centrally from Whitehall.

For these and many other reasons "regionalization" is the order of the day. It is definitely on the move. It may become our conception of the "New Order" or the "New Deal." It is, anyhow at the moment, the vogue or the fashion or whatever you like to call it. Let us hope and pray that "regional areas" for any and every purpose will be continuous and not overlapping, and, finally, let us give up "kicking against the pricks" and awaken to the fact that the regionalization of hospitals and health services is in reality only part of a great new movement which is bound to come to maturity in the very near future, and, therefore, let us hope the Medical Planning Commission will make a good job of this part of their great task while there is still time for some real hard concentrated thinking.

MEDICAL ADMINISTRATION IN FOUR EUROPEAN COUNTRIES

An interesting meeting was arranged by the London Association of the Medical Women's Federation on June 26 when the subject of medical administration and services in their respective countries was expounded by an Austrian, a Czechoslovak, a German, and a Norwegian. The conditions they described were, of course, those obtaining before 1933 in Germany, before 1938 in Austria, before 1939 in Czechoslovakia, and before 1940 in Norway. Dr. JANET AITKEN presided.

Austria before 1938

Dr. GLATTER, late of Vienna, described the struggle over social insurance in Austria, in particular the economic conditions of the medical profession after the last war, when there was a large surplus of doctors (10,000 in Vienna alone for a population of under two millions); compulsory health insurance covering 60% of the population; no means test, so that any person, however relatively well off, could come under the panel system; and a decrease in private practice to such an extent that only doctors of international standing could earn a living by that means. The professional medical organizations had to fight for recognition, resulting in strikes and lock-outs at certain institutions. Some advantages were presently gained, but not until the law of 1937 did the doctors secure most of their demands, their professional interests being effectively safeguarded. Ironically, however, the law never came into full operation, Austrian social insurance being superseded by the German law.

Pre-Nazi Czechoslovakia

Prof. JULIUS LOWY, formerly of Prague, described medical training in pre-Nazi Czechoslovakia. The student was

admitted to the medical faculty of one of the four universities at the age of 18 or 19. The preparation for a medical career cost only about £500, as compared with an average of £1,500 in Great Britain. Everyone, regardless of his means, was given the opportunity to study, but provisions were made to weed out unsuitable candidates. If a student failed in one examination he could sit a second time without formality. If he failed a second time he could only sit by special permission, and if he failed a third time he could only sit again by starting the whole system of his studies *de novo*. It was exceptional for the newly qualified student to set up in practice sooner than two years after qualification; he held hospital appointments for two or three years. The insurance companies did not appoint panel practitioners unless they had held hospital appointments for at least two years and had completed a course in social medicine. Before a man was permitted to specialize he had to spend four or five years in hospital. Prof. Lowy described the system of health insurance, which included specialist as well as general practitioner services, maternity benefit, and hospital charges. Insured patients had free choice of doctor, and they were also able to see consultants and specialists at specified times.

Health Insurance in Germany

Dr. F. W. JACOBSON, formerly physician at Virchow Hospital, Berlin, said that in Germany the amount of private practice was very small; 80 or 90% of the population was insured. The income limit for compulsory insurance was 3,600 marks (£180), but there was a large class of voluntary insured persons and also the dependants of the insured who were attended on a panel system. There was free choice of doctor, and patients might be treated by their panel doctor at home or at his surgery or at the hospital. To prevent unreasonable use of the services of panel doctors every prescription cost the insured person 25 pfennig (3d.), though in a case of bona-fide illness the amount was not insisted upon for repeat prescriptions. Differences between the doctors and insurance companies were settled by a body consisting of ten representatives of each side with three deputies from the Ministry of Labour. A panel doctor could not be appointed until two years after he had qualified, and of that two years he must have spent at least three months as assistant to a panel doctor and for six months have been in an institution where he could receive instruction in social and State medicine. The qualification for panel specialists required four years of special instruction in surgery, internal medicine, children's diseases, and ophthalmology, or two years in orthopaedics, ophthalmology, dermatology, and venereal diseases, and nervous diseases and psychiatry. Doctors in charge of clinics or out-patient departments were not allowed to hold more than one appointment. The heads of hospital departments received much less pay than their chief assistants, but the latter, unlike the former, were not allowed private practice. Specialists in Germany were not congregated in particular quarters; there was no equivalent to Harley Street in Berlin. Every suburb had its recognized specialists. He added that in recent years there had been a good deal of Nazi dilution. For example, the additional two years after qualification was now interrupted by a compulsory period at a labour camp.

Centralization in Norway

Dr. DEDICHEN, inspector-general of Norwegian Health Service in Great Britain, said that in view of the geographical, social, and economic peculiarities of Norway it was necessary for the State and municipal authorities to take over and centralize very much of the health and hospital work of the country. The 380 public health officers represented about 18% of the Norwegian medical profession. There were still some private hospitals in Norway, some of them run by religious bodies, but they were becoming of less importance. The best of the municipal hospitals were in every respect up to the standard of other countries. The increasing demand for public health services had meant a certain limitation of the principle of free choice of doctor. Public health insurance was on a wide basis, and the numbers of non-insured were small. Reforms needed were a better organization of post-graduate education and a closer collaboration between general practitioners and the hospitals.

In reply to questions Dr. JACOBSON said that in Germany dependants were insured at a lower rate of contribution but received less benefits. The doctors did not receive their panel fees directly from the State nor from the insurance companies, but through their own medical organization. There was a ratio between the contribution of the insured person, the fee paid to the insurance organization, and the amount of attendance and service for the patient. Dr. DEDICHEN said that in Norway the income for sickness insurance was derived as to six-tenths from the insured persons, two-tenths from the

State, one-tenth from the municipality, and one-tenth from the employers. Asked how the ordinary patient arrived on the doorstep of the right specialist, Dr. JACOBSON said that from youth the German received more instruction about hygiene than in this country; much more teaching was given to girls concerning motherhood and ante-natal care. Parents knew where to send their children suffering from various ailments. In reply to another question, Dr. GLATTER said that there was no difference in Austria between medical men and medical women in rate of payment and opportunities for promotion; and Dr. JACOBSON said that it was the same in Germany, where many of the chief assistants in surgical and other departments were women.

AIR-RAID PROTECTION

FURTHER REPORT BY THE HALDANE COMMITTEE

The *Evening Standard* of May 7 reported that the Prime Minister asked Mr. Lloyd George whether he advocated the widespread provision of bomb-proof shelters, or of shelters proof only against blast; to which Mr. Lloyd George replied: "If you do it on a sufficiently large scale you can do it against both." But Mr. Herbert Morrison said in the House of Commons: "We are ready to consider deep-shelter proposals on their merits, but there must be taken into account questions of labour supply, materials, and so on." Whether or not there is shortage of these at present, according to the latest report of the National A.R.P. Co-ordinating Committee time and material have up to the present been wasted in the construction of surface shelters. It has been learnt that not one of a thousand people using a "Haldane" type shelter was injured when a bomb exploded near-by. In some places the public have been forbidden the use of deep shelters already existing, various contradictory reasons being given for these measures. For instance, one shelter used regularly by 2,500 people was at first stated to be unsafe, and yet was later said to be required for essential work.

Protection against Gas

Meanwhile, the question of protection against poison gas is being discussed apart from the problem of shelter against bombs. The Co-ordinating Committee points out that in the official leaflet, "What to do about Gas," people are recommended to "go upstairs," regardless of the fact that bombs may be falling, and that in any case if liquid gas is sprayed the top floor of a house may well become dangerous. There is no mention of whether the shelters should be used in these conditions, or whether people in an Anderson shelter should go to their houses if the rattles sound. In the committee's opinion these anomalies can be overcome only by the construction of large bomb-proof shelters provided with filtered air from outside. The committee further recommends that people should be told that very little gas gets into a room if the doors are closed and there is no draught up the chimney, and that everyone, not only the mothers, should be taught how to adjust babies' protective helmets and how to use the accompanying pump. Among other points brought to the attention of Mr. Morrison are the omission from the leaflet of any mention of the possible need for temporary evacuation of areas suffering from persistent gas attacks, the necessity for rest for those who have been affected by phosgene, and the early treatment of gas casualties. It is considered that fears of blistering should be allayed by giving publicity to the fact that, though a hundred thousand British soldiers were injured in this way during the last war, not one died as a result. The committee also asks that the amount of safety afforded by the ordinary civilian gas-masks against arsine should be made clear. In August, 1938, a demonstration showed that arsenical smokes could penetrate the mask filter. Since then, however, the supplementary "context" filter has been issued, but no statement has been made about its adequacy in dealing with arsine.

Distress in Bombed Towns

In the midst of this concern for the future, the Co-ordinating Committee is not forgetting the present distress among the homeless in badly bombed areas. Arrangements for feeding the homeless are improving, but are still inadequate. In the Coventry raids of April for instance, the Queen's Messenger convoy sent from London arrived too late to be of any help. People were being advised to boil all water, but there was no water to boil, and many were without gas or electricity; no steps were being taken for emergency supply by such means as, for example, the erection of a few boilers in the streets.

NATIONAL FLOUR: CRITICISMS FROM CHESHIRE

The Cheshire Local Medical and Panel Committee, which has several enterprises to its credit—the "Medical Testament" will be remembered—has been having a brush with Lord Woolton on the question of national flour for bread.

Full-germ Wholemeal Bread

In March, under the stimulus of its honorary secretary, Dr. L. J. Picton, the committee forwarded to the Minister of Food a memorandum urging that genuine wholemeal bread should be made generally available and that the 85% extraction flour which the Ministry had announced, if it contained the full germ, should be the only "white flour" of the future. It was pointed out to the Minister that the removal of the embryo in steel-roller milling is the reason why white bread is never felt to be as satisfying as wholemeal, and why ten loaves of white only go as far as nine of wholemeal. The germ is the only part of the grain which contains oil, the richest known source of vitamin E. The reason for the removal of germ has been to maintain the keeping properties of flour, but in the view of the Cheshire committee if wheat is stored in widely scattered parcels inland instead of at the big silos at vulnerable ports the country miller will get a chance to make wholemeal, which, if it were wanted, could be sieved or "bolted" through wool or silk as was done seventy years ago before the introduction of the roller mills, and such flour could be used at once. Some millers extract the wheat germ, treat it with superheated steam and restore it, but vitamin B₁, of which there is a large proportion in the germ, is destroyed by great heat.

The reply of Lord Woolton, dated April 19, was that millers had been instructed when milling national wheatmeal (of 85% extraction) to take all possible steps to include the maximum amount of germ, and that he was advised that they would not find it necessary to remove the germ for heat treatment and mix it back.

This assurance was gratefully received, but in May there was published a memorandum by the Medical Research Council (*British Medical Journal*, May 31, p. 828) which on two grounds aroused misgiving in vigilant Cheshire. It described two alternative milling processes, one requiring a rearrangement of milling machinery to produce the 85% flour, the other depending upon the addition to the white (73%) flour of "combinations and other fractions." The second was admittedly an inferior method, resulting in a synthetic and unreliable product, but allowable pending an alteration of machinery. In a further letter to the Ministry of Food, dated June 12, the Cheshire committee urged that (1) the genuine 100% meal of the wheat, with neither extraction nor addition, should be made increasingly available; (2) the method of milling the 85% flour by a rearrangement of milling machinery should as soon as possible replace the alternative synthetic method; (3) ordinary white flour should be withdrawn and the 85% flour allowed to do duty as white, "as the sieved wholemeal did up to the unfortunate German innovation in 1872." This innovation, really Hungarian, was the introduction of milling by grooved rollers.

Fortification with Calcium

The other matter which aroused some question was the statement in the Medical Research Council's memorandum that calcium carbonate (as *creta praeeparata B.P.*) is to be added to flour, 7 oz. to 280 lb. of ordinary white flour and double that amount to the new 85% flour. The main reason given is that more calcium must be added to diet to maintain a sufficient supply for health. An increased amount has to be added in the case of the 85% flour because that flour contains more of its phosphorus as phytic acid, which the lime is required to neutralize. The Cheshire committee protests to Lord Woolton that once flour is fragmented and deprived of this or that fraction the balance of its nutrients is disturbed, and such an addition as chalk brings in new problems. It also points out the richness of wholemeal in minerals which are deposited just inside the groove or crease in the wheat berry. With stone milling these minerals were ground up with the rest of the flour and contributed to the acceptable taste of the wholemeal, but modern milling is designed to "break the stuff," even entirely to eliminate these minerals, which the millers call "crease dirt," resulting in a whiter but insipid flour. A quotation from *Leviticus* is commended to Lord Woolton: "When I break the staff of your bread . . . ye shall eat and not be satisfied."

Lord Woolton has agreed to publication of this interesting correspondence.

MINERS' PHTHISIS MEDICAL BUREAU

The report upon the work of the Miners' Phthisis Medical Bureau, Union of South Africa, for the three years ended July 31, 1938, states that the general incidence rate of silicosis among the working miners in 1937 to 1938 was the lowest ever recorded. This incidence rate—7 per 1,000—represents a fall of 64% from the figures obtained eleven years previously. During the period under review there was a considerable increase in the work of the bureau, due to the greater number of European miners and native labourers employed through the expansion of the mining industry. The report stresses the need for further control of the dust produced by machine drilling, which is, apparently, the most important remaining individual problem in the reduction of the incidence of silicosis. Three characteristic features in the type of silicosis encountered to-day among the gold miners of the Witwatersrand are referred to. First, it is a condition usually contracted as the cumulative result of many years' previous exposure to the inhalation of siliceous dust. Secondly, it is a progressive disease, and it is the added predisposition to active tuberculosis in lungs containing siliceous dust which is the predominant factor in the ultimate advance of a majority of cases to grave incapacitation or even death. Thirdly, it is also a chronic disease. Cases which are markedly infective from the outset progress rapidly, and the patients may die within the year, but the average expectation of life of those who have contracted the disease in a detectable form is fifteen to sixteen years. Indeed, in many cases the disease may reach and maintain a condition of prolonged or apparently indefinite arrest.

Reports of Societies

SULPHONAMIDES AND BACTERIA IN URINE

At a meeting of the Section of Pathology of the Royal Academy of Medicine in Ireland, with Dr. R. A. Q. O'MEARA in the chair, Dr. P. A. McNALLY read a communication from Prof. J. W. BIGGER and himself on the action of certain sulphonamide drugs on the growth of bacteria in urine.

They had tested sulphyridine (M & B 693), sulphanilamide (sulphonamide P. B. W. & Co.), sulphathiazole (M & B 760), and sulphamethylthiazole (M & B 838) on *Proteus vulgaris*, *Bacterium coli*, *Staphylococcus pyogenes*, and *Streptococcus faecalis*, all isolated from the urine of patients suffering from cystitis. *In vivo* the destructive effect was facilitated by the presence of polymorphonuclear leucocytes and *in vitro* by the smooth inorganic walls of the containing vessel. Many workers had found that the *in vivo* efficiency closely followed the *in vitro* action. Strict controls were necessary, especially with *Proteus vulgaris*, which, in the absence of the drug, produced a bactericidal pH in the urine in twenty-four hours *in vitro*. The most effective of the four drugs for this organism and for *Bact. coli* was sulphyridine, and the least effective was sulphanilamide. Sulphathiazole was disappointing against *S. pyogenes*, sulphyridine being more effective at equal concentrations. Using an artificial bladder, by which it was possible to create to some extent the conditions prevailing in the human urinary tract, the authors found that sulphyridine and sulphathiazole were more effective than in flasks; the organisms seemed to develop some drug-fastness when acted on by low initial concentrations of the drugs. In the treatment of urinary infections clinicians should determine the causative organism, use sulphyridine for *P. vulgaris* or *Bact. coli*, arrange the dosage so as to secure the highest permissible concentration in the urine from the start, and make sure that the urine was alkaline.

The CHAIRMAN pointed out the difference between blood and urine in that phagocytic action was almost absent in the latter. The mode of elimination of the drug might vary in different individuals. Mr. T. J. D. LANE said he had found in two cases that no amount of sulphanilamide would sterilize the bladder. Dr. BRENDAN O'BRIEN suggested that it might be interesting to use urine from patients who were being treated with large doses of the drug for pneumonia or meningitis, and see how it compared with simple solutions of sulphanilamide. Dr.

EDWARD SOLOMONS asked if infections of the bladder and kidney could be treated from below. Dr. A. R. PARSONS thought that it might be wise to give drugs to increase the alkalinity of the urine.

Dr. McNALLY, in reply, said that the highest concentration of free sulphonamide in the urine that he had found was 400 mg. per 100 c.cm. The maximum that could be dissolved *in vitro* was 100 mg. per 100 c.cm., so it would be no use to introduce the drug from below. If the pH in the bladder could rise to bactericidal limits it would probably damage the bladder wall. *In vivo* the highest pH reached in *P. vulgaris* infections had been 8.4.

GROWTH OF COLIFORM BACILLI IN WATER

At another meeting of the Section of Pathology of the Royal Academy of Medicine in Ireland, when the President, Dr. D. M. MITCHELL, was in the chair, Mr. HAVELOCK NELSON read a paper by Prof. J. W. BIGGER and himself on the growth of coliform bacilli in water.

Prof. Bigger had previously declared that these bacilli would sometimes multiply in tap water, especially when it was boiled, autoclaved, or filtered through a Pasteur-Chamberland filter. The statement had been contested by Col. Harold, who had suggested that the growth was due to the filter or rubber connexions of the filter and not to the water itself. The present investigation showed that the water still supported growth when no rubber was present in filtration. The inner dressing of the rubber (talc, French chalk) had proved an excellent medium in distilled water. Growth still occurred when the talc had been roasted in a muffle furnace for several hours. The water, which was carefully tested in controls, did not support growth, nor did the cotton plug, for the organism grew in talc and distilled water if the neck of the flask was covered with an inverted beater. The broth in the inoculum was not the answer, and the sole remaining source of nutrient substances was the atmosphere. A dozen or so other insoluble inorganic substances also supported growth.

The PRESIDENT asked if the organisms, owing to some property in these growth-producing substances, were able to get carbon dioxide and nitrogen from the atmosphere as their source of energy and nutrition. Dr. R. A. Q. O'MEARA said the work was extremely important from the public health point of view. It was possible to train an organism to revert to a primitive metabolism, and these organisms were relying on something even simpler than carbohydrates for their growth, possibly having reverted to a bygone age.

At the annual general meeting of the Society for Relief of Widows and Orphans of Medical Men, with Sir William Willcox in the chair, the report for 1940 was presented and approved. During the year sixty-one widows and three orphans had received £4,642 10s. Owing to enemy action, four of the widows had been compelled to vacate their homes. The total membership of the society is 259, of whom 160 are life members. Membership is open to any registered medical practitioner who at the time of his election is resident within a twenty-mile radius of Charing Cross. Relief is granted only to the widows and orphans of deceased members; widows with a yearly income of over £125 are not eligible for relief. Grants to orphans cease on their attaining the age of 16. Widows under 65 years of age at present receive £65 a year, those over 65 £70, and orphans receive £50. There is a special fund from which grants are made to orphans over the age of 15, to enable them to study for some professional or business career. The grant from this fund is usually fifty guineas a year for five years. Full particulars of the society may be obtained from the secretary, 11, Chandos Street, Cavendish Square, W.1.

Civil Defence workers transferred from the area of their homes and persons attending industrial training establishments away from home are to be admitted to E.M.S. hospitals when they require in-patient treatment, and the cost, after deduction of the patient's contribution, will be met by the Ministry of Health. Transferred war workers admitted to hospital are to receive an allowance of 5s. a week towards such expenses as would not be incurred in their home town.

Correspondence

Wholemeal Bread

SIR,—In the *British Medical Journal* of May 31 (p. 828) the Medical Research Council gave their second memorandum on bread, and set out their specification for national flour of 85% extraction. Apparently they have two criticisms of wholemeal bread: first on account of its roughage and second on account of its keeping properties. The M.R.C. state that it is undesirable to increase the roughage in wartime diets, but they give no grounds for this statement. The only reference I can find in the literature is work by Bickel and Fleischer (quoted by Copping, *Nutr. Abstr. Rev.*, 1939, 8, 555), who find that wholemeal bread in amounts under 3½ oz. hastens the passage of a barium meal, but in amounts over this tends to delay it. The statement of the M.R.C. requires support, for the bran they propose to exclude contains 7.8 mg. Fe per 100 grammes compared with 1.0 in white flour, which, in these days of anaemia, is of great importance, as the iron is very well absorbed. It must be remembered, too, that until recent years wholemeal was the only meal available and was eaten in double the quantity.

In answer to the M.R.C.'s second criticism of wholemeal, I have seen the interim results of a series of experiments on the keeping properties of wholemeal. Samples from three different sources have been stored in a bakery for six months at a temperature not exceeding 60° F., and at the end of this time were in sound condition. So the statement of the M.R.C. that flour of 85% extraction could be kept under reasonable conditions of storage for four to six weeks or longer, though true, is misleading.

The M.R.C. recommend 85% extraction flour and suggest two methods of producing it. Flour (i) is nearer to white flour, but needs changes in milling machinery. Flour (ii) requires no change in machinery, but, according to their specification, is open to variation. The flour is made by adding to white flour the germ and fine bran which have been separated. As some mills do not separate the germ the wheatings from these will contain more bran and less germ. Flour produced from these mills will be darker and contain more roughage than that produced by other mills. It is doubtful, therefore, if the specification given for Flour (ii) justifies the analysis. Nevertheless the M.R.C. recommend the production of this flour, as it can be made without delay. In other words, an 85% extraction flour, which will vary from off-white to the pale brown of wholemeal, is advocated in spite of the fact that it is less nutritive and no easier to manufacture than wholemeal.

The M.R.C. recommend the addition of calcium salts to all wheat flours. When this is done the nutritive values of 11 oz. (the average daily consumption) of each of the three breads are found to be as follows:

	Starch grammes	Prot. grammes	Ca mg.	Fe mg.	Vit. B I.U.	Vit. E mg.
Wholemeal bread + Ca	136	26	340	6.7	310	0.8
85% extraction bread + Ca	142	25	353	4.0	260	0.6
White bread + Ca	168	23	267	2.7	70	0.0
Average daily requirements	420	50	670	13.0	550	2.0

I repeat, therefore, that without further evidence on the action of bran in the alimentary canal the M.R.C.'s case for 85% extraction bread is not a good one. It is significant that in Eire at this moment flour of 95% extraction is the only type allowed to be manufactured for bread-making purposes. In South Africa the Secretary for Agriculture has proposed a standard loaf of 90% extraction.

This, however, is not the whole problem before the Government, for there are large stocks of white flour in the country. The addition of vitamin B is a small step to improve the nutrition of white flour, but the urgent necessity is the addition of Fe. The M.R.C. state that the addition of Fe salts might interfere with the nutritive value of other components of the flour. Perhaps they might obtain some

information from Canada or the U.S.A. The Canadian Council on Nutrition and the National Research Council of the U.S.A. seem quite happy about it.

To make this white flour as nutritionally valuable as is reasonable it is necessary then to add imported germ, Ca, and Fe salts. While this is being done the baking machines, which make a large proportion of our bread, can be adjusted for the preparation of wholemeal bread.—I am, etc.,

Leeds, June 30.

R. A. MURRAY SCOTT.

Oxygen Administration

SIR,—In your issue of June 28 (p. 980) there is an advisory article entitled "Hospitals and Gas Casualties. Notes on Reception and Management." With regard to treatment of gas cases with oxygen it is stated that "he [the medical officer in charge] should ensure that all those likely to be concerned understand the use of the nasal catheter, the B.L.B. mask, the spectacle-frame outfit. . . ." Other equally efficient methods of oxygen administration are not mentioned. Advisory articles have recently repeatedly excluded all other methods, although in one of the earliest pamphlets—namely, Memorandum No. 5 (England and Wales) Emergency Medical Services—it is admitted (p. 2) that there are other equally effective methods.

In a case of widespread gas attack it seems reasonable to advocate any efficient method since there is certain to be a shortage of apparatus. Among these other methods which have been passed as efficient by clinicians is the box-mask or face-tent method (*British Medical Journal*, 1938, 1, 1260; *Lancet*, 1937, 1, 82) and its modifications. A box mask requires no valves and may be made from a cardboard box, sticking plaster, lint, and a rubber tube in ten minutes. The modification of Dr. Alice Rose and Mr. Holmes Sellors (*Lancet*, 1940, 1, 648) is also readily constructed from materials provided in a hospital. This face-mask method has also been used with success by Mr. T. W. Adams (*Lancet*, 1940, 2, 474) and the late Dr. E. P. Poulton, and also by well-known specialists in America and in France. In hot climates and out-of-the-way places where rubber and other materials deteriorate rapidly a readily constructed cardboard mask has its advantages. This has been pointed out in Australia.

The recommended methods certainly have their disadvantages and setbacks. They are not particularly becoming. Recently Professor R. V. Christie and Dr. Hadfield (*British Medical Journal*, 1941, 1, 77) tried to apply the B.L.B. mask and the nasal tubes to a patient, but he refused to wear them. Again, the B.L.B. mask is certainly not wholly fool-proof, unless the mouth is also covered. This has been admitted by those who recommend the B.L.B. mask (*Proc. roy. Soc. Med.*, 1940, 33, 481). If the mouth is covered as well as the nose, then there is no great difference from the face tent in respect to the area of the face covered. There is also "a valve" (in the latest type, of sorbo rubber) to operate in the B.L.B. mask, and this must impede respiration in the very weak patients.

With the nasal-tube method cocaine is often necessary, but this does not altogether abolish the discomfort due to the irritation of a constant rapid flow of oxygen over the mucous membrane. Again, there is no doubt that the addition of a face tent increases the efficiency of nasal tubes and reduces waste of oxygen.

As the late Dr. Poulton found, there are cases, particularly in children, which can be treated adequately only in some modification of Sir Leonard Hill's bed tent. It might be advisable to keep all available tents at hand.—I am, etc.,

London, N.W.3, June 30.

J. ARGYLL CAMPBELL.

Medical Aid for China

SIR,—The China Medical Aid Committee appeal for your interest and assistance to carry on its work.

For four years China has held out against the aggressor and war has produced devastation and destruction, not only of homes and industries but of hospitals, with an increasing number of wounded, sick, and crippled needing medical aid. China, with slender medical resources, has valiantly attempted to deal with this suffering, and Dr. Robert Lim, Director of the Chinese Red Cross, has set up numerous medical units for treating the sick and wounded and for training first-aid workers for the fighting Services; but in China the number of doctors with modern training is few, and in 1939 Dr. Lim appealed to the Western world for help.

In 1939 this committee, in co-operation with a Norwegian committee, sent out some twenty doctors who have now become heads of Red Cross units and are striving with inadequate materials and very little trained assistance to create a medical service in the front line. The Chinese Red Cross, short of funds, asks us to maintain, at least in part, the doctors we sent out two years ago. The following is taken from a recent report to us:

"Moreover epidemics of typhus, typhoid, and relapsing fever have taken terrifying toll. In the absence of qualified people to guide the inhabitants in elementary self-protection, whole families have been wiped out and entire villages and districts have been devastated by such epidemics. Infantile mortality is very high. Over 70% of the population of the North-West suffer from trachoma and this means thousands of blind. Millions of people have not a single doctor to give advice and help to sick and wounded, and there are no medicines to treat disease, prevent epidemics, and protect the newborn."

The army services alone require 30,000 doctors and there are but 5,000 in the whole country. Our contribution to this immense deficiency has been small but it has been appreciated. Dr. Lim, writing to us in March of this year, says, "Let me say how grateful we are here to all of you for still taking an interest in poor China while England is being so battered from the air. It is simply splendid of the British people, and the common aim of our armies to struggle on against aggression and the example given by Britain has given the people of China a new stimulus to fight on."

Please let us have your utmost assistance and let China see that we appreciate to the full, amidst our own troubles, the great service to our cause afforded by her continued resistance to aggression. Your readers' support will be greatly appreciated. Please forward donations to Dr. E. R. C. Hambly, Treharrock, Long Grove, Seer Green, Bucks.—I am, etc.,

London, July 1.

HORDER.

Secret Remedies: Loophole in New Bill

SIR,—In connexion with the Pharmacy and Medicines Bill now being introduced in the House of Commons, it would appear that if, instead of making the declaration of all ingredients of a hitherto secret remedy compulsory, the proprietors are allowed to state only so-called active ingredients, an easy loophole will exist for fraud and evasion by dishonest purveyors of certain advertised articles. For example, a secret so-called cure for alcoholism, which the analysis in your publication *More Secret Remedies* showed to contain over 75% alcohol by volume with only minute traces of brucine and strychnine, would on a partial declaration be well calculated to dupe the lay public into imagining they were expending their money on potent medicaments magically blended, whereas they would in reality be purchasing something which, unless controlled by a qualified person, would be actually deleterious to them. It is to be hoped that those piloting the Bill through the House will note and stop this loophole.—I am, etc.,

A. E. CARVER, M.D., D.P.M.

Nuneaton, June 6. Medical Director, Caldecote Hall.

Tuberculosis in Recruits

SIR,—In a note on detection of tuberculosis among recruits (*Lancet*, 1940, 2, 518) I expressed the hope that others would publish their findings so that an inquiry could be made into the criteria for reference to tuberculosis officers. This hope has been admirably fulfilled in the paper of Dr. Sidney H. Graham and Mr. Mostyn Davies (June 21, p. 920). Graham and Davies have, however, in my opinion, failed to stress the basic aim of such an investigation. This is not so much how many tuberculous recruits are discovered by reference to tuberculosis officers as how many are *not* detected and are accepted into the Services. Of 1,869 recruits first seen by tuberculosis officers in Wales, 108 (5.7%) had active pulmonary tuberculosis. But how many recruits attended the Medical Boards? And, on the basis of published studies of the incidence of unsuspected tuberculosis, how many among them were in fact suffering from active tuberculosis? I have been told that between 1 and 2% of recruits are usually referred to tuberculosis officers. Even at the higher figure, the 3,049 referred recruits in Wales (including those already known to the dispensaries) would

represent a group selected out of about 150,000 men. The incidence of unsuspected active pulmonary tuberculosis in over 100,000 unselected Australian recruits was 0.56% (Galbraith, *British Medical Journal*, 1941, 1, 699). For well-known reasons this incidence is probably much higher in Wales. But even if we assume it to be 0.50%, the expected cases of active pulmonary tuberculosis among the Welsh recruits would be 840. As only 105 cases were discovered, at the very lowest estimate 732 recruits with active pulmonary tuberculosis were admitted into the Services. Thus the criteria at present used for referring recruits to tuberculosis officers led to the detection of less, and probably very much less, than 13% of the men who might reasonably be expected to have had unsuspected active pulmonary tuberculosis when they attended the Medical Boards.

Graham and Davies do not comment on another interesting finding. Of the 108 active pulmonary cases, 79 (73%) are stated to have been sputum-negative; and I note that among the 573 males aged 18 to 35, other than recruits, referred to the same tuberculosis officers in 1940, 282 (49%) were sputum-negative. If this difference is significant it deserves explanation. And are so many "early cases" really being discovered in Wales? Or are the sputum examinations at the dispensaries necessarily superficial, and is therefore the distinction between "T.B.+" and "T.B.—" merely misleading and should it be dropped?

One more point. Commenting on the significance of a previous "pleurisy" as mentioned by the recruit, Graham and Davies write that among the 3,049 referred recruits, 499 stated that they had had pleurisy; 116 (23%) subsequently developed pulmonary tuberculosis. The figure 3,049 includes the 1,189 recruits already known to the dispensaries. Of more direct interest would be the percentage of tuberculous recruits among those who had given a history of pleurisy to the Medical Board and had not previously been seen by a tuberculosis officer. For it seems possible that the group previously seen would have discussed the "pleurisy" with the tuberculosis officer; at the Medical Board later such a history might be given only if it had been "approved" by the tuberculosis officer.

I sincerely hope that the paper by Graham and Davies is only a preliminary communication, and that further study of their valuable material is being carried out by them.—I am, etc.,

Staines, June 23.

G. GREGORY KAYNE.

Carriers of Tuberculosis

SIR,—I have just seen Dr. E. Fraenkel's letter in your issue of June 21 (p. 946). My paper in your issue of May 8 was necessarily somewhat compressed for obvious reasons, and I should have liked more space in which to elaborate the thesis of "tuberculosis carriers." Dr. Fraenkel appears to hold the view that all individuals with tubercle bacilli in the sputum have an *advancing* process. In many cases this is clearly untrue, for patients with a positive sputum may be kept under observation for a number of years and may show little or no change in the x-ray picture of the chest. Surely these people do not suffer from tuberculosis in the same way as a patient who has symptoms of toxæmia or signs of destruction in the respiratory tract, such as cough, sputum, and hæmoptysis. I would not regard such patients, in fact, as having active pulmonary tuberculosis, although I would not form an opinion to this effect until the patient had been under observation for many months, but I do not want to split hairs with Dr. Fraenkel or anyone else on this point.

I quite agree that any patient with a positive sputum is a potential danger to himself, and there is not one word in my paper to suggest the contrary. My main purpose, however, was to suggest that patients who might have no symptoms or signs of active tuberculosis may very easily be a menace to others, and I wished to stimulate practitioners in general to have sputum examined for tubercle bacilli much more frequently than is the case at present. Surely it is important that this should be done, as overcrowding and rationing together may quite well increase susceptibility to tuberculous infection. Dr. Fraenkel would, I am sure, admit the existence of typhoid carriers, and such individuals may develop bone abscess or *cholecystitis* thirty years after their original infection. Presumably in the interval they were not suffering from typhoid fever.—I am, etc.,

London, W.1, July 3.

JAMES MAXWELL.

Bacteriology of the Closed-plaster Method

SIR,—I have had opportunity to sample the bacteriological flora of varicose ulcers at a large hospital clinic where treatment has been by enclosure of the whole leg in clastoplast, which is left on, in most cases, for two or three weeks at a time. As in the closed-plaster method discussed by Dr. Jean Orr-Ewing, Mr. J. C. Scott, and Mr. H. D. Gardner (June 14, p. 877), the virtue of this method appears not to be related to the bacteriology as a rule, but would seem to depend on biochemical and physical factors.

Strict aseptic procedures not being possible in such a clinic, cross-infections were seen to occur. Among others, fifteen suitable cases were followed through. *Ps. pyocyanea* appeared suddenly, affecting six cases, then almost died out after about two months. Of five large ulcers which healed particularly well—that is, in two to five months—three showed *Ps. pyocyanea* as follows: (1) *Staph. aureus* was replaced by *Ps. pyocyanea*; (2) *Staph. albus* followed by *Ps. pyocyanea*, and later by *Ps. pyocyanea* with enterococcus; (3) *Ps. pyocyanea* alone; (4) *Staph. aureus* and *citreus*; (5) *B. coli*. But other cases showed average or slow progress in the presence of a variety of organisms including *Staph. aureus*, enterococcus, *B. coli*, *proteus*, diphtheroids, and *Ps. pyocyanea*. *Str. pyogenes* was found in two patients who had resistant and "angry" legs. Direct smears were made and the amount of phagocytosis noted. This bore no obvious relation to progress.

I thank Dr. Stuart McAusland for the opportunity to follow these cases.—I am, etc.,

Liverpool, June 27.

JOY CRONIN LOWE.

Discission of Secondary Cataract

SIR,—I read with interest Dr. F. E. Preston's letter (May 24, p. 797) suggesting the use of mydracin before discission after cataract extraction. I have tried this method on a few cases and found it very helpful, especially when the capsule was of a rather dense nature. Mr. Bishop Harman's method of using two Ziegler knives I have found most helpful on many occasions, the disadvantage probably being two penetrating wounds instead of one.

With the present various methods of intracapsular extraction discission is not so common as some years ago. For those who still use the orthodox method of expressing the lens it may be helpful to suggest a procedure which I have found very useful in my own work. This is very simple, and reduces the necessity for needling to a minimum. It is as follows. After using the cystotome to tear the anterior capsule, while this instrument is still in contact with the lens, a side-to-side or rocking movement of the lens is performed. This breaks away the ligament fibres and usually causes the lens to come forward in its capsule. It can then easily be expressed in the usual way, and, to my mind, with less likelihood of loss of vitreous than in the usual intracapsular methods.—I am, etc.,

Norwich, June 23.

W. E. RUTLEDGE.

Chemoprophylaxis of Rheumatic Fever

SIR,—I was much interested in your annotation on "Chemoprophylaxis of Rheumatic Fever" (June 28, p. 793). It is queried why, "if rheumatic fever is an infection by the *Streptococcus pyogenes*, the acute stage should not be amenable to sulphanilamide treatment." The probable explanation is that this stage is mainly a manifestation of an allergic reaction occurring in a patient sensitized to the *Streptococcus pyogenes*.—I am, etc.,

Gorseinon, Swansea,
June 30.

G. E. DONOVAN,
Medical Officer of Health.

Local Anaesthesia in Operations for Pyloric Stenosis

SIR,—The admirable article by Mr. David Levi (June 28, p. 863) establishes the main principles in the surgical treatment of congenital pyloric stenosis. There is, however, one point which is not adequately stressed in his account of the technique, and that is the employment of local anaesthesia. My own figures in a series of sixty cases are a clear indication of the value of this form of anaesthesia in this condition.

Fifty-three of these were dealt with in the children's ward of a general hospital, while the remaining seven have been operated on in nursing homes or cottage hospitals. Up to 1939 general anaesthesia was employed as a routine, and the results were far from satisfactory. In forty-one cases in this series there were thirteen deaths, a mortality of 31%, which, as Dobbs (*Lancet*, 1941, 1, 661) states, is probably an average figure for general hospitals up and down the country. My own experience bears out his statement that most of the deaths following operation were due to gastro-enteritis. In two cases infants had already returned home but were re-admitted a few weeks later on account of gastro-enteritis which proved fatal.

Since 1939 a total of 19 cases have been operated on with no mortality. The only difference between these two series has been the employment of local anaesthesia in place of a general anaesthetic. These patients have been referred to me by my medical colleagues or admitted directly under my care. Some of them had already been given a trial of "eumydrin" by the physicians, who, on the whole, have been disappointed with the results. A tendency has been noted in the more recent cases to call in a surgeon somewhat earlier than during the first series, when eumydrin was being given a trial, but apart from this there has been no distinction in the treatment in the two series, and the markedly improved results must, I feel, be attributed in great measure to the use of local anaesthesia. I have no doubt that a general anaesthetic in these cases predisposes to a subsequent gastro-enteritis.

By making a small high incision in the midline over the liver there is no danger of small intestine or omentum prolapsing out of the wound if the infant strains, while the judicious use of a teaspoonful of honey usually keeps the infant perfectly contented throughout the operation. Dobbs's suggestion that the risk of a long stay in hospital may be counterbalanced by the adverse effects of operation is answered by Levi's demonstration that operation under local anaesthesia, certainly in breast-fed infants, has no adverse effects.—I am, etc.,

Wolverhampton, June 30.

R. MILNES WALKER.

Differential Diagnosis of Contusion of the Brain

SIR,—In reply to Dr. Murdo Mackenzie's letter (June 28, p. 985), of course a psychoneurotic may complain of headache just as he may complain of pain or distress in any other organ or region of the body, but it is neither a characteristic nor a diagnostic symptom of the condition. On the other hand, severe headache in our series of cases following a definite history of concussion was the outstanding and disabling feature, often dominating the whole picture. The attitudes of the two types of sufferer to the symptom are quite different. The contused person regards his headache as itself constituting essentially the disorder, and it is the symptom for which he is most anxious to obtain relief. The neurotic, on the other hand, if he does mention headache, does so only as one symptom of a general state of distress, which he often has difficulty in describing. The contused person nearly always states that he is improving and he is hopeful; the condition of the neurotic is usually static. The condition of a contused person—at the interval of three to five months from the exciting trauma—may often be described as still subacute.

The "forgetfulness" in contusion is also quite different from the occasional inattention which leads many of us neurotic or otherwise—to leave umbrellas in omnibuses. The contused person complains of forgetfulness spontaneously as a new symptom. A housewife, for instance, finds that she must make a list of everything she goes out to buy—a thing she has never had to do before. Sufferers from this condition create the impression that they are still slightly dazed or not fully aware of their surroundings. Also they are less emotional and less concerned about their emotions than the neurotic. For these reasons it would not be characteristic for a contused person to say he "feels such a fool" for forgetting things; he is not thinking of other people. The neurotic, on the other hand, acutely sensitive to the attitude of others about him, might well make such a remark.

Each of these differences may seem small by itself, but collectively they make two pictures which are readily distinguishable in a large proportion of the cases.—I am, etc.,

London, S.W.11, July 1.

WILLIAM A. BEND.

Paralysis accompanying Herpes Zoster

SIR.—In view of the recent correspondence in your columns regarding paresis associated with herpes, the following case would seem to be sufficiently unusual to merit mention, and serves still further to indicate the connexion between herpes and a generalized blood-stream infection.

A man aged 53, who works as a postman, has suffered from mitral disease for many years; in March, 1938, his heart began to fibrillate. This has been more or less controlled by tab. digit. pulv. for the past three years, but early in January, 1941, he had an attack of pulmonary congestion. This showed signs of clearing up by the end of the month, and on February 5 he felt better, breathing was easier, but there was still some tachycardia. On February 12 the heart sounds were steadier and the pulse rate slower, although the uneven beats of fibrillation were still present. He also complained on that day of a dull pain in the front of the right thigh, which in view of his rheumatic history I took for a myalgic pain. He returned home, and tells me that two days later (February 14) the sore area in front of the right thigh began to burn, became more red, and by the morning of the 15th blebs had begun to appear. He visited a colleague, who diagnosed herpes zoster. On the 16th a few spots appeared on his chest, face, and forehead. On the 18th he came up to see me, and showed an extensive herpetic eruption over the inner side and front of the right thigh, with a few isolated blebs below the knee and in the sacro-iliac region (L2 and L3); while, in addition, he showed a well-marked eruption resembling varicella extending over the body, limbs, and head; several of the pocks on the chest had reached the pustular stage, while those on the face were vesicular and on the forehead papular. By March 1 the herpetic vesicles had dried and some of the scabs were separating, while the varicella pocks were drying up. The patient also complained of weakness of the affected leg, the thigh muscles had lost tone, and the right knee-jerk could not be elicited. By March 10 most of the scabs of the herpes and of the varicella had dropped off, but the weakness of the knee was still marked and the right knee-jerk still absent. He developed almost complete paralysis of flexion of the right hip by the iliopsoas, of the sartorius, and most of the quadriceps and adductors of the thigh. He was seen on April 2 by Dr. Wilfred Harris, who reports: "I took his electrical reactions myself and found complete reaction of degeneration in the vastus internus and externus and the lower half of the rectus, although the upper half of the muscle reacted normally to faradism. R.D. was almost complete in sartorius and the adductors." Massage and galvanism were given for a month and later followed up by faradism and exercises during May and June. He has made a good and gradual recovery, so that walking is now almost normal and he is taking up a light inside duty this week.

In view of Professor J. A. Nixon's remarks (July 5, p. 31) on herpes generalisatus this case seems worthy of mention, and the recovery after such a severe loss of muscular activity is very encouraging. I presume the damage to the motor fibres is at the point where the anterior roots join the posterior roots just peripheral to the ganglion.—I am, etc.,

London, W.1, July 5.

R. COVE-SMITH.

Subcutaneous Ligature of Veins

SIR.—Dr. H. S. Russell (April 26, p. 626) described a method of subcutaneous ligature of veins. For several years I have been using a similar technique for the resistant type of case. It seemed unnecessary to take up your valuable space in adding my testimony to Dr. Russell's or in amplifying his excellent article, but since then some ill-founded criticisms have been made, and I therefore thought that it might be useful to add my experiences in support of Dr. Russell's method.

I have done a considerable number of cases and have never had any complication of any kind. I do not insert the suture by means of a sewing needle, with the necessity for drawing a double thread through the tissues, but I use the hypodermic method of suturing first described, I believe, by Dickson Wright. I inject some novocain into the skin and then advance the hypodermic needle under the vein, at the same time injecting a little solution; a little more novocain is injected under the skin on the far side of the vein and a moment allowed for it to anaesthetize the skin; the needle is then pushed out through the skin; the syringe is disconnected, and a suture

is threaded through the needle like a stylet; it is usually easier to pass the suture from the point of the needle. The suture is then tied over a little piece of sterile gauze, a small elastoplast dressing is applied, and the vein is injected below this level; or the suture can be left untied for a moment and the vein injected by the empty vein technique, and then the suture is tied. It is of course wiser to have the patient lying down when passing the sutures.

A troublesome vein can be ligatured in several places and the "locks" between emptied before injecting. In this way, also, a "deep feeder vein" can be isolated and its cause of failure eliminated.

By this method I have successfully treated many cases that have been submitted to me by doctors who have stated that "injection has failed to cure these veins." I am convinced that with reasonable care the method is devoid of risk and is a valuable addition to one's technique.—I am, etc.,

Hove, July 3.

H. J. MCCURRICH.

SIR.—I have read with interest the article by Dr. H. S. Russell (April 26, p. 626) and the criticism of it by Stuart McAusland (May 17, p. 763). Subcutaneous ligature of varicose veins was first described by Velpeau and Schede and was soon given up. It was reintroduced and strongly favoured by Kocher (1916), who, in the case of widespread varicose veins, inserted 100 and sometimes more subcutaneous ligatures. Soon after Linser introduced the treatment of varicose veins by injection with sclerosing fluid, a combination of ligature and injection was employed by many surgeons.

Dr. Russell's method is harmless and painless, but it is not much more effective than injections properly done without ligature. Neither the method of injection alone nor in conjunction with subcutaneous ligature should be used in cases where a positive Trendelenburg sign is present. A positive Trendelenburg sign demands open ligature of the vein near the saphenous opening and the removal of the saphenous trunk in the thigh.

I have found that the best operation is the removal of the vein by Babcock's method followed by injection of the varices in the leg, but I should like to draw attention to a method which I employed in many thousands of cases with excellent results: The vein should be sought for in the lower part of the thigh with the patient standing upright and its position marked. The patient then lies down with the leg slightly elevated. The vein is gently exposed, using 10 c.cm. 2% novocain. The vein is then divided between ligatures. The distal part of the vein is opened and a blunt Horrocks's or Barley's cannula is introduced and fixed in position by means of a ligature. (I use a special curved cannula with a stop-cock.) Through the cannula varying amounts of sclerosing solution may be injected depending upon the extent of the varices. I use 60% glucose in quantities up to 50 c.cm. The wound is closed by two catgut sutures and the limb bandaged firmly. This completes the simple operation, which can be easily performed with aseptic precautions in the surgery or in the patient's home. This procedure gives the only guarantee against recanalization. Recurrence is rare.

I quite agree with Dr. Russell that every effort should be made to treat varicose veins adequately, and surgeons should try to find better and still better methods of doing so.—I am, etc.,

Bradford, July 1.

NORBERT SCHICK, M.D., Vienna.

Ether Convulsions

SIR.—After reading Mr. Charles Wells's letter (June 21, p. 945), I thought it might be of interest to describe a case which came under my notice to-day in the Willesden General Hospital.

A woman of 32 had a laparotomy performed for a uterine fibroid. I used the McKesson CO₂-absorption apparatus and the anaesthetic was perfectly smooth until the time arrived for sewing up. I noticed slight spasm of the lower jaw, which did not persist, so I ignored it. However, about five minutes later spasm returned not only in the jaw but in the legs and arms. The respiration was in character like that described in Dr. Wells's letter. I was using ether in moderation with the indicator at "half." The bag was kept inflated with nitrous oxide, and the oxygen indicator stood at 4 or 6 according to the degree of cyanosis. The colour kept uniform throughout except for slight cyanosis, but this increased when the convulsions started. The pulse was of good volume, regular, and

100 to 104 in rate during the spasm. The rectal temperature was 100.4° F. There was no marked sweating of the face.

After removing the face-piece I gave chloroform, about 1/2 to 1 drachm, very cautiously in drops on a mask until the house-surgeon, Mr. Freeman, prepared 5 c.cm. of pentothal sodium. He injected 4 c.cm. as soon as possible into a vein and immediately the convulsions ceased. He gave a further 1 c.cm. after a few minutes' interval. The operation was then completed. The patient left the table with both pupils widely dilated but with normal shallow respirations.

On reaching the ward the respiration became very shallow, almost Cheyne-Stokes at intervals. On the suggestion of the house-physician, Dr. Gladstone, I gave oxygen with 5% CO₂. This after a time improved the breathing, and at long intervals the patient made a deep inspiration. All this time the pupils remained dilated, but they gradually became smaller. The pulse varied in volume but kept regular. Artificial respiration seemed to help in dispelling cyanosis while it lasted, but gradually the colour became normal after more O plus CO₂. I saw the patient about one hour later, when there was slight conjunctival reflex, but she was still unconscious. Three hours later consciousness had returned and the patient smiled and could talk.

The premedication was omnopon grain 1/3, scopolamine grain 1/150, an hour before operation.

The cases I have seen have all occurred in hot weather; fortunately none of them has been fatal.—I am, etc.,

Willesden, June 23.

C. LEONARD TRAYLEN.

SIR,—Mr. Charles Wells (June 21, p. 945) has described a case of novocain convulsions in a letter concerning "ether" convulsions. This is unfortunate because novocain convulsions are no mystery, although it seems to be insufficiently known that cocaine and all its derivatives convulse as certainly as does strychnine. On the other hand, "ether" convulsions are a great mystery still, for how are we to explain convulsions produced by a large dose of a narcotic drug?

Hyperthermia is an attractive theory, and I may be forgiven for possibly overstressing it, because it is so reasonable and so kind to keep the feverish patient cool during an operation in a heat wave. With a high temperature from a septic appendix it is not wise for the child to wear thick bed socks, be covered with blankets and mackintoshes, and to be deprived of all sweating defences by atropine.

It is of the utmost importance that the rectal temperature of all these cases be taken. As the fits are easily controlled by evipan intravenously, the abdomen should be sewn up and the rectal temperature taken when all is quiet. If it is high—and I think it is invariably—then steps can be taken to reduce it and to cool the carotid blood to stop cerebral damage and possibly a return of fits when the evipan has worn off. The fortunate thing is that evipan or pentothal is good for all fits except those due to uraemia.—I am, etc.,

A. DICKSON WRIGHT, M.S., F.R.C.S.

London, W.1, June 30.

Treatment of Gonorrhoea

SIR,—The emphasis laid on the treatment of gonorrhoea by sulphapyridine when two articles deal with that disease in the same issue of the *Journal* (June 28) is liable to create a somewhat wrong idea as to the value of the treatment.

Major MacKenna's article (p. 958) deals with gonorrhoea in men specially selected for healthy physique, and it is well known that the healthier the man the shorter is the life of the gonococcus in his system. Secondly, these men are in a position to report at once and have a rest from their daily arduous duties. Thirdly, they are at once put on an alkaline dietary. In spite of all the costly treatment outlined by Major MacKenna the relapse rate is as high as 5%.

In Dr. James Sommerville's report (p. 961) the relapses were as high as 6.66%, and complications occurred in 1.66%, while toxic symptoms occurred in 13%. These results are in striking contrast with those of Major MacKenna, but they are very instructive and therefore of value. Dr. Sommerville speaks only of alcohol as interfering with successful treatment, but he does not give any reasons why this should be. Alcohol, as is well known, tends to increase the patient's pH, which in Major MacKenna's patients was countered by the alkaline dietary. The part played by an increased pH in delaying recovery of all diseases is of great importance and deserves

the serious attention of the medical profession. The predisposition of persons to tuberculosis and acute rheumatism depends on whether their pH is increased or not, and it is hardly necessary to say that gonorrhoea in tuberculous patients is not "cured" in three days, while the tendency to complications is intensified very considerably. Good treatment can be successful only by helping the patient's constitution to re-right itself.—I am, etc.,

Swansea, June 28.

G. ARBOUR STEPHENS.

Anatomical Nomenclature

SIR,—Please allow me to suggest that it would be well for authors of medical and (particularly) surgical textbooks who, as most of them did, learnt their anatomy with the students of the last generation, to bear in mind that, wisely or unwisely, anatomical nomenclature has now largely been changed.

Studying Mr. Hamilton Bailey's excellent *Emergency Surgery*, I came across the term "cave of Retzius," for which, wishing to confirm my memory of its identity, I searched in vain the text and index of Gray's *Anatomy*, latest edition. Correspondence with the editor of the latter showed that he strongly disapproved of the retention of personal names in anatomy, and preferred the new term "retropubic pad of fat," which, of course, signifies not the "cave" but its contents. Many other examples of the same nature might be quoted. Apart from the confusion thus caused to those who, like myself, learned their anatomy twenty-five or so years ago, it seems to me (if I may venture to express an opinion) a great pity that, by the elimination of proper names, the historical aspect of anatomy should disappear. I challenge any medical man to read Fielding Garrison's *History of Medicine* without acquiring a renewed and even thrilled interest in his profession.

Meanwhile I would suggest that authors using old names should add the new ones in parentheses.—I am, etc.,

May 20.

JOHN S. MEIGHAN, M.B., Ch.B., B.Sc.,
Surgeon Lieut. R.N.V.R.

Universities and Colleges

UNIVERSITY OF OXFORD

The Weldon Memorial Prize for 1941 has been awarded to Julia Bell, M.A., F.R.C.P., Honorary Galton Research Fellow of University College, London, and member of the scientific staff of the Medical Research Council.

UNIVERSITY OF CAMBRIDGE

Owen Lydon Wade (Emmanuel College) has been awarded the Marmaduke Shield Scholarship in Human Anatomy, of the annual value of £100.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

M.D.—F. C. Deller.

M.B., Ch.B.—134 N. B. Jones, 24 B. B. Evans, 23 N. O. K. Gibbon. *Part III*: Katharine E. Ainsworth, G. M. Ardian, W. W. Aslett, Aileen M. Barry, W. H. Berry, R. S. Cook, R. T. Davies, J. A. Donnellan, C. V. Donnelly, B. K. Ellenbogen, J. J. Ennitt, H. E. D. Flack, H. W. Forshaw, G. L. Gamble, A. J. Goldman, H. R. Gray, J. J. Hargadon, I. J. Harris, J. H. Hughes, Lillic L. Jackson, Katie H. Jones, Mair E. Jones, W. J. Jones, Mary Jordan, A. C. Kirby, C. A. Kovachich, C. C. Laird, T. E. Lamb, D. Leslie, T. B. McMurray, M. Makin, Lucy D. Meyrick, E. L. Moore, A. Moorhouse, P. P. Newman, J. A. B. Nicholson, J. D. F. Norman, C. N. Partington, D. E. Paterson, H. C. Percy-Hughes, G. H. Pimblett, Joan E. M. Potts, A. G. Rickards, F. S. Rickards, M. Rosenthal, C. N. Samuel, G. D. Scarrow, G. L. Shatwell, J. M. Swithinbank, W. G. Taaffe, E. Walker, C. W. Walton, A. S. Whitehead, J. K. Wilson, J. Winter, F. J. Zacharias. *Part I*: Mary A. R. Allan, A. S. Beadcl, R. A. Blyth, W. G. Canning, J. F. Ferguson, E. N. Hugh-Jones, E. D. G. Kirkwood, Jean C. Miller, E. W. Parry, J. S. Redfern, 5 J. V. Shepherd, 5 G. H. Thomas, K. B. Thomas, Doreen M. Watt. *Passed in Separate Subject*: F. E. D. Griffiths (Pharmacology and General Therapeutics). *Part II*: G. W. Gibbs, F. E. D. Griffiths, R. B. McConnell.

1 First-class honours. 2 Second-class honours. 3 Distinction in surgery. 4 Distinction in obstetrics and gynaecology. 5 Distinction in pharmacology and general therapeutics.

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examinations indicated:

M.D.—P. R. Evans (by thesis), J. A. Hobson (by examination).
M.B., Ch.B.—E. P. Abson, R. G. Ball, J. Ball, E. A. Cachia, D. M. Coates, B. O. Dowdell, B. I. Eames, Jeanne M. Edwards, F. Feinmann, A. Glass, J. C. Greenwood, P. G. Griffiths, E. G. Hall, Frances A. Hepburn, Margaret Jacques, R. P. Jepson, Susanne M. Lempert, D. C. Little, F. S. Mooney, T. E. Parry, *S. S. Rose, J. Thompson, Vera Waime, F. R. Wilde, H. L. Wise, B. Wolman, P. B. Woolley. *Part I (Forensic Medicine and Hygiene and Preventive Medicine):* Alice Akred, G. Ashe, A. N. Ashworth, Shirley G. Barrett, Pauline Blockey, H. Bolton, H. A. Boydell, D. M. Brierley, W. E. Broughton, Kathleen M. Brown, P. Cliff, J. G. Coburn, D. G. Crawshaw, Betty J. Dakin, Sheila Egan, D. Eglin, C. J. L. Elsdon, Nora F. M. Falk, S. Falk, A. I. Goodman, S. Grace, R. Greenwood, N. Harris, K. Heap, Mary W. P. Huddart, Esther Jackson, W. H. Lowdale, R. L. Lunt, C. W. Marsden, R. W. T. Mason, Ann L. Pinson, Ethel J. Samuel, Eileen T. Sloane, H. F. Smith, O. C. Sueden, D. Sutton, M. Swerdlow, R. H. Townsend, Margaret Wade, A. E. Wall, H. C. Warrington, J. Whewell, J. R. Wright.

* Second-class honours. † Distinction in medicine.
‡ Distinction in forensic medicine.

UNIVERSITY OF ST. ANDREWS

At a graduation ceremony on June 27 the following medical degrees were conferred:

M.D.—R. Y. Dunlop, Jean L. Hukam.
M.B., Ch.B.—*Nancy Young, *K. G. Lowe, *A. W. K. Main, *E. L. McQuitty, *Lactitia J. W. Douglas, *Anne M. Wood, *Gwendoline M. Sturrock, Mary O. Adams, Margaret C. Barber, Elizabeth S. Bayne, S. C. Chatterji, F. E. Clonick, A. Everard, Joyce M. Fleming, R. S. Flynn, J. O. Forfar, Philippa E. Gaffikin, Sheila Graham, J. S. Law, A. MacKenzie, R. S. MacKenzie, A. MacLean, F. A. Macrae, J. M. S. Manson, N. Paton, J. M. Robertson, Kathleen Robertson, Constance F. Ross (née Reed), A. E. D. Sanjana, Agnes G. Swales (née Brough), K. A. Swales, A. K. Tulloch.

The William Low prize for the most distinguished student was awarded equally to Nancy Young and K. G. Lowe.

* With commendation.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Election to the Council

On July 3 four Fellows were elected into the Council to fill the vacancies caused by the retirement in rotation of Professor A. H. Burgess, Mr. H. S. Souttar, and Mr. V. Zachary Cope, and by the death of Mr. R. C. Elmslie. The result of the poll was as follows:

	Votes
ARTHUR HENRY BURGESS (Manchester)	608
HENRY SESSIONS SOUTTAR (The London Hospital) 604	
VINCENT ZACHARY COPE (St. Mary's Hospital)	528
ERNEST FREDERICK FINCH (Sheffield)	492
Philip Henry Mitchiner (St. Thomas's Hospital)	480
Sir Harold Delf Gillies (St. Bartholomew's Hospital)	467
Reginald Martin Vick (St. Bartholomew's Hospital)	429

In all 1,097 Fellows voted; in addition seven votes were found to be invalid. Professor Burgess, Mr. Souttar, and Mr. Cope are all elected for the full period of eight years, and Mr. Finch acts as substitute member for the late Mr. Elmslie until July, 1946.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—J. A. Dodds, M. El Badri, D. A. Ogden.
MEDICINE, PATHOLOGY, AND FORENSIC MEDICINE.—G. R. Boyes, D. A. Ogden.
MIDWIFERY.—D. A. Ogden, J. M. Macdonald, J. Mason, Le R. D. Miller.

The diploma of the Society has been granted to D. A. Ogden.

Three additional Sigmund Freud fellowships for psychoanalytical training have been announced by the Boston Psychoanalytical Institute. The fellowships will begin in September, 1941, and are open to graduates of recognized medical schools who have had at least one year's work in general hospital training and two years' work in psychiatry.

Obituary

SIR FREDERIC STILL, K.C.V.O., M.D.,
F.R.C.P., LL.D.

Physician Extraordinary to the King; Emeritus Professor of Diseases of Children, King's College, London

George Frederic Still was born in London in February, 1868. From Merchant Taylors' School he went up to Caius College, Cambridge, and thence to Guy's Hospital. At Cambridge he gained first-class honours in the Classical Tripos and was Winchester prizeman. At Guy's he was house-physician in 1894 after taking the M.B., B.Ch. degrees, and in the same year won the Murchison Scholarship of the Royal College of Physicians of London. Early in his career Still decided to specialize in medical diseases of childhood, and he was appointed assistant physician at the Hospital for Sick Children, Great Ormond Street. In 1896 he was awarded the Cambridge M.D. for his thesis on "A Special Form of Joint Disease met with in Children." The substance of this appeared in the first edition of Albutt's *System of Medicine*, 1897, Vol. III. It was a short article of five pages, but it introduced to the medical world a form of disease previously unrecognizable which became known, as it is to-day, as Still's disease. He defined the condition as a chronic progressive enlargement of joints associated with enlargement of lymphatic glands and spleen, coming on before the second dentition.



In 1899 Dr. Still was appointed physician for diseases of children at King's College Hospital, the first hospital with a medical school to establish a special department for diseases of children, and in 1906 King's College, London, made him its first professor of diseases of children. At the Royal College of Physicians, of which he became a Fellow in 1901, Still was Goulstonian Lecturer (1902), Lumleian Lecturer (1918), FitzPatrick Lecturer (1928 and 1929), and Censor (1932-3). For three years he was the chairman of the Medical Board at King's and a valued member of the committee of management of the hospital. In 1905 he joined Sir James Goodbart in preparing the fifth edition of his former chief's well-known *Diseases of Children* and continued as co-editor until 1909, when he published on his own account a textbook, *Common Diseases of Children*. This was based on lectures he had given at King's College and Great Ormond Street Hospitals, with considerable additions. His theme was the everyday and the commonplace diseases which bulk most largely at a children's hospital and in the routine work of the private practitioner. The book, being very practical, met with immediate success and reached a fifth edition in 1927. He contributed to Albutt and Rolleston's *System of Medicine*, 1907, Vol. III, an article on congenital hypertrophy of the pylorus. It was a concise and clear consideration of a disease first described by Samuel Gee, which, thanks in part to his own observation, was being recognized much more often than in earlier years. In 1919 he contributed to the Osler Birthday Volumes an article on "Some Seventeenth Century Writings on Diseases of Children," in which he paid tribute to the value of books by Francis Glisson and Walter Harris, physician to Charles II, and Thomas Sydenham's work on

chorea was of course not forgotten. The subject of his FitzPatrick Lectures before the Royal College of Physicians was "The History of Paediatrics in the XVth and in the XVIIth and XVIIIth Centuries." In them he amplified his paper in the Osler Birthday Volumes, but even then he found that there was much more in the subject than two lectures could satisfactorily encompass, and in 1931 there came from his scholarly pen *A History of Paediatrics*. This surveyed progress in the study of disease of the child up to the end of the eighteenth century, with a wealth of reproductions of title-pages and illustrations from old books and portraits. He was elected first president of the British Paediatric Association, and similar societies in the United States and Canada made him an honorary member. Very interesting lectures given by him at Birmingham in 1927 under the Ingleby Trust dealt with "Place-in-family as a Factor of Disease." A short paper on "Infantile Scurvy: Its History" appeared in the *Archives of Disease in Childhood* for August, 1935, with other articles bearing on the importance of Thomas Barlow's discovery in 1883 of the true nature of that disease. This special number of a journal with which Still had close connexion as chairman of its Editorial Committee was produced in honour of Sir Thomas Barlow's ninetieth birthday. Dr. Still's contribution indicated how near earlier writers had got to the truth and yet how they missed the essential feature of the deficiency nature of the disorder. He kept up his interests in classics, and in 1931, on the centenary of King's College Medical School, wrote in Latin verse "*Carmen Scholae Medicinae*," which was set to music and sung at the celebrations. In 1932 at the Centenary Meeting of the British Medical Association he was president of the Section of Diseases of Children, and next year presided over the International Paediatric Congress held in England. His long period of fruitful service to Great Ormond Street Hospital was recognized by election as consulting physician. He had also been for many years consulting physician to the Infants' Hospital, Vincent Square, to Dr. Barnardo's Homes, and to the Society for Waifs and Strays. The National Association for the Prevention of Infant Mortality had the benefit of his chairmanship for twenty years.

In 1934 Dr. Still was awarded the Dawson Williams Prize (founded in memory of the late Editor of the *British Medical Journal*) in honour of his work for sick children. When he retired from hospital duties King's College and its Hospital elected him emeritus professor and consulting physician, and a widely supported project was set on foot to pay tribute to "a great physician and lover of children." This took the form of a presentation portrait by Gerald Kelly, R.A. (reproduced on the preceding page), and the endowment of a "Dr. Still Cot" at King's College Hospital.

Sir Frederic Still was created K.C.V.O. among the Coronation Honours of 1937 in recognition of his life-long devotion to the welfare of children and his personal services to the Royal Family. In the same year he became Physician Extraordinary to the King, and was elected an Honorary Fellow of the Royal Society of Medicine. The University of Edinburgh also honoured him with the degree of LL.D.

A correspondent writes:

Handsome of feature, slight of build, with a grave courtesy all his own, George Frederic Still warmed towards a child, and if its mother tried him he bore with her in a spirit of fortitude and forbearance. His own widowed mother was his dearest friend and they lived together until her death at an advanced age broke the happy union. It was charming to see them on their way to church on Sunday, she supported on his arm, he in spruce frock-coat holding the Prayer Book and Hymnal. The waiting-room at the old house in Queen Anne Street had a grand assortment of toys to beguile or soothe the young people before their turn came to enter the presence of the doctor with the quiet manner and sweet smile. Many of us

remember him as a businesslike chairman, graciously but firmly keeping his committee to the point. Dr. Still never flinched from duty, and his life was filled with tender thought for all sick or unhappy children. Now he has gone to his rest, and we are the poorer; but the influence he wielded is not cut off by death.

J. R. DICKSON, O.B.E., M.B., C.M.

Secretary, Trinidad and Tobago Branch, B.M.A.

A correspondent sends the following appreciation, which supplements the obituary notice published on June 28.

John Rhodes Dickson, whose sudden death on April 8 is deplored by everyone in Trinidad and Tobago and most of all by his colleagues, was born seventy-four years ago at Arona, Trinidad, where his father, the Rev. W. F. Dickson, was minister of the Presbyterian Church. He was educated at the Queen's Royal College, Port of Spain, where he won an Island Scholarship in 1884, and at Edinburgh University. He joined the Government Service in 1891; and after serving as assistant surgeon at the Colonial Hospital and holding acting appointments in country districts, he decided to specialize in public health work. It is largely due to his efforts that the Government came to recognize the value of public health, and the Public Health Service, which is now full grown and working well, is the result of Dickson's constant and untiring efforts. He was the first pathologist and bacteriologist for the Colony, and was also largely responsible for checking epidemics of yellow fever and bubonic plague in 1907-8. These diseases have never reappeared. He was in England on leave in 1914 and was taken by the War Office and attached to the R.A.M.C. for six years. On his return to Trinidad he was appointed Deputy Surgeon-General and Senior Medical Inspector of Health for the Colony. He frequently acted as Surgeon-General. He retired from the Service in 1930 and was awarded the O.B.E. He was then appointed lecturer to the Imperial College of Tropical Agriculture, which post he held until 1939. After Dr. K. S. Wise, the Surgeon-General, retired the Government showed their appreciation of Dickson's sterling qualities and appointed him chairman of the Bruce Stephens (Charitable) Trust. For years he had been vice-president and mainstay of the Child Welfare League. He had been a useful member of the Council of the Medical Board of Trinidad and Tobago and was its vice-president.

Besides these activities, enough for any one man, Dickson must be remembered as the one who worked hardest at reviving the almost defunct Branch of the B.M.A. and with zeal and unceasing labour as Branch Secretary. He attended the annual meeting at San Fernando on April 5. He seldom missed the Annual Meeting of the B.M.A. when in England. Island-wide tribute was paid to the passing of a distinguished son of Trinidad who had always kept in the forefront of his thoughts and actions measures for the advancement of public health, child welfare, and alleviation of distress, and the welfare of the profession. A lack of show, characteristic of Dickson, hid the true extent and range of his work and sympathies.

Dr. K. S. Wise writes:

As we were, for two years, very closely associated in the administration of health affairs in Trinidad, I am glad to pay my tribute to Dr. Dickson, whom I regarded very highly as a professional colleague and even more so as a friend of exceptional charm and character. He was a man to whom his word was often more than his bond. To assign him some important duty was to know that it would be well and thoroughly completed with a conscientious regard for each and every detail as well as a careful consideration of the broad and fundamental principles. This is well illustrated by his early realization that success in the administration and efficiency of public health measures required not only a high degree of technical skill but also a well-trained local personnel and a liberally instructed public. Much of his earlier professional career was spent in the organizing and effecting such training and public instruction. His efforts certainly induced in the public mind a healthy sensitiveness to sanitary matters in general and brought into being a valuable and experienced body of associated medical personnel. His success in this hitherto virgin field in the early years of this century are well known to those familiar with health affairs in Trinidad. Needless to add, this shining example had its effect beyond the confines of Trinidad in other areas in the West Indies. With the passing of Dr. Dickson the Island of Trinidad has lost a skilled professional colleague, a generous and kindly friend, and an unselfish, public-spirited citizen.

W. PARRY MORGAN, M.D.

Lecturer in Bacteriology, Welsh National School of Medicine

We regret to announce the death on June 14 of Dr. W. Parry Morgan, well known as a bacteriologist in Cardiff, where he held important public and academic posts.

William Parry Morgan was a native of Cardiff and most of his working life was spent there. From the University College of South Wales and Monmouthshire he entered Clare College, Cambridge, where he won the Lady Clare scholarship and was 16th wrangler in the Mathematical Tripos of 1898; he went on to study medicine at St. Mary's Hospital with a university scholarship. Having taken the degree of B.Sc. Lond. and the M.R.C.S., L.R.C.P. diplomas in 1904, he served as house-surgeon, house-physician, and resident obstetrical officer at St. Mary's, took the M.A. and B.Ch. at Cambridge in 1906, and the M.B. in 1908; for his M.D. thesis in 1917 he was named *proxime accessit* for the Horton Smith prize.

From 1908 to 1914 he held the post of assistant in the department of therapeutic inoculation at St. Mary's Hospital, but this was interrupted by a year's work in South Africa as research bacteriologist under the Witwatersrand Native Labour Association, for whom he prepared jointly with Sir Almoth Wright in 1913 a report on pneumonia. During the last war Dr. Parry Morgan held a temporary commission as captain in the R.A.M.C., working mainly in laboratories. He was then appointed pathologist and bacteriologist at the Glamorgan County and Cardiff Public Health Laboratory and lecturer to bacteriology in the Welsh National School of Medicine. He was the author of articles on the technique of artificial pneumothorax in the treatment of pulmonary tuberculosis, published in the *Lancet* in 1914 and the *Quarterly Journal of Medicine* in 1917; and a controversial paper read to the Pathological Section of the Royal Society of Medicine on the treatment of wound infections appeared in the *British Medical Journal* of May 13, 1916.

The death on June 13 at his home in Buckinghamshire of Dr. GEORGE EDWARD TWYNAM at the age of 53 removes one of the few remaining links with the early pioneers of Listerian surgery. Educated at University College Hospital, where he shared lodgings with three other students, one of whom was Victor Horsley, he qualified as M.R.C.S. in 1880 and took the L.R.C.P. in 1881. After doing a house appointment at his own hospital he obtained a post as house-surgeon in Sydney. When he arrived there he found the medical profession much interested in what they had heard and read of Lister's discoveries; but few of them had first-hand knowledge of the new antiseptic technique, and they welcomed a young surgeon who could show them how things were being done in London. The result was that Twynam soon found himself elected to the honorary staff of the Prince Alfred Hospital, Sydney, and later became lecturer on clinical surgery at the university. He was a successful general practitioner and consulting surgeon in Sydney for several years, but eventually returned home for private reasons. He then started in general practice in South Kensington, where he was well known for many years and was both popular with and respected by his colleagues. Some years ago he retired, at first to Sevenoaks and later to Buckinghamshire. He retained his physical vigour in marked degree: when well turned seventy he was accustomed to take country walks of thirty miles or even more, purely for recreation. He had many recollections of Sir Victor Horsley as a young man: one of Horsley's foibles which Twynam used to recount was his persistent refusal to pass his fellow students the mustard pot at meals; he held that mustard was an artificial stimulant to the gastric mœosa, as harmful as alcohol. You could get up and fetch it for yourself if you wished, but he wouldn't have act or part in the matter by passing it across the table.

The death of Dr. DOUGLAS DENT MALPAS has broken another link with Victorian life and manners. We lose thereby one of our most worthy colleagues in the outer world of general practice, where the limelight seldom penetrates but the traditions of the profession are upheld and its influence for good is felt both by patients and by the community. Son of the Rev. Henry Malpas of Bristol, Malpas studied medicine at Goy's, Aberdeen, and Paris, and, after qualifying as M.R.C.S. Eng. nearly 65 years ago, took his

M.B., C.M. at Aberdeen in 1878 and M.D. in 1881. For over thirty years he was in consulting practice among the British at Biarritz, where his professional skill and character of mind and heart won for him a position of considerable influence. He attended many distinguished visitors there, including King Edward VII, in a consultant capacity. After qualifying, he travelled in what is now called the Middle East and round the world for some eighteen months with a weakly patient, on the verge of a mental breakdown, for whom he and his wife made a home for thirty years—a severe test of Christian friendship. He was intensely religious, one of the quakerlike Plymouth Brethren, and maintained a keen interest in evangelistic work throughout his life. Distinguished in appearance, dress, and manner, he was essentially grave and serious, a blend of the Senator and Puritan. He retired to Boscombe during the last war, and died there on June 9 last in his ninetieth year. In 1886 Malpas married Sarah Culme Shepherd, who predeceased him. Their eldest son died of cerebrospinal meningitis in the Crystal Palace epidemic while on active service during the last war. The surviving son, Dr. Douglas Duacan Malpas, is in radiological practice at Bournemouth.

Medical Notes in Parliament

Pharmacy and Medicines Bill

In the House of Commons on July 8 Mr. ERNEST BROWN moved the Second Reading of the Pharmacy and Medicines Bill, which, he said, repealed the Medicine Stamp Duty in accordance with a promise given by the Chancellor of the Exchequer last April. Pointing out that the stamp duty yielded about £800,000, and the licence duty about £40,000, he said that the tax had become difficult to collect, if not unworkable. The same medicine might be sold in one shop without regard to tax, while in another shop tax would be paid. None of the exceptions was justified on grounds of public health, and the whole basis on which the duties rested was defective. The result of the application of the Purchase Tax to medicines at 16½% was that the estimated yield would be about £3,000,000 a year, or nearly four times the present annual yield of the medicine duties. The continuance and maintenance of the chemist's profession were essential to the welfare of the community, and the trading interests had reached an agreement on the various points concerned. The agreement was provided for in the Bill and was a solution which would safeguard the interests of chemists. There was no desire to interfere with the interests of legitimate herbalists.

SECRET MEDICINES AND ADVERTISEMENTS

The Bill regulated the trade in medicines and, in regard to secret remedies, the course had been chosen which was most likely to help. The brutally scandalous age of patent medicines was now largely a matter of the past, but in the present state of the law an opportunity still existed for the noscrupulous to trade on the fears of the uninformed and credulous. Any qualified person would in future be able to tell the value of any medicine and to advise the user accordingly. The only kind of medicines in which disclosure of ingredients was not required would be those supplied to individual persons and prescribed according to their needs, such, for example, as a mixture made up on a doctor's prescription.

Advertisements dealing with remedies for certain serious diseases or with articles for procuring abortion would in future be prohibited. Legislation of this kind already existed prohibiting the advertisement of articles recommended for the treatment of venereal diseases and cancer. The present Bill would prohibit the advertisement of such remedies as those for Bright's disease, cataract, diabetes, epilepsy or fits, glaucoma, locomotor ataxy, paralysis, and tuberculosis. The basis for this list was the report of the Select Committee of 1914, and the diseases had been selected because, like cancer and venereal disease, they were all of a serious nature, and were susceptible of alleviation, if not cure, by normal methods of treatment, and because it was dangerous in each case to delay seeking treatment by resorting to quack medicines. The Bill also made minor amendments to the Pharmacy and Poisons Act, and was the first step in the journey on the road to reform.

LONG-OVERDUE MEASURE

In the debate which followed, Mr. BEVERLEY BAXTER, speaking as a member of the Committee of 1937, said that although the Bill looked very innocent and constructive, it had a tendency to place monopoly powers in the hands of the British Medical Association, which was a very reactionary institution. There was a tendency to ban things too much. He would rather have a system of inquiry into and judgment on the efficacy of the various remedies. Mr. J. GRIFFITHS said that the only way to prevent the exploitation of the poor was by providing a real State Medical Service.

Prof. HILL extended a warm welcome to the Bill, which, he said, was long overdue. We had been too respectful and tolerant of vested interests in the past, which had exploited the sick and suffering, and it was time we realized that, *laissez faire* in this matter led to cruel scandals. He complimented the Minister of Health on his courage in bringing in the Bill. Mr. H. STRAUSS said that the Bill would still permit the kind of advertisement designed to produce a sense of ill-health. The best way to stop these advertisements would be to have distinguished doctors broadcasting on the value to be placed on the advertising of some kinds of medicine.

Sir ERNEST GRAHAM-LITTLE supported the Bill, but regretted that so little was proposed to be done by it. A larger quantity of medicines was consumed by the people of this country than anywhere else in the world. It was not good that persons should dose themselves without check. One reason for the immense increase in the use of medicines was the power of the Press. He did not think that the proposal for restricting advertisements of medicines went far enough.

Mr. R. T. DAVIES said that the Bill did not deal with advertisements of surgical appliances, such as aids for the deaf, which were often sold at high prices. He asked if the word "advertisement" covered speeches by quacks in the market-places as well as the printed word.

STATE REGISTER OF PROPRIETARY MEDICINES

Mr. WAKEFIELD urged that the Bill did not go far enough in the control of proprietary medicines, but hoped that it was only a beginning. Many persons, he said, felt that the State should take a greater responsibility for the proprietary medicines now offered for sale. The goal to be aimed at should be, if a medicine were valuable and the claim made for it reasonable, the State should authorize its sale. If the medicine were banned it should be on the responsibility of the State entirely to prohibit the sale. That would mean the introduction of a State register of proprietary medicines.

Sir FRANCIS FREMANTLE expressed regret that it had not been found possible to include advertisements of surgical appliances in the Bill. The Bill made a beginning in the stopping of fraud and would help toward the promotion of truth in the application and use of medicines. He regretted that the Bill did not compel disclosure of the quantity of the component parts of the preparations. The gibes which had been made against the British Medical Association were most unfair and unjust. He expressed the hope that in a few years' time a useful amending measure would evolve from the experience gained by the working of this Bill. It was ridiculous to describe the Bill as hasty legislation. Captain ELLISTON said he hoped to put forward amendments in committee for the enforcement of its provisions. The quantity as well as the nature of the substances in any preparation ought to be disclosed.

Miss HORSBRUGH, replying to the debate, denied that the Bill prejudiced the little man compared with his bigger competitor. Herbalists, if they were not carrying out the law, would be shut down after the Bill had passed. The only difference would be that they, like other people, would be compelled to put the ingredients of the mixtures they sold on the bottles or packets. No impediment would be placed on the sale of such drugs as insulin; the object of the Bill was not to prevent things being sold but to let the public know what they were buying. The Bill did not profess to deal with advertisements as a whole, but only certain classes of advertisements. The fact that the ingredients of a remedy had to be disclosed would, in many cases, stop what might be a rump.

The Bill was read a second time.

The Milk Situation

In the House of Lords on July 1 Lord TEVIOT called attention to the present agricultural policy of the Government, especially in regard to the best treatment of the land to produce the maximum quantity of healthy food.

Lord DAWSON said that the present consumption of milk was probably greater than at any other period. It had contributed in no small measure to the good health of the people, notwithstanding the rationing of staple foods and the inevitable wear and tear of the times. While the consumption was increasing, however, the production of milk was decreasing. We wanted to prevent illness and maintain health, and for that milk was necessary. Last winter we were fortunate in the matter of epidemic illness, but we could not be sure that we should have equally good fortune in the coming winter. We must, therefore, maintain our dairy herds at almost any cost. We could curtail meat and even cheese so long as there was sufficient milk. Milk was the keystone of the nutritional arch, and if we interfered with that keystone we should weaken the whole fabric.

The problem of milk production was concerned with winter feed for dairy cattle. If food production was to be maintained in the coming winter, dairy cattle must have priority of home-grown feeding stuffs and the balance which they needed above these must be obtained by importing feeding stuffs. The only alternative, if we could not do something to stop the diminishing production of milk by giving real priority to dairy herds, was to reduce the consumption of milk in this country. That would, however, inevitably entail risks in the coming winter and might even be fraught with danger. He hoped that a compulsory system of milk rationing, with all its attendant evils, could yet be avoided.

The Services

BIRTHDAY MEDICAL HONOURS

The names of the following members of the medical profession in the Services appear in the Birthday Honours List in a *Supplement* to the *London Gazette* published on July 1.

K.B.E. (Military Division)

HAROLD EDWARD WHITTINGHAM, C.B.E., M.B., Ch.B., F.R.C.P., Air Marshal, Royal Air Force. Honorary Physician to the King. Director-General of Medical Services, Air Ministry.

C.B. (Military Division)

CYRIL VERITY GRIFFITHS, D.S.O., M.R.C.S., L.R.C.P. Surgeon Rear-Admiral, R.N. Honorary Physician to the King. Deputy Medical Director-General, Admiralty.

ROBERT CECIL PRIEST, M.D., F.R.C.P. Major-General, late R.A.M.C.; Honorary Physician to the King. Consulting Physician to the British Army and Professor of Tropical Medicine, Royal Army Medical College.

O.B.E. (Military Division)

ABANI MOHAN CHAUDHURI, M.B., F.R.C.S. Major, I.M.S. EDWARD CAWDRON CORDEAUX, D.S.O., M.B., B.S. Acting Captain, R.N.

RONALD GRANT DINGWALL, M.B., Ch.B. Surgeon Lieutenant-Commander, R.N.

WILLIAM RALSTON DUNCAN HAMILTON, M.B., Ch.B. Major (Temporary, Lieutenant-Colonel), R.A.M.C. THOMAS MADILL, M.B., B.Ch. Surgeon Commander, R.N.

M.B.E. (Military Division)

GEORGE JAMESON CARR, M.B. Lieutenant (Temporary Major), R.A.M.C.

Mentions in Dispatches

Surgeon Lieutenant John Fawcett Hughes, R.N., Surgeon Lieutenant Frederick Bagot, R.N.V.R., Surgeon Lieutenant Robert Lewis Ferguson, R.N.V.R., Temporary Surgeon Lieutenant Richard Constant Ponder, R.N.V.R., and Temporary Surgeon Lieutenant John Heaton Simpson, R.N.V.R., have been mentioned in dispatches for good services in the last six months or more of war.

R.A.F. AWARD

The King has awarded the Air Force Cross to Flight Lieutenant William Kilpatrick Stewart, R.A.F.V.R.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

Temporary Major HUGH EMBRY BONNELL lost his life by enemy action in May at the age of 35. He was educated at the University College of South Wales and Monmouthshire and at King's College Hospital, qualifying M.R.C.S., L.R.C.P. in 1931. He was chiefly interested in pathology and held appointments in this specialty at King's College Hospital, Manchester Royal Infirmary, and the Royal East Sussex Hospital, Hastings, before becoming pathologist to the East Ham Memorial Hospital and consulting pathologist to the Runwell Hospital, Wickford.

Prisoner of War

Captain Eric Davey Trounce Lewis.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Enteric fever and dysentery, which in recent weeks have been on the increase in England and Wales and in Scotland, have declined in both countries during the week under review. Cerebrospinal fever has increased slightly and, in England and Wales, diphtheria and whooping-cough to a greater extent. Acute poliomyelitis, which tends to appear in June, is less than one-half as frequent as in the corresponding week of 1940.

Cerebrospinal Fever

For the second week in succession the incidence of cerebrospinal fever has exceeded that of the corresponding period of last year; it is present in over two-thirds of the administrative areas of England and Wales, but only in five were more than 9 cases notified—namely, Lancaster 34 (Blackpool 2, Liverpool 11, Manchester 2, Rochdale 2, Nelson M.B. 3, Whiston R.D. 2, and 1 each in Bolton, Oldham, Southport C.B., Ashton-under-Lyne M.B., Brierfield U.D., Denton, Fulwood U.D., Heywood M.B., Huyton with Roby U.D., Leigh M.B. and Poulton le Fyde U.D., Warrington R.D.); Yorks, West Riding 21 (Sheffield 8, Huddersfield 2, Leeds C.B. 2, and 1 each in Barnsley, Bradford, Rotherham C.B. and R.D., Wakefield, York, Adwick-le-Street U.D., Brighouse M.B., Harrogate M.B., Swinton U.D., Sedburgh R.D.); London 13 (Bethnal Green and Hammersmith 2 each, Camberwell, Fulham, Holborn, Islington, Lambeth, Lewisham, St. Pancras, Poplar, Stepney 1 each); Gloucester 12 (Bristol 8, Gloucester C.B. 1, R.D. 1, Cheltenham 2; Middlesex 12 (Enfield U.D. and Hornsey M.B. 2 each, and 1 each in Feltham U.D., Friern Barnet U.D., Hayes and Harlington U.D., Hendon M.B., Tottenham M.B., Twickenham M.B., and Wembley M.B.); Glamorgan 10 (Cardiff 2, Swansea 1, Caerphilly U.D. 1, Gelligaer U.D. 1, Neath M.B. 2, Ogmere and Garw U.D. 1, Pontardawe U.D. 2). In Scotland fifteen counties or burghs were affected, chiefly, Glasgow 15, Edinburgh 7, and Ayr county 5.

Dysentery and Enteric Fever

Dysentery appeared in England and Wales in eighteen areas and enteric fever in twenty-six, as against twenty-one and twenty-five respectively in the previous week. The former was fairly widely distributed in Lancaster. The paratyphoid fever epidemic in Birmingham and surrounding district, referred to in these columns last week, continues. In Lancaster the 32 dysentery cases notified occurred in Blackburn 4, Liverpool 1, St. Helens 3, Lancaster M.B. 1, Blackburn R.D. 10, Preston R.D. 3, Warrington R.D. and Whiston R.D. 5 each. More than one-half the cases of enteric fever notified in the whole country belong to the Birmingham outbreak—namely, Warwick 43 (Birmingham 24, Coventry 5, Solihull U.D. 11, Sutton Coldfield M.B. 2, Meriden R.D. 1); Worcester 11, all in Bewdley M.B.; Stafford 6 (Smethwick 3, Stoke-on-Trent, Aldridge U.D., and Lichfield M.B. 1 each). The only other counties affected to any extent were Leicestershire 12 (Leicester 8, Barrow-upon-Soar R.D. 2, Billesdon R.D. 2), and Somerset 12 (Taunton 8, and 1 each in Wellington U.D., Bathavon R.D., Chard R.D., and Long Ashton R.D.). In Scotland there were 25 cases of paratyphoid B fever, of which 13 were in Dundee; and 5 of typhoid (3 in Glasgow and one each in Angus county and Ayr burgh).

INFECTIOUS DISEASES AND VITAL STATISTICS

No. 24

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 14.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland. Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 125 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	236	13	42	2	10	232	11	62	1	7
Deaths	—	—	4	—	—	—	—	5	—	—
Diphtheria	853	36	200	21	29	698	40	266	35	32
Deaths	26	1	5	—	—	12	—	5	1	2
Dysentery	97	8	43	—	—	24	1	31	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	3	1	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	2	—	—
Enteric (typhoid and paratyphoid) fever ..	146	4	26	3	4	77	4	6	6	1
Deaths	—	—	—	—	—	1	—	—	—	—
Erysipelas	—	—	41	8	3	—	18	29	1	1
Deaths	—	—	—	—	—	—	1	—	—	—
Infective enteritis or diarrhoea under 2 years	23	1	4	4	1	43	7	11	7	8
Deaths	—	—	—	—	—	—	—	—	—	—
Measles	11,145	324	112	1	12	9,210	23	1,877	3	61
Deaths	9	2	—	—	—	6	—	4	—	2
Ophthalmia neonatorum	81	6	23	—	—	90	11	32	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza* ..	804	33	2	—	2	551	20	2	4	8
Deaths (from influenza) ..	19	2	2	—	1	11	2	1	—	—
Pneumonia, primary ..	—	23	195	8	8	—	20	176	6	12
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute ..	1	—	—	—	—	1	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute ..	5	1	—	2	2	11	—	1	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	1	1	7	2	1	3	3	10	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	109	11	16	—	2	161	12	13	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	973	30	131	49	27	888	28	105	37	57
Deaths	1	—	—	—	—	—	—	—	1	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	4,764	140	339	2	5	744	7	74	1	13
Deaths	19	2	10	—	—	3	—	—	—	—
Deaths (0-1 year) ..	299	21	77	23	15	281	27	61	23	25
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) ..	4,210	515	633	204	152	4,333	706	605	170	153
Annual death rate per 1,000 persons living ..	—	—	13.9	13.5	—	—	—	12.2	11.3	13.4
Live births	5,158	396	904	362	184	6,149	915	999	365	280
Annual rate per 1,000 persons living ..	—	—	18.4	24.0	—	—	—	13.2	24.4	22.3
Stillbirths	194	10	34	—	—	229	42	31	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	36	—	—	—	—	33	—	—

* Data for England and Wales, London (administrative, health, and other counties) and other overseas territories are based on figures received from Northern Ireland.

Medical News

The British Institute of Philosophy announces that a short address, entitled "The War and Philosophy," will be delivered by Sir W. David Ross, Provost of Oriel College, Oxford, at University Hall, 14, Gordon Square, London, W.C.1, at 1.45 p.m. on Tuesday, July 22. Cards of admission can be had from the Director of Studies at University Hall.

The summer meeting of the Association of Clinical Pathologists will be held at Cambridge on Saturday, July 19. The scientific part of the proceedings will open in the University Department of Pathology at 10 a.m., and the day's programme will close with dinner in Trinity Hall at 7 p.m. A number of papers and demonstrations have already been promised. Members who notify their intention of attending will receive information as to accommodation and final arrangements for the meeting from Dr. C. H. Whittle, Brookfield, Trumpington Road, Cambridge.

The following medical promotions in and appointments to the Order of the Hospital of St. John of Jerusalem were announced in the *London Gazette* of June 27. As Knights: Lord Horder, G.C.V.O., Major-General the Hon. Sir E. Fiset, C.M.G., D.S.O., V.D., Lieut.-Colonel I. Fraser, S. McCormac. As Commanders: Captain R. Williams, G. B. Peat, Colonel W. W. White, V.D., Major-General Sir Gordon G. Jolly, K.C.I.E., I.M.S., Majors S. Copley and A. T. Smith. As Officers: J. E. Dovey, Colonel J. Pratt-Johnson, M.C., V.D., Captain G. W. C. Bissett, J. A. Corrigan, H. A. Creighton, A. G. Morris, E. W. Stewart, J. Ferguson, H. B. Pierce, A. M. Robertson, J. Wells, Lieut.-Colonels J. W. Tice, F. A. Barker, C.I.E., O.B.E., I.M.S. (ret.), and W. S. C. Copeman, R.A.M.C. As Associate Officer: B. W. Advani. As Serving Brothers: C. R. Hoskyn, D. J. Nicol, H. Fallows, J. L. Lewthwaite, C. Lundie, B. W. MacDonald, C. Marks, J. Gillan, J. R. Larson, M. V. Roberts, E. L. Davies, H. Lloyd. As Associate Serving Brother: S. J. Hoffman. As Serving Sister: Mary I. Place.

Profs. Henrik Dam the biochemist, and George de Hevesy the chemist, of Copenhagen have been appointed lecturers at Harvard University for the current academic year.

A central health institute has been founded in Turkey. It will contain a school for public health and an institute of hygiene.

The New York State department of health reports that 434 typhoid carriers, exclusive of those in State institutions, were under supervision in Upstate New York at the close of 1940. Thirty-seven new cases were added during the year.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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QUERIES AND ANSWERS

Obstinate Oedema

"X. Z." asks for advice in the case of a man of 45 with retinitis pigmentosa, six toes on each foot, a mental defect; he is not obese but has oedema of both legs, and his underclothes tend to fall into small holes. At times the oedema extends and becomes very marked in the eyelids and around the neck and scrotum and penis. There is no albuminuria; blood pressure 140/86. The oedema does not respond to caffeine or mercurial diuretics or to increase or decrease in salt or protein. He refuses hospital investigation.

Ragged Finger-nails

"R. S. M." writes: "F. R. S." may be interested in the few points I can add to his description (June 27, p. 952). The patients in my three cases, aged 50 to 60, are closely related, active, healthy people without digestive or cardiac troubles. All originated before food restrictions and have not grown worse since. The fingers very often "go dead." This is followed in one case by chilblains, often involving the nail-beds. When the inflammation subsides the nail is partially detached from its bed, and as it grows becomes longitudinally ridged and brittle. In a second case the nails are almost lost; in the third mild persistent infection is superadded. Toe-nails are normal. Calcium and parathyroid are very useful in controlling the chilblains.

Income Tax

Purchase of Additional Car

"J. M." has a car which requires extensive overhaul and spare parts will be difficult to obtain. In the meantime he has obtained a similar second-hand car and is using it as a spare car.

* * The cost of the additional car ranks as capital expenditure and, of course, depreciation allowance is due in respect of it. On the other hand spare parts represent ordinary maintenance and their cost can be charged against current earnings. If one of the two cars is scrapped and parts of it used for repairing the other, a rather difficult situation will arise. It is thought that in such circumstances the inspector of taxes may agree to allow as a deduction the market price of the parts so used.

LETTERS, NOTES, ETC.

The Unburned Cornea

In one of Jules Verne's books the hero has his eyes put out with red-hot irons, but a film of tears over the cornea is turned into steam, and when the lid burns finally recover it is found that the cornea, thanks to this protective layer, has not been burned at all. At the June meeting of the Section of Ophthalmology of the Royal Society of Medicine Mr. T. M. Tyrrell, who read a short paper on "War Injuries of the Eye," gave an up-to-date example. A boy, eleven years of age, reputed to be "England's youngest air-raid warden," was admitted to hospital with a badly burned eye. His air-gun had become blocked by a pellet jamming in the rifle, and to free it he fired several others, which all stuck behind the first. Then he had the bright idea of heating the barrel in a watchman's coke fire, and, observing some melted lead run out of the muzzle, he put the muzzle to his eye to see if it was clear, whereupon a further stream of hot lead entered the eye. Mr. Tyrrell was able to pick out a complete cast of the conjunctival sac, and beneath it he found the cornea quite clear and bright, though the conjunctiva of the fornices was oedematous and parboiled. In the result there was nothing worse than a small symblepharon of the lower fornix. Burns of the cornea are very uncommon, and another speaker in the same discussion said that he, too, had seen a case in which molten metal had entered right into the eye and all that he had had to do was to take off a cast of the front of the cornea, leaving the cornea intact. It was suggested that the fluid in which the cornea was bathed was in a colloidal state and formed a protective layer which would not conduct heat, so that the cornea escaped undamaged.

Earlier Time for Receipt of Advertisements

Owing to the ever-increasing difficulties of production under war conditions it is now imperative that advertisements announcing vacancies for medical officers of health, hospital posts, locum-tenents, etc., should reach the Advertisement Manager, "B.M.J.," Tavistock Square, W.C.1, not later than first post on the Monday of the week of issue. If proofs are required the "copy" must reach this office on the Wednesday in the week preceding publication of the announcement.

The Medical Directory

The Editor of the *Medical Directory* (104, Gloucester Place, Portman Square, London, W.1) writes: To maintain the accuracy of our annual volume we rely upon the return of our schedule, which has been posted to each member of the medical profession. Should the schedule have been lost or mislaid we will gladly forward a duplicate upon request. The full names of the doctor should be sent for identification.

Corrigendum

In the article headed "Lactose for Prevention of Odour in the Closed-cast Treatment of Compound Fractures," by Drs. ALLAN D. WALLIS and MARGARET J. DILWORTH (May 17, p. 750) the first sentence of the third paragraph should read as follows: "In selecting a sugar for use in wounds lactose was chosen instead of glucose because, since its molecule is larger, *first*, a solution of it is isotonic with the blood contains more sugar, and, *second*, loss by absorption from the wound should be less."

PROBLEMS OF THE CIRCULATION*

BY

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Capacity of the Circulation

One of the greatest advances in regard to the circulation in the last twenty-five years has been the recognition of its variable capacity. It had long been recognized clinically that circulatory collapse might occur from the rapid removal of a large amount of fluid which had been compressing vessels in the chest or abdomen, or from excessive dilatation of the skin vessels by heat. It was recognized, too, that the cross-area of the open capillary bed, and therefore its capacity, was enormous; but not until the work of Dale and Richards (1918) and of Krogh (1918-19) was it realized that by far the greatest number of the capillaries in the body are not usually open, that they only dilate when local metabolic needs demand a greater supply of blood, and that a generalized opening leads to the capillaries' soaking up the blood like a sponge, with the result that circulatory failure occurs from a failure of the blood to return to the heart. This occurs when the capillaries dilate as a result of the action of toxins like histamine, or when there is loss of the nervous control of the blood vessels of a sufficiently large area.

The treatment of the condition when it occurred or was thought to have occurred clinically was obviously the supply of additional blood or blood substitutes to the circulation. The problem is not, however, quite so simple; for dilated capillaries are abnormally permeable—as we see typically in pleurisy with effusion—and allow the albuminous fluid of the blood to pass into the tissues in abnormal amounts. The use of blood has the advantage that its corpuscles convey the oxygen and assist in carbon dioxide removal, which is so vital for the prevention of generalized and fatal asphyxia; but the relatively low osmotic pressure of blood allows the passage of fluid through the dilated capillaries to continue. Various attempts have been made to supply more concentrated fluid. Gum-saline of a higher osmotic pressure than blood was eventually recommended (Erlanger and Gasser, 1919) as an improvement on the 6% solution originally advocated by Bayliss and made the subject of these lectures in 1918.

This problem was also made the subject of an Oliver-Sharpey lecture by Dale in 1923.

The availability of large numbers of blood donors has made possible the provision of concentrated or dried blood plasma or blood serum, which may be used in whatever concentrations are desired. These substances have the advantage that by their osmotic action they withdraw some of the fluid which has seeped through the capillary walls.

In actual practice these fluids are of special value in all varieties of haemorrhage in which there is not an increased capacity of the circulation but a diminution as a result of the constriction of vessels by the vasomotor centre, which compensates so far as possible for the loss of blood. When there is an increased capacity of the circulation there

is good evidence, as indicated in the next section, that the problem is by no means so simple as originally supposed, but it has been demonstrated, largely as a result of the work of Blalock (1931), that fortunately many cases of low blood pressure which were thought to be due to increased capacity of the circulation are in reality due to concealed haemorrhage.

The Peripheral Resistance

It has long been understood that without resistance to the outflow of blood from the arteries and elastic vessels a diastolic blood pressure would not be maintained. In these days of war we see the similar necessity for a nozzle on a fire hose if we are to obtain a constant jet of water during the time the pump is filling. Before 1918 it was taught in regard to the circulation that since the cross-area of the circulation was so large the peripheral resistance was located solely in the arterioles.

The recognition of the fact referred to in the previous section, that the majority of capillaries were normally not open but closed, led to other considerations, and Dale and Richards (1918) emphasized that a fall of peripheral resistance was in part responsible for the fall of arterial pressure due to histamine. It was amply confirmed by Hemingway and McDowall (1926) and by McWhan and McDowall (1937) that histamine caused a fall of peripheral resistance accompanied by increased venous outflow in limbs perfused with saline solutions.

This factor of the fall of peripheral resistance has been largely ignored in treating cases of low blood pressure because, as has been said, a generalized dilatation of blood vessels, whether produced as a result of loss of nervous activity by asphyxial products or by other toxins such as histamine acting directly on the capillaries, greatly reduces the return of the blood to the heart and masks the effects of the fall of peripheral resistance so far as venous return is concerned. The importance of this fall of resistance becomes apparent only when an attempt is made to bring about a recovery of the arterial blood pressure by the injection of blood or a blood substitute. Experimentally by a simple model, or by animal experiment, it is easy to demonstrate, since it is a simple fact of hydrostatics, that if the peripheral resistance is reduced it is not possible to cause a return of the arterial pressure to normal without at the same time producing a considerable rise in venous pressure. The most convincing experiment in relation to the problem is to study the effect of the injection of fluid into the circulation after section of the spinal cord high up. This section brings about a generalized dilatation of vessels, resulting in a fall of arterial and venous pressures. If an attempt is now made to return the blood pressure to normal by the injection of fluid the result is a complete failure, because there is not only an increased capacity but also a fall of peripheral resistance. In spite of a maximum output of the heart, enough fluid cannot be pumped out to maintain a high arterial pressure when the peripheral

* The second Oliver-Sharpey Lecture to the Royal College of Physicians of London, 1941.

resistance is so low. The example taken is an extreme case which rarely occurs, but it serves to indicate a point that has been commonly overlooked. It is as if we attempted to produce a jet from a hose without a nozzle by working the pump to the maximum of our ability. In the case of the circulation the venous pressure rises enormously, and this cannot be without importance, for it must be followed by all the sequelae which result from venous congestion. Further, the capillary pressure will be raised, and this will promote still further the seepage of fluid from the blood into the tissues—a fact which is especially important in relation to the lungs and pericardium.

How to restore the peripheral resistance once it has fallen becomes a subject of major importance, for often the patient dies in spite of all treatment. The difficulty is that we know of no drug which will constrict all the blood vessels in the body without impairing the heart. Drugs such as adrenaline, ephedrine, and pituitary extract merely drive the blood from the blood depots into the muscles, and their action is quite short-lived. Adrenaline and ephedrine exhaust the heart, and if continued may, as shown by Freeman (1933), of themselves bring about a fall of arterial pressure, it is thought, through causing asphyxia of the areas they shut down. Pituitary extract acts dangerously on the heart. Barium is too toxic. The preparation veritol (β (*p*-oxyphenyl-isopropylmethylamine) is probably the best, but its success has not been very great. It may be that a more suitable drug or combination of drugs will be discovered, but meantime it is as elusive as the philosopher's stone. One of the greatest difficulties in the problem is that in very few instances is any attempt made to diagnose accurately the cause of the fall of blood pressure which goes under the general name of shock, and until this is done as a routine there will be confusion between those cases in which there is a fall of peripheral resistance and those in which there is simple loss of circulating blood.

When possible we have to try to prevent the occurrence of the fall of arterial pressure, and a complete knowledge of how this may be brought about is of the utmost importance. I have already discussed this in a recent lecture given to the Royal College of Surgeons (McDowall, 1940).

The Problem of Fainting

Fainting, although quite a common phenomenon, offers a number of interesting problems. It occurs when the arterial pressure falls, and especially when it falls rapidly. There is no hard-and-fast line between the unconsciousness of fainting and that of shock, into which it may merge as in haemorrhage, but it is convenient to consider fainting as an evanescent phenomenon. Falls of blood pressure occur in cardiac impairment and from dilatation of vessels, separately or combined. A vessel dilatation which commonly produces an evanescent unconsciousness is the result of excessive external heat and toxins—notably that of influenza—which impair the vasomotor system. In the latter case the fall of arterial pressure through failure to adapt to the erect posture may be very considerable. The failure of the vasomotor system may be the result of fatigue of the system, as is seen in the fainting of soldiers on parade or lining the streets—especially on a hot day.

Since consciousness depends on the amount of oxygen supplied to the cerebrum, any state which impoverishes the oxygen-carrying power of the blood must increase the liability to fainting: of these, haemorrhage—notably menstruation—and anaemia are the most common. Muscular exercise, by opening up the vessels of the muscles, may in such persons produce fainting. A similar type of fainting may occur from sudden removal of pressure on vessels in the chest or abdomen. Interference with the pulmonary circulation also causes fainting. This may be the result

of the pooling of blood in the chest or of the excessive negative pressure of whooping-cough; it may also be caused by compression of the pulmonary vessels from excessive intrathoracic pressure produced by severe expiration with the glottis closed, as in straining at stool.

Fainting is not, however, confined to those who have any apparent circulatory deficiency, and may, as is well known, be produced psychologically—the psychologists would have us believe as a mental escape from environment from which physical escape is impossible. Lewis (1932) has described the phenomenon as a vasovagal syndrome because it is associated with a fall of blood pressure and slowing of the heart; it is presumed from an increase in the depressor reflexes. It would, however, be much better to look upon the condition essentially as a release phenomenon, the result of sympathetic paralysis or inhibition; for section of the sympathetic produces a similar result experimentally. One of our problems is whether the unconsciousness is in part the cause of the fall of pressure, for there is increasing evidence that sympathetic activity is much more related to the activity of the cerebral cortex than hitherto supposed. Since, however, unconsciousness produced in other and diverse ways does not necessarily result in such a marked fall of arterial pressure, it would seem that by some unknown means the psychological state affects sympathetic centres and that the unconsciousness is produced secondarily.

The well-known fact that the vessels of the skin are intensely constricted offers many problems. It is generally agreed that the fall of blood pressure is due to a dilatation of vessels somewhere, but evidence as to which vessels are dilated is somewhat circumstantial, and is assumed from the persistence of the fall of blood pressure after atropine has been given to prevent the cardiac slowing. The best direct evidence on the point is possibly that of John Hunter, who one day, when bleeding a patient, observed that the venous blood turned bright red just before the patient fainted. Since the skin vessels were presumably constricted we must conclude that there was a dilatation in the vessels of the muscles. The fact that the heart is slowed as a result of increased vagus action would also lead us, as suggested by Lewis, to conclude that the vascular component of the depressor reflexes, which, like the cardio-inhibitory reflex, is activated from the carotid sinus and cardio-aortic region, is also increased. This would bring about a generalized dilatation of vessels. If this explanation is correct it is difficult to understand why the skin vessels escape this general dilator reaction, for all experimental work goes to indicate that the skin vessels take part in the dilator reflexes from the aorta and carotid sinus. It may be that the vessels of the skin are differently controlled—perhaps they respond specially to a fall of internal pressure. Actually, as has been said, skin vessels respond to adrenaline differently from those of muscle, but the acute fall of blood pressure and the slowing of the heart preclude the possibility that adrenaline is concerned in the reaction. However it is produced, it must always be considered possible that the skin constriction is part of a hitherto undescribed defence reaction, of which immobility, simulating death, is a part. Such reactions are common among the lower animals.

High Blood Pressure

No consideration of the problems of the circulation would be complete without reference to high blood pressure, and its importance cannot be overestimated, especially at a time when too many public men are apt to be its victims. The subject has been set out by a very large number of writers for many years, and I shall not attempt to do more than give a survey of the problem as it now

appears to stand. Most valuable details on the subject have been published by Dawson (1925), who emphasized the mental factor; by de Wesselow (1934), who gave a most exhaustive review of the associated chemical changes; and by Pickering (1939), who has made extensive experimental studies of cases.

For the most part the problem now centres round the question of how the increased peripheral resistance is produced, but in regard to this there has unfortunately been a distinct tendency for those interested to take sides. Some suppose a neurogenic hypothesis, and others a chemical one in spite of the fact that admittedly the high blood pressure may be produced from a variety of causes and may be but a common symptom. Further, the two hypotheses are not so mutually incompatible as at first sight appears.

There are certain incontrovertible facts which seem to be, but may not be, relevant. High blood pressure occurs in the following conditions: mental stress, severe exercise, adrenal tumours, nephritis, gout, eclampsia, chronic lead or alcohol poisoning. Experimentally, temporary rises may be produced by stimulation of sensory nerves, of the sympathetic direct or through the vasomotor centres, by oxygen want or accumulation of carbon dioxide, and by the injection of extracts of the adrenal, the pituitary, the cortex of the kidney known as renin (Pickering and Prinzmetal, 1937; Tigerstedt and Bergman, 1898), and of certain pressor amines (Barger, 1914). It may also occur in suitably rested animals as an overcompensation to the injection of depressor substances such as histamine (McDowall). A persistent rise of pressure may also be produced experimentally by partial occlusion of the renal arteries (Goldblatt, Lynch, Hanzal, and Summerville, 1934). This fact, together with the occurrence of high blood pressure in nephritis and the presence of a pressor substance (renin) in the kidney, has caused an undoubted and justifiable bias of opinion towards the view that the kidney is somehow concerned: but, in spite of most painstaking endeavour, conclusive evidence regarding the exact factor concerned is lacking. No pressor substance has been demonstrated in the blood of patients suffering from any variety of high blood pressure. It cannot be dialysed out, nor has the injection of large quantities of blood from patients into normals any effect (Pickering, 1935-6; Prinzmetal, Friedman, and Rosenthal, 1936). That, however, is not to say that no pressor substance is present, but merely that the means of testing for it are inadequate. It may be that the pressor substance is present only in very small amounts but that its effects are cumulative on the arterial wall. It should, however, be pointed out that no substance having such an action has yet been discovered. Further, it is possible to inject into animals a dose of adrenaline or pituitary which will constrict the skin very considerably yet be insufficient to raise the blood pressure. The blood pressure is really too crude a criterion of the existence of small doses of a pressor substance. It is also possible that normal subjects are more capable of destroying the chemical substance than those with hypertension, and therefore it is not possible to demonstrate the action of the pressor substance on the normal circulation. It is possible to carry this idea still further and to reverse the usual chemical conception of hypertension and suggest that the primary fault is failure to destroy a pressor substance which may exist normally in the blood or be liberated as a result of some pathological process. The view, however, has considerable experimental support, for the blood of hypertensive dogs has been found to be more pressor if the kidneys of a recipient dog are removed, and may explain why it is that removal of one kidney in man may occasionally result in a rise of blood pressure, and why the blood of hypertensive patients may have no effect on normals. Already, too, there is evidence

that extracts of normal kidney may be of benefit in certain cases of high blood pressure (Grollman *et al.*, 1940; Pa *et al.*, 1941). There can be little doubt that the study of experimental hypertension produced by compression of arteries is of very special importance. It indicates, for example, that it is possible to produce a persistent high blood pressure of renal origin although there is no evidence of renal disability from a study of the urine. The differentiation between so-called essential hypertension and that chronic nephritis may therefore be quite artificial and of a matter of degree of kidney damage.

The Nervous Hypothesis of Hypertension

Those who support the nervous hypothesis have likewise or even more so, failed to produce conclusive evidence. There seems to be little doubt that hypertension in man is a disease of civilization. It is stated to be absent among the lazy African natives, and affects in a remarkable degree some of the most active persons of our time, but statistically accurate data on this subject are difficult to obtain. In certain families there is a tendency to the condition has been noted by many observers. Dawson, however, suggests that the high blood pressure is not produced by striving, but that an existing tendency or trait is made manifest by striving. It is easy to imagine that sustained mental strain would bring about constriction of the peripheral vessels and many anxious patients appear to be in such a state. Such stress is, however, accompanied by cardiac acceleration. Some observers have found that as a rule the blood pressure is appreciably less in patients examined at home than in the same patients examined in the clinic, and there can be no doubt that blood-pressure readings are of little value unless the patient is in a state of mental quiet and quite familiar with the application of the sphygmomanometer armlet, etc. The effect of mental factors appears to be indicated by the fact that in some patients, a large dose of a sedative may reduce the pressure and in some there is an increased metabolic rate. This would suggest that a general increase in sympathetic activity occurs, and in this connexion it is of some interest to note that very high blood pressures are common in male cats during the spring sexual season—when the sympathetic is very active (Arridge, McDowall, and Mathur, 1932). On the other hand there is no evidence of a general increase of sympathetic activity which would produce a rapid heart rate, a dilated pupil, or sweating.

We have therefore to ask ourselves, Can mental strain produce more remote effects on the circulation? There are several possibilities. That which since the time of Savile has received most attention is the possibility that frequent use of the arterial muscle may lead to its hypertrophy and that as a result the lumen becomes narrowed. Several workers have attempted to repeat the observation of Savile—that the muscle of the media of the arterial wall was hypertrophied—with varying results. The difficulty is that of deciding when hypertrophy of arteries of different sites is present. The possibility that hypertrophy actually interferes with function has also been considered by some, but is difficult to imagine; but such a state has been shown to exist in the hearts of racing greyhounds, in which cardiac hypertrophy inside a relatively fixed pericardium may lead to cardiac impairment, which is relieved by slitting of the pericardial sac (O'Shaughnessy).

Pickering (1935) and Prinzmetal and Wilson (1936) claim to have negated the nervous hypothesis by finding that hypertensive subjects showed no greater increase than normals of the blood flow through the band when its vasomotor control was removed by raising the body temperature. How far this conclusion is valid is, however, a little uncertain. It excludes certainly any of the immediate

effects of increased sympathetic action, which, as has been said, are already probably eliminated by the absence of a fast heart, but it does not exclude the possibility of hypertrophied arteries, which could still dilate to loss of vasomotor control or to suitable chemical stimuli. In regard to this latter point it ought to be mentioned that a fall of arterial pressure does not necessarily mean that the vessels concerned in a high blood pressure have dilated. Histamine or amyl nitrite, for example, may lower the blood pressure in hypertensive patients by dilating the capillaries and producing capacity effects; indeed, histamine is known to lower arterial pressure while actively constricting arteries. The finding that certain vasodilator drugs lower the blood pressure in cases of hypertension is of no significance in relation to the problem.

It should be pointed out that Oliver (1896), who gave extensive study to the problem, was quite familiar with the fact that the radial artery in patients with high blood pressure caused by chronic nephritis reacted quite normally to changes in posture. It was more constricted when the subject was standing than when recumbent. He, with his arteriometer, examined a number of persons who suffered from periodic attacks of high blood pressure, and found that in these the postural variations in radial calibre disappeared, although between the attacks they were quite normal. He considered, however, that the size of the lumen of the radial artery usually depended on the blood pressure, but pointed out that in all cases of hypertension the lumen of the artery diminished in size progressively.

Another possibility is that the kidney is particularly affected by mental stress; but while there is such confusion regarding the function of nerves on the kidney it is difficult to go further than to mention it. It is possible, too, that the mental stress, by interfering with digestion, which it does admittedly, or with the metabolism, may lead to toxic changes.

Thus it becomes evident that the nervous and chemical hypotheses may yet be brought together; and, in any case, it is not sufficient to say that the kidney or any other organ is at fault without at the same time considering why it is at fault.

Conclusion

In closing these lectures I cannot but plead for the closer relation between physiology and medicine which these lectures were designed to promote. I trust the necessity for this has been evident from what I have said. More will agree that it is needed than did in Oliver's time, but too often the statement is but a pious expression of opinion to which no effect is given. There are still too many who are satisfied with the diagnosis and treatment of disease according to recognized formulae and who are not interested in the progress of their subject. Would that the spirit which imbued Oliver were more prevalent; but may we hope that those who plan the medicine of the future will have vision beyond the immediate needs of the patients, and will organize so that medical research will be as much a routine as is treatment.

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THE INCIDENCE OF DYSPEPSIA IN A MILITARY HOSPITAL

BY

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The occurrence of dyspepsia in the Army during the present war has proved to be one of the major medical problems. Several investigations have been recorded in which the incidence of the various causes of dyspepsia has varied considerably. Payne and Newman (1940) reported that 60% of 287 patients, many of whom were evacuated to England from the B.E.F., had duodenal ulcer. This finding has been criticized by Hartfall (1941) and Spillane (1941) as not being consistent with their experience among soldiers serving in this country. Two factors may explain this discrepancy: Payne and Newman's cases included many from the B.E.F. which had been carefully selected by C.C.S.s and base hospitals in France as likely to be instances of organic disease; and there can be little doubt that in the early days of the war many men who had been suffering from peptic ulcer for some years in civil life were mobilized—for example, reservists and volunteers with special training allowing of their rapid dispatch to France. Presumably most of these men have now been discharged from the Army by medical boards, and it might be expected that the incidence of organic dyspepsia among troops would consequently be lower than in the early months, especially as civilian medical boards examining recruits are more aware that ulcer cases do not do well under military conditions.

Saffley (1941) reports that of 320 soldiers investigated radiologically 50.3% were "normal" and 38.7% had peptic ulcers. He also states that of 338 cases of dyspepsia in a near-by military hospital from which he drew his patients no lesion was found in 124, ulcers were present in 133, and the remarkably high proportion of 38 cases were diagnosed as anxiety neurosis. Working in another military hospital, I have not found this high incidence of neurosis, and the psychiatrist there has informed me that few cases of neurosis passed on to him have symptoms referred to the gastro-intestinal organs. On the other hand, the occurrence of peptic ulcer among all cases of dyspepsia referred to this hospital has been considerably less than that found by Payne and Newman (1940) in cases evacuated from the B.E.F. It was therefore deemed worth while to publish the incidence of the various types of dyspepsia investigated by us during a period of four months—November, 1940, to February, 1941—especially as these were cases sent "direct" from units in the area.

Method of Approach

In the vast majority of instances the question to be answered was, Is there or is there not an active ulcer present? A summary will therefore be given of our method of approaching a possible case of ulcer dyspepsia, and of the basis on which the diagnosis was made. This will be followed by a detailed account of all types of cases and by a discussion of further points in differential diagnosis.

Most of the cases of dyspepsia referred to this hospital were first seen at the out-patient clinic, where the history was taken and a careful clinical examination was made. With few exceptions investigation by fractional test meal (F.T.M.) was then carried out in the out-patient department by appointment, unless it was at once obvious that

the condition was not ulcer dyspepsia, or if documentary evidence was forthcoming that the soldier had been adequately investigated elsewhere within the preceding three months. If the history, clinical findings, and result of the F.T.M. were suggestive of ulcer the case was put on the waiting list and hospital investigation arranged within a week or two, either here or in a neighbouring civil or E.M.S. hospital. Some patients—e.g., those with bleeding ulcers, men over 40 years with a short history, and men who appeared ill and in pain—were admitted direct from the out-patient clinic. If the history was not suggestive of any of the recognized organic causes of dyspepsia and if clinical examination and the F.T.M. failed to reveal evidence of organic dyspepsia the patient was returned to the unit with a note to the medical officer recommending any simple measures that seemed appropriate. Further investigation was rarely thought necessary, and often was undesirable, in such cases, as the soldier is notoriously highly suggestible and the idea of disease is more easily implanted than eradicated. In special circumstances a diagnosis of peptic ulcer was made in the out-patient clinic without in-patient investigation. Thus if a man had a paramedian abdominal scar with a typical history of ulcer dyspepsia and a history of perforation, gastro-enterostomy, etc., and if the F.T.M. done here showed a climbing hyperchlorhydria, there was considered to be enough evidence to justify "boarding" him as a case of peptic ulcer. Or if a man gave a typical history of ulcer along with a convincing story of having been investigated in civil life and treated by Sippy or Lenhartz type of diet, then a climbing or plateau hyperchlorhydria with consistent clinical signs—e.g., localized epigastric tenderness, pallor, and often loss of weight—was regarded as sufficient evidence of the existence of an ulcer. Marked hyperchlorhydria—i.e., a curve which after the first hour was consistently at or above 60 c.cm. N/10 HCl—was required before such a step was taken. Such cases were labelled peptic ulcer, as it was often impossible to determine the location of the ulcer accurately without another barium meal and as the aim was primarily to determine whether or not a man was fit for military duties. The in-patients were investigated by a second F.T.M., a barium meal, and often examination of faeces for occult blood; and the diagnosis was based on a careful consideration of the history, a clinical examination, and the results of special investigations. Ulcer was never diagnosed if the radiologist reported a normal stomach and duodenum. On the other hand, a marked hyperchlorhydria in the presence of active symptoms and consistent clinical findings, if there was persistent deformity and defective filling of the duodenal cap, was taken to be enough evidence of duodenal ulcer: it was thought to be wrong to base a diagnosis on "direct" vision of an ulcer crater only and on no other grounds. In some cases reflex duodenal spasm was excluded by cholecystography, pyelography, etc., if the history or clinical examination suggested such a possibility. The presence of occult blood in the faeces was sometimes helpful. Gastric ulcer was, of course, diagnosed only in the presence of "direct" radiological evidence.

During the period November, 1940, to February, 1941, 257 cases presenting symptoms of dyspepsia as a principal feature were seen at this hospital. Of these, 45 must be disregarded, as a final diagnosis was not made here, some having moved to another area before investigation could be started, some having been admitted to near-by civil or E.M.S. hospitals from our waiting list by arrangement, and a few recent ones having to await admission. The remaining 212 cases were fully dealt with and investigated by us; 88 were in-patients and 124 out-patients. These two groups are discussed separately.

In-patients

In Table I the in-patient cases are classified according to type of dyspepsia; it gives the numbers and percentage incidence of each type, the average age of onset according to

TABLE I.—In-patients

Diagnosis	No.	Percent- age	Average Age of Onset	Onset in Civil Life	Onset in Army
Duodenal ulcer	30	34.1	27.5	25	5
Gastric ulcer	10	11.4	29.5	9	1
Functional dyspepsia ..	25	28.4	27.3	9	16
Acute gastritis	4	4.6	39.0	0	4
Chronic gastritis	2	2.3	33.5	2	0
Psychoneurosis	5	5.7	18.4	5	0
Hyperchlorhydria	2	2.3	17.0	2	0
Achlorhydria	1	1.1	39.0	0	1
Dyspepsia (aetiology obscure)	2	2.3	40.0	1	1
Constipation	1	1.1	31.5	0	2
Carcina of stomach ..	1	1.1	50.0	0	1
Appendicular dyspepsia ..	1	1.1	27.0	1	0
Chronic cholecystitis ..	1	1.1	34.0	0	1
Pulmonary tuberculosis ..	1	1.1	42.0	0	1
Banti's syndrome	1	1.1	19.0	0	1
Total	88	100		51	37

to the patient's history (which is not always as reliable in the Army as in civil life), and the numbers of each type originating during Army service or in civil life.

45.5% of the 88 cases were proved to be ulcers, the incidence of gastric ulcer being remarkably high, although 5 of these were at the pylorus and were judged by the radiologist to be gastric and not duodenal. 28.4% were labelled functional dyspepsia. This group was composed of men complaining of active indigestion, nearly always of a type similar to that found in ulcer cases; but in the majority the history was atypical in some direction, and investigation by the F.T.M., barium meal, and occult blood test, and often cholecystography, chest radiography, urine culture, etc., was negative, although transient hyperchlorhydria or mild hypochlorhydria was found in some or there was radiological evidence of hypermotility or atony. In no instance was this diagnosis made if any well defined sustained abnormality was reported. A point of clinical interest is that in the functional dyspepsia group abdominal tenderness was rare, whereas in the ulcer group well-defined localized epigastric tenderness was usually present. In the 4 cases of acute gastritis there was vomiting with or without diarrhoea; some were febrile others dietary in origin. The 2 cases of chronic gastritis had hypochlorhydria, with excess mucus in all specimens and a compatible history; the barium meal served to exclude other causes. Of the 5 labelled psychoneurosis 3 were cases of hysterical vomiting, 1 was globus hystericus and 1 was aerophagy that was manifestly hysterical investigation by barium meal was negative in every case. In all 5 cases the hysterical symptoms had been present several years before enlistment. Of the 2 cases of hyperchlorhydria 1 had a very high climbing curve and an atypical history, and two barium meals failed to reveal an ulcer of stomach or duodenum. This patient responded well to treatment with alkali and light diet, and returned to duty. The other also showed a climbing curve, but with a history typical of duodenal ulcer, although the barium examination failed to reveal any abnormality: as there was a fifteen-year history and the symptoms did not improve on alkali and simple dietary measures, and as he was physically under-developed, he was "boarded" out of the Army. The case of achlorhydria, confirmed by histamine occurred in a thin middle-aged man who complained of anorexia and loss of weight, and in whom all other investigations were negative. He returned to duty, having gained weight after treatment with acid, hydrochlor. dil. on a graded diet. Two cases were labelled dyspepsia of unknown type. One of these was that of a man aged 5 who had an eight-year history of recurrent attacks of

vomiting, each lasting two to three weeks: he was admitted during an attack. Clinical and barium examinations were negative, and the F.T.M. showed only mild hyperchlorhydria and no mucus. Renal and chest investigations were also negative. As he was of low mentality and had pronounced arteriosclerosis he was "boarded" out of the Army. The other case of dyspepsia of unknown type was that of a man aged 33, with epigastric pain after meals not relieved by alkali or food, in whom a barium meal showed exaggerated gastric mucous folds and spastic duodenal cap without obvious cause. As he was unable to swallow a Ryle tube and gastroscopy could not be performed the diagnosis remained uncertain (? chronic hypertrophic gastritis). Simple treatment allowed of his return to duty. Among the remaining cases the patient with appendicular dyspepsia had a recurrent subacute appendicitis, and the case of pulmonary tuberculosis occurred in a prematurely-old man aged 43 whose only symptoms were gastric in origin and in whom fibroid tuberculosis was detected only after gastric tests were negative. In this series of 88 cases there were 3 of haematemesis and melaena—2 due to duodenal ulcer, which recovered, and 1 in which death occurred after repeated severe haematemesis and in which necropsy showed advanced changes of Banti's syndrome. Only 1 of the 88 patients was admitted with perforated (pyloric) ulcer.

Out-patients

In Table II the out-patient cases are classified in a similar manner. Of the 124 cases 35.5% were diagnosed as peptic ulcer on the basis already outlined. As might be expected

TABLE II.—*Out-patients*

Diagnosis	No.	Percentage	Average Age of Onset	Onset in Civil Life	Onset in Army
Peptic ulcer ..	44	35.5	26.9 yrs.	36	8
Functional dyspepsia ..	54	43.6	25.0	26	28
Acute gastritis ..	2	1.6	27.0	0	2
Chronic gastritis ..	4	3.2	38.0	2	2
Psychoneurosis ..	6	4.8	20.3	4	2
Hyperchlorhydria ..	2	1.6	25.0	2	0
Achlorhydria ..	3	2.4	31.0	2	1
Appendicular dyspepsia ..	4	3.2	29.5	0	4
Chronic cholecystitis ..	1	0.9	37.0	1	0
Malingering ..	4	3.2	29.0	0	4
Total ..	124	100		73	51

the functional dyspepsia group (43.6%) is greater than in the in-patient series; these cases gave an atypical history, although often there were points of similarity with ulcer dyspepsia cases, in which the patient looked fit and in which epigastric tenderness was absent. In no instance did the F.T.M. show any sustained departure from normal, although mild degrees of transient hyperchlorhydria and hypochlorhydria, as well as a suggestion of hypertonia or hypotonia, were not uncommon.

Six cases are included under the heading psychoneurosis: 2 were cases of neurotic aerophagy (1 of long duration, 1 dating from enlistment); 1 was a case of hysterical dysphagia with other hysterical stigmata: 1 was that of a man, with visceroptosis as shown by barium series, who had already been discharged from the Army in peacetime for this complaint and was markedly neurotic; the remaining 2 were cases of anxiety neurosis following bombing and melancholia, in neither of which were dyspeptic symptoms outstanding, but which were referred on this account.

The cases of hyperchlorhydria showed fairly high curves; 1 had a quite atypical history, and the other had had a barium test meal in another military hospital just previously. The 3 cases of achlorhydria were in comparatively young men who had normal blood counts and minor symptoms. Of the remaining patients 4 were

regarded as malingering: 2 of these were under escort, 1 had already been investigated in another military hospital, and, like the fourth man, in whom investigation was not regarded as necessary, the bizarre history was impossible of belief. In all cases the men's attitude was obviously that of trying to "put one over" on the M.O. These men were warned of the possible consequences of untrue complaints. While I cannot agree with the view held by some that malingering does not occur in the modern Army, it is in my experience extremely uncommon.

Discussion

This analysis will not elicit any facts in the aetiology of peptic ulcer. However, several interesting points emerge therefrom. First, the incidence of ulcer in this series is probably very similar to that found in civil hospital practice. This finding is not incompatible with the figures of Payne and Newman (1940), for reasons already mentioned. My experience with the B.E.F. was that a much higher incidence of ulcer was found than in the present series, although in the evacuation from France the actual figures were lost. It will be seen from the tables that 67 ulcers began in civil life, against 17 during Army service. Of the latter, 3 were in Regular soldiers and 4 in Regular officers of many years' service; therefore only 10 out of the 84 cases of ulcer arose in the Army during this war. The majority of ulcer cases in this series occurred in reservists during their period in civil life and in volunteers and conscripts from 27 years upwards. These figures do show that the problem of peptic ulcer incidence in the Army does not differ from that in civil life, and it is probable that the increased incidence of ulcer among civilians since the last war is the major factor in the prominence of such cases in this war in comparison with the Army of 1914-18. Increased awareness of its existence is probably also a factor in a medical service which, so far, has been less busy with battle casualties than in the previous war, so that more time can be given to cases of dyspepsia. The disposal of the man with peptic ulcer has been by medical board and discharge from the Army, as it is clear that this kind of man does not do well in the Army. The only exceptions to this rule have been those highly trained Regular officers who were given a full course of medical treatment: the officer can usually regulate his diet in a way that the rank and file cannot, and the officers in this series so treated have returned to duty symptom-free.

The incidence of 79 cases of functional dyspepsia in 212 cases is probably higher than that met with in civil life, and it will be seen that 44 of these had their origin during Army service, as against 35 arising in civil life, a finding that is not unexpected. I have no doubt that in each of these cases the man was suffering from genuine dyspepsia due to some, often minor, disturbance of function: the word "functional" is used advisedly to indicate this, and not loosely to include all cases in which organic disease could not be found. The aetiological basis of this type of case is not easy to define, although it is probably no more obscure than the aetiology of peptic ulceration. As already mentioned, evidence of some functional disturbance was frequently present, such as minor degrees of hyperchlorhydria, hypochlorhydria, hypermotility, gastroptosis, or atony, although sometimes it was not of a degree consistent with the severity of the symptoms. In a number of cases dental sepsis was present. It is obvious that the causes of this type of dyspepsia lie deeper than in the factors which have already been mentioned and which were often absent. In some cases the sudden change from civil diet to Army diet and from a sedentary life to vigorous training undoubtedly served at least to aggravate any tendency to gastric upset. In my opinion a potent factor in those

cases was worry and anxiety, often arising from circumstances—domestic, financial, etc.—already present in civil life and carried with the man into the Army. In other cases the source of worry was associated with the war, although not with Army routine. It is not always realized that the soldier in this war has the same sources of worry as are so universal among the civilian population: thus very many men are anxious about their wives and parents in bombed areas, or about their families evacuated to unfamiliar surroundings. Then there are men who have left good civilian positions for much less remunerative Army service, not all having their pay made up; others have had their training for a skilled but non-essential occupation interrupted and are apprehensive of the future. Army life itself gives few causes of worry, as the soldier is well looked after; but undoubtedly some men worry about the uncertainty of when their next move will be made and where it may take them. It seems reasonable to suggest that anxiety may play a part in the production of dyspepsia in men whose autonomic nervous system is constitutionally somewhat precariously balanced, especially as it is agreed that worry has an adverse influence on the symptoms of established peptic ulcer. In pointing out the factor of anxiety it is not suggested that those men suffered from anxiety neurosis: quite the contrary, as with them, unlike cases of anxiety neurosis, there was adequate cause for worry. Nor was the anxiety of pathological intensity or such as to interfere with their general efficiency: such men were never medically "boarded," and simple measures were sufficient to fit them for duty. They were firmly assured that they did not suffer from any organic disease and that their health was good and would improve under Army conditions. In only a few cases were medicines—e.g., acid, hydrochlor. dil. or magn. trisilicat.—necessary. Details of the findings were always sent to the unit M.O.

The incidence of actual neurosis was very low; 9 of the 11 cases arose in civil life and were unchanged by Army service, save possibly for the better. The incidence of chronic cholecystitis and gastric carcinoma is much lower than in a civil hospital, probably owing to the lower average age of our patients.

Conclusion

This analysis shows that the problem of dyspepsia in the Army is more or less the same as that of peacetime civil life, any differences being determined by such factors as age groups, sex, general anxiety about the war, etc. Army conditions have not produced any new syndrome, and it is very probable that they have not increased the incidence of gastric or duodenal ulcer. The increased incidence of dyspepsia in the Army of this war finds its parallel in a comparable increase in the civil population since the last war, and is directly related thereto.

Summary

257 cases presenting symptoms of dyspepsia were seen at a military hospital during a period of four months. Of these, 212 are considered in detail.

The incidence of peptic ulcer was similar to that found in civil hospitals.

There is an increased incidence of functional dyspepsia, the aetiology of which is discussed.

The analysis does not reveal that Army conditions have any marked effect on the production of dyspepsia.

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GASTRO-PAPILLOMATOSIS DUE TO VITAMIN A DEFICIENCY INDUCED BY HEATED FATS*

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Since Fibiger (1913) first described experimentally induced tumours of the fore-stomach of the rat many other workers have investigated this problem without, however, reaching a satisfactory explanation of his original results. Fibiger described three types of lesions: (a) multiple papillomata of the fore-stomach; (b) squamous carcinoma of the fore-stomach; and (c) carcinoma of the tongue. He also obtained a carcinoma in a mouse that was transplantable. These lesions he attributed to the presence of a nematode, *Gongylonema neoplasticum*, derived from cockroaches which were present in the animal-house and which were consumed by the rats in addition to their diet of white bread and water. Passey (1934) drew attention to the fact that such diet must have been deficient in vitamins, and that vitamin A deficiency in the absence of the gongylonema can lead to papillomatosis of the fore-stomach of the rat. Cramer (1937) reviewed experimental work, including his own investigations bearing on Fibiger's results, and concluded that "diet and parasite are in themselves not sufficient to account for the lesions observed by Fibiger, and that there must be yet another factor involved which has not yet been identified." More recently Roffo (1938, 1939) claimed to have obtained a wide range of pathological lesions, including ulcers, papilloma, and carcinoma of the fore-stomach, adenocarcinoma of the glandular stomach, and sarcoma of the stomach and liver, in rats fed with heated or ultra-violet-irradiated cholesterol, and with overheated animal and vegetable fats. It is clear from the copious illustrations to his papers that Roffo has induced marked hyperplasia of the epithelium of both parts of the rat's stomach, amounting in some cases to histological evidence of malignancy, though the carcinomata do not seem to have metastasized to the liver, as might have been expected. The sarcomata, however, metastasized freely. These experiments are therefore of outstanding interest and demand independent investigation. Roffo believes that carcinogenic hydrocarbons are formed from sterols by the action of heat or ultra-violet rays, but, according to Cook and Kennaway (1940), his views on the nature of the chemical changes involved are inadequately supported by his experimental evidence. The presence of carcinogenic hydrocarbons in the food has been shown by Waterman (1939) to be capable of inducing tumours in the fore-stomach of mice.

In this laboratory an examination of a variety of fats has been made, after different conditions of heating, for the possible presence of known carcinogenic hydrocarbons, but nothing having the characteristic fluorescent spectrum of these substances has yet been demonstrated. It seems possible, therefore, that other types of carcinogen may be partly responsible for Roffo's experimental results. The suggestion that ordinary cooking fats may develop carcinogenic properties under the action of heat raises a practical problem which might have a bearing on the incidence of gastric cancer in man. The fats used in Roffo's experiments were apparently heated to 300–400°C., a higher

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range of temperature than is ordinarily reached in domestic cooking, but it seemed possible that similar changes might occur progressively in fats repeatedly heated at lower temperatures. Even in times of peace economic conditions habitually forced a large part of the community to use fats repeatedly for cooking, and our experiments were therefore designed to imitate the worst conditions of frying likely to be in daily use, and to test the fats so treated by feeding them to rats and mice.

Experimental

1. A mixed cooking fat (equal parts of cotton-seed oil and whale oil) was heated to 200-220° C. in a closed iron saucepan for twenty to thirty minutes on thirty consecutive weekdays. The total time of heating amounted to about twelve hours. White bread was fried each day in this fat, allowed to cool, and then fed to 50 Norwegian hooded rats, maintained on a basal diet of whole oats, green vegetables, and water, with the addition of about 2 c.cm. of milk per rat three times a week and 2 grammes of carrot once a week after the first two months. When this experiment had been in progress for twelve months 40 rats had died, of which 8 showed multiple papillomata—6 with central ulceration—1 had a single unulcerated papilloma, and 2 showed irregular hyperplasia of the epithelium, all the lesions occurring in the fore-stomach. One rat developed a carcinoma of the lower lip. As in the foregoing experiment the bread was heated as well as the fat, this variable factor was eliminated in subsequent work by heating the fats alone and, after cooling, spreading them on white bread for feeding to the animals, using unheated fat spread in similar amounts as a control. The survivors of this first group of rats were fed in this manner for a further period of seventeen months, with the addition of about 2 grammes of carrot per rat four times a week, for reasons given below.

2. Twenty-four inbred Wistar albino rats were fed on the basal diet, with the addition of pure lard heated on thirty consecutive weekdays to 200-220° C. for twenty to thirty minutes.

3. Twenty-four Wistar rats were fed on the same basal diet, with the addition of cotton-seed oil, heated in the same way.

4. Twelve Wistar rats were fed on the basal diet, with the addition of unheated lard.

5. Twelve Wistar rats were fed on the basal diet, with the addition of unheated cotton-seed oil. (In Groups 2 to 5, after two months, 2 grammes of carrot once a week, and after a further five months four times a week, was added to the diet.)

6. Fifty stock mice were fed on the basal diet, with the addition of repeatedly heated mixed cooking fat spread on white bread, as described in the second paragraph under Group 1. (After two months 0.5 gramme of carrot once a week, and after a further ten months six times a week, was added to the diet.)

Litters of rats were divided between Groups 2 to 5 so that the groups were genetically comparable. During the first year of these experiments symptoms suggestive of avitaminosis-A were observed in young rats, particularly in Groups 2 and 3. The difference between these groups and the controls became more marked as time passed. The animals were smaller and less robust than the controls, had dry fur and slight xerophthalmia, and avoided exercise except in pursuit of food. As the control animals showed no such symptoms it seemed that the addition of heated fat had in some way neutralized or interfered with the metabolism of the dietary vitamin A. This possibility was tested in the following manner:

7. Twenty-four Norwegian hooded rats were fed on the basal diet, with the addition of about 3 c.cm. of milk and about 2 grammes of carrot once a week. This diet cannot be considered deficient in vitamin A. After four days the following additions to the diet were made: (a) 6 rats received 0.5 gramme of unheated lard six days a week; (b) 6 rats received 0.5 gramme of lard heated at 327° C. for one hour six days a week; (c) 6 rats were similarly fed with lard heated at 220° C. for twelve hours; and (d) 6 rats were similarly fed with lard heated at 220° C. for one hour. After two months 2 rats from each group were killed and their livers rapidly removed, rinsed in physiological saline,

minced, and desiccated. One gramme of desiccated liver was shaken with 5 c.cm. of chloroform for five minutes, the extract was then decanted, and dilutions of 1/1, 1/2, 1/4, up to 1/128, with chloroform, were made in a series of test-tubes. To each tube, containing 0.5 c.cm. of extract, 2 c.cm. of 30% solution of antimony trichloride in chloroform was added, and the highest dilution in which the blue vitamin A colour reaction could be detected was noted. The results of these estimations are shown in Table I.

TABLE I.—Relative Vitamin A Contents of Rat Livers

Rat No.	Lard	Vitamin A Content of Liver (Control = 1)
375B 376B	Unheated (control)	1 1
372B 373B	Heated, 220° C. 1 hr.	1 1
363B 366B	Heated, 220° C. 12 hrs.	1/2 1/2
361B 362B	Heated, 327° C. 1 hr.	1/4 1/8

It will be seen that the vitamin A content of the liver was reduced in proportion to the degree and duration of heating to which the lard was subjected. The remaining rats in this experiment were then fed for one month on a diet rich in vitamin A (basal diet, plus 2 grammes of carrot daily); one from each group was sacrificed, and the liver vitamin A estimated in the above manner. No differences were found between them, showing that the interference with vitamin A metabolism due to the heated lard was not permanent. The remainder of the animals are still under observation.

When animals died their stomachs were washed out and then filled with 10% formal-saline and left to fix for twenty-four hours before being opened. Fixation in this way gave very satisfactory preparations, free from distortion. All the stomachs were subjected to independent histological examination by Dr. L. Woodhouse Price, who reported his findings without knowing the details of the experiment. This is the routine procedure with all histological material in this laboratory. All but three lesions classed as papilloma were histologically confirmed. The results are shown in Tables II to V.

TABLE II.—Lesions in 14 out of 44 Norwegian Hooded Rats, surviving for More than 4 Months, fed on Basal Diet and repeatedly Heated Mixed Cooking Fats (30 Died without Gastric Lesions)

Rat No.	Duration of Experiment at Death	Lesions
108B	139 days	9 papillomata (5 ulcerated) in fore-stomach
138B	182 "	15 " (ulcerated) "
112B	221 "	4 " " "
113B	228 "	4 " " "
122B	226 "	1 papilloma " "
141B	236 "	" " " "
127B	268 "	21 small papillomata " "
103B	278 "	1 ulcerated papilloma " "
144B	301 "	" " " "
148B	312 "	" " " "
149B	318 "	" " " "
150B	343 "	Keratinizing carcinoma of lower lip
128B	354 "	2 haemorrhagic ulcers in glandular stomach
105B	436 "	Haemorrhage in glandular stomach

* On vitamin-A-rich diet after first year.

TABLE III.—Gastric Lesions in 6 out of 19 Wistar Rats, surviving for More than 4 Months, fed on Basal Diet plus repeatedly Heated Lard (13 Died without Lesions)

Rat No.	Duration of Experiment at Death	Lesions
741	139 days	2 ulcerated papillomata of fore-stomach
873	192 "	3 " " "
877	209 "	2 papillomata (1 ulcerated) "
694	304 "	4 ulcerated papillomata "
713	304 "	3 " " "
714	315 "	1 papilloma " "

TABLE IV.—Gastric Lesions in 3 out of 14 Wistar Rats, surviving for More than 4 Months, fed on Basal Diet plus repeatedly Heated Cotton-seed Oil (11 Died without Lesions)

Rat No.	Duration of Experiment at Death	Lesions
878	117 days	1 ulcerated papilloma of fore-stomach
969	196 "	" "
715	318 "	" "

TABLE V.—Gastric Lesions in 3 out of 45 Stock Mice surviving for more than 4 Months, fed on Basal Diet plus repeatedly Heated Cooking Fat (41 Died without Lesions; 1 Survives)

Mouse No.	Duration of Experiment at Death	Lesions
1104	271 days	1 papilloma of fore-stomach
1106	279 "	" "
1134	355 "	Diffuse hyperkeratosis of fore-stomach

In the three groups of rats receiving repeatedly heated fats in addition to the original basal diet 77 survived for more than four months, and 17 of these died within the first year of the experiment and had papillomata in the fore-stomach. Control rats (receiving unheated fats) dying within the same period showed no papillomata, but 2 had minor degrees of hyperplasia. Among 25 old rats (over 2 years) from other experiments 3 showed hyperkeratosis of the fore-stomach, 1 diffuse hyperplasia, and 1 a simple papilloma of the fore-stomach. In our experience similar lesions have not been observed in control rats under 2 years old.

The benzidine test was carried out on stomach contents in cases showing brownish discoloration of the glandular stomach, and was found to be positive, confirming the presence of blood in the stomach cavity, probably derived from small ulcers. Papillomata, ulceration, and consequent haemorrhage appear to be definitely related to the feeding of repeatedly heated fat and associated with symptoms of varying degrees of avitaminosis-A. To test the possible interrelation between these pathological states 10 rats that had been under experiments for a year and 31 for seven months were given a diet rich in vitamin A, consisting of rat-cake nuts (see accompanying formula) daily, carrot 2 grammes four times a week, and about 2 c.cm. of milk once a week, while continuing to receive the differently treated fats as before. Six of these rats died after being on the vitamin-A-rich diet for more than a year, and none of these showed any gross lesion of the stomach. Two survivors are still under observation. The others are accounted for in the tables.

Rat-cake Formula (Supplied by the North-Eastern Agricultural Co-operative Society, Ltd., Bannermill Place, Aberdeen)

Wheat offal (fine middlings No. 2)	19.2%
Ground wheat	19.7%
Sussex ground oats	19.2%
Ground barley	9.5%
Ground maize	9.5%
Meat and bone meal (45% protein)	9.5%
Dried skim-milk	7.0%
White fish meal (60% protein)	4.7%
Dried yeast (40% protein)	1.7%
Sodium chloride	0.5%
Cod-liver oil	0.5%

In more recent experiments 92 rats have been maintained for ten months on the vitamin-A-rich diet throughout, with the addition of heated lard (350° C. for one hour or 220° for about twelve hours). No pathological lesions of the stomach have been observed among 10 that have died. *In vitro* tests for vitamin A in mixtures of cod-liver or balibut-liver oil and heated fats dissolved in chloroform were carried out to see whether any direct neutralization occurred, but the usual antimony trichloride blue reaction could not be observed, as the heated fats alone gave a brilliant red colour reaction with this substance. Attempts to separate the vitamin A from the heated fats after mixture were not successful, and it is not certain at present whether any direct destruction of vitamin A by heated fats occurs or whether the vitamin reaction is merely masked by the intensity of the red colour reaction. Further work is being done to clear up these points and to determine the nature of the substance in the heated fat responsible for the red colour reaction with antimony trichloride.

Discussion

The foregoing evidence suggests that there is present in repeatedly heated fats a factor which interferes in some way with the absorption or metabolism of vitamin A. Our results confirm Roffo's claim that heated fats cause papillomatosis in the fore-stomach of rats, but no evidence of glandular tumours or of sarcoma has been found. One rat developed a carcinoma of the lower lip, but the significance of a single case cannot be assessed.

Although no recognizable carcinogenic hydrocarbons were formed in heated fats under the conditions of our experiments, a factor which may provisionally be termed "anti-vitamin A" was produced, and the subsequent pathological lesions developed by rats and mice receiving this factor with an otherwise adequate diet were apparently due to an artificially induced avitaminosis-A. Thus our results correlate those of Cramer and of Passey with some of the results observed by Fibiger and by Roffo. The malignant tumours originally described by Fibiger and the more extensive series of Roffo may have been due to the action of some hitherto unrecognized factors in the presence of avitaminosis-A. Mice were less susceptible to induced avitaminosis-A and papillomatosis than rats.

So far as any application of these experiments to human pathology is concerned there is no evidence of the development in fats, under ordinary cooking conditions, of any known carcinogen, but the anti-vitamin-A factor may possibly be detrimental to health, particularly when the dietary intake of vitamin A is low. If there is any analogy between rats and humans in this respect the addition of vitamin A to the diet in the form of raw carrot seems to be sufficient to counteract the effects of the anti-vitamin. The habit of eating raw carrot seems to be prevalent at the present time, and it is possible that future statistics will show whether this has any influence on the incidence of human gastric diseases.

Summary

Groups of rats and mice were fed with a variety of repeatedly heated fats in addition to an adequate basal diet. Within a year signs of avitaminosis-A appeared among the rats, and cases of ulceration and papillomatosis of the fore-stomach were observed among those that died. Control animals fed with unheated fats and the same basal diet showed no gross pathological lesions. Extracts of the livers of rats fed with lard heated under various conditions in addition to the basal diet contained reduced amounts of vitamin A as compared with controls.

The heated fats did not contain recognizable amounts of any known carcinogen, but they included some substance which interferes with the antimony trichloride reaction for vitamin A, giving a bright red coloration.

Rats fed with repeatedly heated fats in addition to a diet rich in vitamin A (carrot) showed no gross pathological lesions in fore-stomach or reduction in liver vitamin A.

The mechanism of papillomatosis in these experiments seems to be related to an induced avitaminosis-A, due to the presence in repeatedly heated fats of an "anti-vitamin A" of undetermined nature.

We wish to acknowledge the valued help given by Dr. L. Woodhouse Price in dealing with a large number of histological preparations, and by Mr. J. G. Chalmers in examining fluorescence spectra of extracts of heated fats.

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CARDIAC MASSAGE FOR IMPENDING DEATH UNDER ANAESTHESIA

BY

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At every turn and in every walk of life it is becoming increasingly apparent that the only effective method of successfully meeting a sudden unexpected catastrophe is to have a preconceived plan and to be able to put it into action immediately. If that plan is comprehensive, and if it can be executed smoothly, it may succeed. To set the heart beating when, during general anaesthesia, it has suddenly and unexpectedly become still, indeed calls for a clear-cut plan of action, for it ranks even higher than the arrest of serious arterial haemorrhage as the most urgent surgical emergency. I have performed cardiac massage about 40 times. In 13 cases the heart has restarted in earnest; but too often, after giving hope for hours or days, disappointment has been the outcome: only 4 patients have survived.

The special point I wish to raise is that cardiac massage should be resorted to earlier. An analysis of published cases shows that cardiac massage has been relatively more successful when the catastrophe necessitating it occurred during the course of an abdominal operation. It is reasonable to assume that, the abdomen being open, massage was resorted to sooner than otherwise would have been the case. In 3 of my 4 successes the operation in progress was an abdominal one, and in 2 of these massage was conducted through the original laparotomy incision. The fourth, my only non-abdominal successful case, sheds some light on the problem before us.

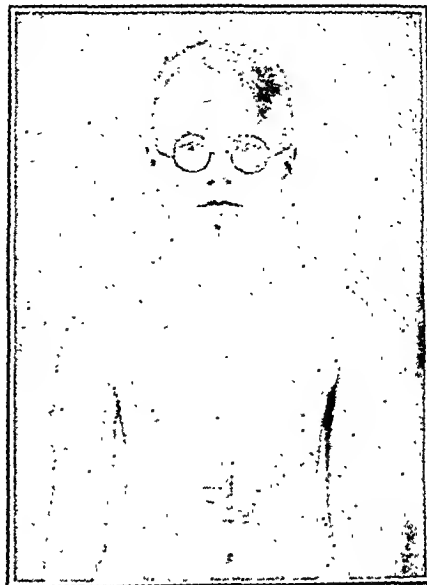
I had completed the operation of epididymectomy for tuberculosis on a boy aged 12. No anxiety had been experienced. I happened to look through the window of the changing-room, and saw the anaesthetist performing artificial respiration. The child had white asphyxia, and we immediately put in operation the routine of having a timekeeper call out the passing minutes. At three and a half minutes I injected adrenaline into the heart. At four and a half minutes, after hastily scrubbing up, I opened the upper abdomen through a midline incision and performed cardiac massage from below the diaphragm. A full minute elapsed without any response. There was then one beat, a short interval, then three or four beats. The heart then restarted in earnest. By the time the abdomen had been closed with through-and-through sutures some colour had returned to the patient's blanched face, the pulse was full but very rapid, and oxygen was being administered. Next day the patient said he felt well.

On the third day the boy complained of dimness and double vision. On the fourth day he could only distinguish between light and darkness. There were other evidences of serious disturbance of the central nervous system, such as incoordination and some paresis. I am not competent to discuss these neurological manifestations, nor is that the purpose of this communication. Sufficient is it to say that it was obvious that the vital centres had been left too long without a blood supply, and during the period of blindness I wondered whether it would not have been better if the cardiac massage had failed. It was during this period I became determined to advocate earlier cardiac massage. By what I believe to be an unprecedented stroke of good fortune, the patient's vision gradually returned and all other untoward signs disappeared. At the present time he has regained his sight and has quite recovered in all other respects (see photograph).

This case in particular convinced me that, to be permanently effective, cardiac massage must be instituted earlier; three and a half to four and a half minutes ("under five minutes" is the generally accepted standard) is too long to wait. Had the patient not been young I feel tolerably certain he too would have joined the large band of disappointments. Equally am I convinced that if I had made

a stand against intracardiac injection taking precedence over cardiac massage before, I might have succeeded in some of the cases in which I have failed.

This is not a sudden change of front. With each succeeding disappointment I have analysed the details of resuscitation, seeking to improve them. On nearly every occasion I have deplored the time wasted in injecting



adrenaline. Inertia and unwillingness to face criticism have, I fear, been instrumental in my continuing to suggest in the works of reference for which I am responsible that cardiac massage is our last card. I wish to revise that view.

Intracardiac Injection of Adrenaline

Championed particularly by the late Harrington Sainsbury, the value of an intracardiac injection of adrenaline has received, and is receiving, pride of place in attempts to restart the heart's action. A study of the literature will show that the successes which have attended this expedient are in the main cases of cardiac arrest during chloroform anaesthesia. In my experience, not once in more than forty instances has an injection of adrenaline into the heart caused it to restart beating. In one case the prick of the needle as it traversed the chest wall (I do not think the heart muscle had been reached) apparently initiated the resumption of cardiac activity; none of the adrenaline in the syringe was injected. In spite of the fact that in every theatre in which I work I try to impress upon the staff that a "cardiac emergency outfit" should be in readiness, oftener than not several minutes have been wasted in getting together the necessary armamentarium. I suggest that the sterile syringe, a three-and-a-half-inch-long needle which fits the syringe, and a bottle of adrenaline should be kept in a sealed sterile jar on the anaesthetist's table. Here it will be in better keeping, and any benefit which adrenaline holds will still be available. But on the following point I am emphatic: adrenaline should be relegated to a subsidiary role.

Is the Heart Beating?

Those without practical experience of these catastrophes are inclined to pass this question by almost with contempt. On the contrary, so difficult and time-consuming is this all-important question that in white asphyxia the correct procedure is to assume the worst and to proceed with resuscitative measures according to a plan by which confirmation

of the necessity for heroic measures is provided by the most direct means available. I have seen an already over-occupied anaesthetist burdened with this question when all the surgeon had to do was to remove a few abdominal packs and put his finger on the abdominal aorta. It should be obvious that if the operation in progress permits access to a large artery it is the surgeon who should inform the anaesthetist. In the absence of direct access to a large artery but with an operative wound before him, the surgeon can at least state whether there is any bleeding, and in certain instances he may feel justified in cutting a moderate-sized artery in order to obtain the necessary information.

When the integument is intact it is the anaesthetist who must settle this point by the means he thinks best. In my view the carotid pulse is the best indicator. The majority consider that a stethoscope applied to the praecordium is the method of choice. My reasons for devaluing the latter are: (1) the patient's head must be left unattended; (2) artificial respiration must be stopped; (3) on at least three occasions the anaesthetist has left his stethoscope in the anaesthetic room, and twice the courier sent for it has returned empty-handed; (4) with the spectre of the coroner before him and the knowledge that by applying the stethoscope he is preventing the continuation of artificial respiration, I submit that even a cardiologist might be unable to answer this all-important question with assurance.

Distribution and Duties of Personnel

With but three to three and a half minutes at our disposal each must know his or her duty: providing they know exactly what to do, even semi-skilled and unskilled members of the theatre team can perform most useful parts.

Timekeeper.—In 1927 I suggested that a junior nurse, a student, or a porter should be detailed to cry loudly each passing minute from the time the anaesthetist sounds the warning note of danger. This plan has proved invaluable, for anxiety masks a correct estimation time.

Provider of Hot Packs.—If in addition to a timekeeper there is a junior nurse available, her duty should be to get a bowl of really hot water and some packs, and be prepared to place the packs, wrung out in hot water, on the praecordium at frequent intervals while the artificial respiration is in progress. This worker is not essential. She should go about her duties without asking questions or distracting the attention of the theatre sister. Her services should be at the disposal of the surgeon's assistant if he should require them.

The surgeon's assistant is dismissed immediately by the surgeon, and relegated to the sole task of performing artificial respiration under the direction of the anaesthetist. He carries out Sylvester's procedure—if necessary, single-handed—but sends for the most suitable helper available.

The theatre sister comes forward and takes on the duties of the surgeon's assistant. Her essential objective is to have in readiness the simplest requirements for a mid-line upper laparotomy.

The anaesthetist takes sole charge of the respiratory apparatus. His first and at all times his most important duty is to be perfectly satisfied that there is a clear airway. His other essential parts can be played without moving from his position at the patient's head.

A (Revised) Plan of Action

Artificial respiration must be started at once, and continued throughout the endeavour. Intrathecal instillation of oxygen and CO₂ is the ideal form of artificial respiration. Sylvester's method is efficient if the airway is kept clear.

FIRST MINUTE

Anaesthetist.—Clears airway; tilts the table, even slightly, so as to lower the head; breaks a capsule of amyl nitrite under the patient's nostrils.*

Surgeon.—Appoints a timekeeper; dismisses his assistant; with the help of the theatre sister, attends to his operation so that it can be abandoned temporarily; if possible, directly palpates a large artery.

SECOND MINUTE

Anaesthetist.—Administers oxygen; passes an intratracheal tube if circumstances permit and he is particularly skilled in this manœuvre.

Surgeon.—Supervises sterilization of the skin of the upper abdomen and lower thorax while he scrubs up or changes his gloves, as necessary.

Theatre Sister.—Prepares the skin of the upper abdomen and lower thorax.

THIRD MINUTE

Anaesthetist.—If asked to do so, palpates the carotid artery; when free from duties of the second minute opens the cardiac emergency jar and places it within reach of the theatre sister.

Surgeon.—If the information received is that the heart is not beating, makes an incision in the midline through the linea alba, large enough to insert the hand; starts cardiac massage from below the diaphragm, at first with a quick forcible movement for half a minute—the base of the left hand over the lower thorax aids in the manœuvre: if there is no response after thirty seconds, changes the movement to a slower rate of about eighty per minute.

Theatre Sister.—Fills the syringe with 1 c.cm. of adrenaline and fixes the needle firmly to the barrel.

FOURTH MINUTE

Surgeon.—Removes his left hand from the thoracic wall while the adrenaline is injected into the heart by the anaesthetist; immediately afterwards, with renewed hope, continues massage as in the first instance—i.e., quickly.

FOUR-AND-A-HALF MINUTES

Surgeon.—Detaches diaphragm from left costal margin with a stroke of the scalpel; opening stretched to take hand; rhythmically squeezes the heart within the pericardium (this seldom fails to give at least a temporary response).

If the last manœuvre is successful the opening in the diaphragm must be closed with catgut stitches. It is quite sufficient to close the upper midline incision with strong interrupted through-and-through sutures traversing all layers.

Conclusion

I have avoided detailed reference to the literature, not from any wish to minimize the contributions of others, but to simplify the message I would convey. Since Darling and Lane published the first successful case in 1902, I was surprised to find that only 50 permanently successful cases had been reported. In several of these both adrenaline and cardiac massage had been used. It would appear that the combination is useful. One case in particular supports this hypothesis; for after two minutes of massage with no response, adrenaline followed by more massage resulted in recovery (Fiddian, 1936).

"Massage—adrenaline—more massage—supradiaphragmatic massage" is, I believe, the watchword which will save more patients. Massage—earlier massage—is the life-giver; adrenaline is its handmaiden.

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* This valuable suggestion was made by Primrose (1935); the object of administering this drug is to distinguish between cardiac depression and cardiac arrest.

"BLUE DRUM," OR IDIOPATHIC HAEMOTYMPANUM, IN CHILDREN

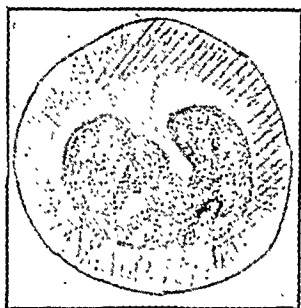
BY

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Shambaugh (1929) has given a detailed description of a condition which he has named "blue drum," and of which he reports two cases occurring in adults. Fowler (1939) also quotes a case, but the age of the patient is not specified.

In appearance the tympanic membrane is blackish blue over the whole of the pars tensa, which is retracted. The pars flaccida does not share in the discoloration. The landmarks of the drum stand out clearly, and the condition is not associated with any myringitis or bulla formation.



"Blue drum"

Deafness of the conductive type is present. Two instances of "blue drum" have been encountered recently in children, and a summary of the histories may be of some interest.

Two Case Records

Case 1.—This patient, a girl aged 7, had a history of intermittent deafness associated with colds, occasional carache, but no otorrhoea. During the fortnight preceding examination the deafness had become much worse, although there were no local or general signs of an inflammatory condition. Slight tinnitus was complained of. Examination of the right ear showed that the tympanic membrane had an intense blackish-blue appearance, as described above. The landmarks were readily visible, and there was no bulging. Rinne's test was negative for the C to c' forks, and Weber's test showed lateralization to the right. Inflation by catheter revealed some Eustachian tube obstruction, and rales were heard through the auscultation tube. The drum assumed its normal position after inflation, and the colour changed to a dull grey, with brownish patches. (Shambaugh's cases showed no change in colour after politizerization.) The hearing for the whisper improved from 6 inches to 10 feet, normal audibility being 20 feet. The left ear had a retracted membrane, with a little fluid exudate of a clear character in the lower part of the tympanum. There was a conductive deafness of a less degree than that of the right ear, the whisper being heard at 2 feet before inflation and 12 feet after. The tonsils showed some evidence of infection, and there was a moderate adenoid pad.

After an interval of a few days the right drum was in its initial state of "black-blueness," although the hearing had become a little better (whisper, 2 feet). Subsequent inflations by Politzer's method over a period of some weeks resulted in an improvement of the hearing to 10 feet for the whisper, at which standard the hearing acuity remained stationary. The drum always reverted to its previous blue appearance in the intervals. This is in line with Shambaugh's experience of recurrence, although in his cases inflation was preceded by myringotomy.

Removal of the tonsils and adenoids was then carried out, and fourteen days afterwards both drums were normal in appearance and the whisper was audible at 20 feet in each ear. The condition has not recurred in the several months which have elapsed since the operation.

Case 2.—A boy aged 10 was referred for the removal of tonsils and adenoids. Some slight deafness had been noticed

at home. Examination of the right ear showed a typical blue drum, with a fairly high degree of conductive deafness (whisper, 2 feet). The left drum was a little dull and retracted, and the hearing for the whisper was 10 feet. Fourteen days after the removal of the tonsils and adenoids the blueness was found to be confined to the anterior half of the drum and the whisper was audible in the affected ear at 16 feet. One month after the operation the drum was normal, as was the hearing to voice and tuning-fork tests.

Commentary

Shambaugh's cases occurred in individuals over 50 years old. The treatment consisted of myringotomy, followed by inflation, which expelled a chocolate-coloured fluid. The period of relief was only temporary, and recurrence followed. Fowler's case had an effusion into the maxillary antrum on the side of the ear lesion, but the subsequent course of the case is not mentioned.

It would appear that the condition is the result of a "hyperaemia ex vacuo," consequent on Eustachian tube obstruction. The reported cases recovered readily and completely after the removal of the primary cause of the Eustachian block.

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Medical Memoranda

Lung Collapse after Eye Operation under Local Anaesthesia

It is thought worth while recording this case, as a search of the literature failed to reveal a similar one. It is well known that collapse of the lung, both massive and partial, follows all types of surgery, occurring in about 0.3% of all operations, and that various reasons have been assigned for this. It seems certain, however, that it is not entirely due to the irritant effect of inhalation anaesthesia, causing a mucous secretion which, by becoming inspissated, finally blocks a bronchus. There are still many cases of this complication following operations with regional block local anaesthesia, although they are only about one-tenth as frequent. This compares favourably with spinal anaesthesia, in which, as regards abdominal cases at least, collapse is as common as with inhalation. In the following case the only explanation as to causation that can be suggested is that patients with glaucoma are nursed upright after operation and instructed at all costs to avoid coughing. This would tend to allow any mucus to gravitate towards the lower lobes and to accumulate there.

CASE REPORT

A spinster aged 65 was trephined by Mr. Tait of Windsor for a chronic glaucoma on December 23, the anaesthetic being a simple instillation of a few drops of 1% pantocain into the right eye. The local and general condition made satisfactory progress until January 1, when there was a sudden onset of dyspnoea, with pain in the right lower chest. I was asked to see her, and found signs suggestive of partial collapse of the right middle and lower lobes. Although there were no constitutional disturbances suggestive of lobar pneumonia she was given a short course of sulphapyridine, 7 grammes in all. Within a further twenty-four hours there was a complete collapse of the two lobes, as shown by the absence of the respiratory murmur, and a temperature of 100.2°. Postural drainage and bronchoscopy were both contraindicated by reason of her eye condition, so inhalation of carbon dioxide was tried, and although after one period of hyperpnoea crepitations were heard over the affected area the condition remained quite stationary.

By January 6 the patient was feeling fit enough to travel by car to spend a few days in a convalescent home. A radiograph taken on January 7 showed the typical appearance of collapse. She then rested a fortnight, with some pain at the right base for the first few days and with some dyspnoea on exertion. During this time large doses of ammonium carbonate were given

by mouth by her own doctor, and when she was seen on March 6 the condition, as judged by physical examination of the chest, had completely cleared.

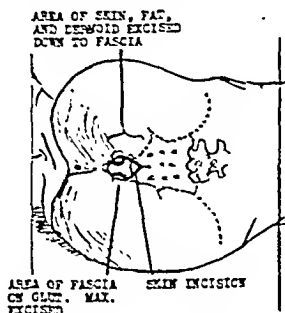
Eton.

ROGER LANE, M.B., M.R.C.P.

Treatment of Post-anal Dermoids

It has been found difficult to ensure healing by first intention in wounds following radical excision of post-anal dermoids. Adipose tissue in this region is particularly unsuitable for dealing with post-operative collections of blood and exudate and in maintaining a clean field for healing.

By exposing muscle in the floor of the wound it was hoped that drainage and other factors which influence healing would work to better advantage. The fascia covering the sacral and coccygeal origins of the glutei maximi is exposed by wide excision of the dermoid region, and a piece of the fascia about the size of a halfpenny is easily removed from one or both sides (see Fig.). This was done in 4 consecutive cases of excision of



infected post-anal dermoids, with closure and healing by first intention. All 4 patients were women: 2 had had exacerbations of swelling and pain within the two weeks preceding operation, and 2 had had previous incisions. All have remained healed for from six weeks to seven months after operation.

Apart from excision of the fascia the operative technique was essentially as that described by W. B. Gabriel (1937). Haemostasis was obtained by pressure and a few fine catgut ligatures. Dead space was reduced by deep silk-worm-gut sutures tied over a roll of gauze. The patients were nursed on their side in bed.

Final conclusions cannot be drawn from so small a series. However, the principle of including healthy muscle in the healing process has not done any harm and may be worthy of extensive trial in suitable cases.

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REFERENCE

Gabriel, W. B. (1937). *Principles and Practice of Rectal Surgery*, London.

Appendix Strangulated in Congenital Hernial Sac in an Infant

The following case may be of interest in view of the age of the patient, the nature of the contents of the hernial sac, and the fact that, though the hernia was of eight hours' duration only, operation showed that it would not have been wise, and hardly possible, to reduce it by taxis.

A baby aged 5 weeks, suffering from convulsions, was under the care of Dr. Mackay at the Queen's Hospital for Children, London, E., when he suddenly developed a swelling in the right inguinal region and scrotum. This, when examined eight hours later, was found to be a scrotal hernia. The scrotum was red, inflamed, and oedematous. The temperature was 99° F., pulse 132. The child vomited once during examination. The bowels had not moved since the appearance of the hernia. An attempt at taxis being unsuccessful, operation was undertaken.

Local anaesthetic 1% novocain was employed and the sac exposed by the usual incision. It was bluish black in colour, and when opened dark fluid poured out. The vermiform appendix, stretching from the internal abdominal ring to the scrotum, was

now seen as the hernial content. It was gangrenous throughout and adherent to the sac posteriorly. The constricting agent the internal abdominal ring. This was enlarged by dividi in an upward and outward direction. The caecum now prese and it was seen that the constriction occurred exactly at the j tion of the appendix and caecum.

The appendix was amputated, but the sac, being inflamed adherent, was not further interfered with. Two catgut sut were used to unite the divided internal oblique and transver muscles; the mouth of the sac was closed at the inte abdominal ring with a few sutures, and the internal oblique e united with continuous catgut. The skin edges were coapted interrupted "kallmerid" suture. The lower end of the we was drained with a dozen strands of silk.

The baby made an uninterrupted recovery: the skin sut were removed on the eighth day, and the wound was comple healed in ten days.

I have to thank Dr. Mackay for permission to publish this c
London, E.2. T. O'NEILL, M.D., F.R.C.

Observation of Malaria Parasites in Fresh Blood Films

When fresh blood is sealed beneath a cover-slip changes o which are not obtainable when blood is smeared directl shed. In some cases of malaria one of these changes is engulfing of a malana parasite by an amoeboid white cell. S a process is often seen in a fresh film in which crescents abo in the blood stream. If this process be allowed partly to oc and then stained the resulting change should be demonstra

A fresh film was made, and after three to five minutes cover-slip was slid away from the slide. Apart from m picturesque forms it was evident that the hoped-for result achieved, for a "crescent," now in spheroidal form, was actu in contact with a white cell, into which had passed some of granules of the crescent.

The crescent was stained blue with cobwebby protoplasm, granules, 32 in number, being black. The white cell had a si lobed palette-like deep purple nucleus, its protoplasm being p and cobwebby: in it were eight or nine granules, similar in f and colour to those in the crescent. Between the blue pr plasm of the crescent and the pink protoplasm of the leuco there was no demarcating border. It looked as if the w cell's meal was severely distending its outline.

When a crescent is approached by a leucocyte in the liv blood it is apt, as if under sentence of death, to perform the m intense gyroscopic movements, its black granules being cer fugalized at a great pace. This revolving globe only half its red cell.

A similar object was obtained in the stained film after a f minute life under the cover-slip. A ring of black rods, sma than a red cell and corresponding to the globe mentioned ab was arranged circumferentially like a ringlet of hair. Insid and not completely filling it was a purplish-blue cobwebby m while outside the ring there was a splash of blue which with streaky short circular lines seemed to have been put into se sort of rotary movement by the gyroscopic globe it contain It looked then as if one of these rotating bodies had been cau at a lucky moment.

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P. Cohen, M. Weichsel, M. and J. H. Lapin (*J. Pediat.*, 19 16, 30) record their observations on 432 whooping-co patients treated with various therapeutic agents. Vaccine tr ment, which consisted of Krueger's vaccine, Sauer's vacc toxin vaccine, or Bordet vaccine, did not improve the sympt but was even associated with attacks which were severer t those of the 80 controls. The results obtained with n topagen (soluble protein of *H. pertussis* in normal saline) topagen hypodermically did not differ from those of the c trols. Patients treated with convalescent serum and hy immune serum had fewer coughing spells, a shorter perio illness, and greater freedom from complications, but only w the serum was injected before the paroxysmal stage.

Reviews

EARLY TREATMENT OF WAR WOUNDS

The Early Treatment of War Wounds. By William Anderson, O.B.E., M.B., Ch.B., F.R.C.S. Oxford War Manuals. General Editor, the Right Hon. Lord Horder, G.C.V.O. (Pp. 96; illustrated. 5s. net.) London: Oxford University Press. 1941.

The Oxford War Primers gained no little popularity in the last war and covered a wide field of interest in medical and surgical problems. Here is the first of a corresponding series designed to bring certain subjects up to date. This volume is compact in form, well printed on good paper, and sells at a moderate price. The author frankly bases his views on practical experience gained in 1914-18, but he has not failed to consider any relevant advances in wound treatment which have been made since that date.

The first chapter deals with surgery in advanced units, and shows a clear perception of what is practicable in that zone. The advice given conforms to current practice in the British Army, and is direct and simple. The only criticism of detail which might be made is his recommendation of splints for fractures of the humerus, which depend for their action on an axillary crutch; many have found these splints to be uncomfortable and not as effective as a simple cradle application of Cramer wire in the transport period. In subsequent chapters various sections of work at the casualty clearing station or corresponding unit are considered. In discussing the use of fluids for intravenous transfusion the author does not appear to have made use of the up-to-date information on the subject to be found in the M.R.C. Memorandum on Wound Shock; nor does he recognize that an efficient blood transfusion service has been in being since the start of the war. The general principles of early wound management are admirably stated, and useful practical hints are given both in this chapter and in the remaining sections. The chapter on penetrating wounds of the abdomen is a model of compact statement and contains a wealth of sound advice. The treatment of burns is not considered in this volume, as the intention is that this subject should be dealt with in a separate manual.

This little book should be of help to every medical officer serving in the Army, as a commentary on the *Training Manual* and other standard works.

A MONOGRAPH ON SCABIES

Scabies—Civil and Military: Its Prevalence, Prevention and Treatment. By Reuben Friedman, M.D. (Pp. 276. \$3.00.) New York: Froben Press. 1941.

It is a sign of the times that a monograph on scabies should now be published, and medical practitioners and the public health services have reason to thank Dr. Reuben Friedman for his timely reminder of a disorganizing disease, the effects of which have again and again been recorded, and again and again been forgotten. The book in question, entitled *Scabies—Civil and Military*, gives us many examples of the formidable consequences of scabies in the past, and up to—and beyond—the war of 1914-18, when, in one British Army, skin diseases were responsible for 90% of the sickness rate. While statistical tables are to be seen on many pages, this book is far from a dull compilation of figures. Dr. Friedman enlivens his story with many a glimpse into the past. Thus, whether it be fact or legend, it is believed that even the great Napoleon fell a victim of the prevalent scourge; and that in his campaigns, as Sokoloff relates, whole regiments, officers and men, on reaching camp would throw off their equipment

and scratch en masse, their commander-in-chief scratching himself with a vengeance until blood appeared.

The reader will turn with particular attention to the sections on the prevention and the treatment of scabies. The author's views on prevention are summarized as follows: (1) personal cleanliness, (2) early diagnosis and treatment, (3) detection of and treatment for infected contacts, (4) disinfection of the fomites. With these admirable directions every dermatologist will be in complete agreement. Dr. Friedman devotes 85 pages, divided into five chapters, to the treatment of scabies. In spite of the well-founded knowledge, long possessed by the peasantry, that external agents cured the disease, the medical writers of antiquity found the cause of scabies in a melancholy humour, in black bile mixed with irritating phlegm, and, even in Van Helmont's time, in acrid or irritating salts contained in the serum or lymph. It was against these theories that Bonomo had to contend, to establish his heretical belief that scabies was of parasitic origin and was cured only by the use of externally applied remedies (p. 194). For this purpose sulphur in some form has long been the accepted agent. Sulphur, however, has certain disadvantages which, in the reviewer's belief, are proportionally diminished as the experience of the practitioner grows. Nevertheless, we may well look to modern therapy to devise remedies which, without reducing efficiency, cut down the time factor; and, as a further step, are not greasy and are odourless. Benzyl benzoate, and more recently rotenone, a derivation of derris root, seem to satisfy these conditions. With other preparations they and their application are fully and critically discussed in the text.

This is an admirable book to which the author has clearly given much of his time and attention: an outstanding contribution to a subject which will become of more and more importance. It may even suggest to the responsible authorities in this country that something should be done to control a rapidly growing menace.

CARE OF THE MOTHER

Babies Without Tears. By Dr. Edith Summerskill, M.P. (Pp. 158. 6s.) London and Melbourne: Hutchinson and Co. (Publishers), Ltd.

This book has a noble theme to commend it. The relief of pain in childbirth and the provision of adequate facilities to prevent the terrible waste of life that still occurs are aims worthy of a crusade, but the conduct of such a crusade is neither easy nor free from danger. To write a book "for all mothers, expectant mothers, doctors and midwives" is a task that few doctors would care to undertake, and still fewer could accomplish with success. Dr. Summerskill has been unfortunate, or subtle, in her choice of title, which may refer to the eye or the perineum with equal justification, and the claim that the book presents a cogent and authoritative plea for the use of anaesthesia is open to criticism. The broad facts of the case, which few will dispute, are that unnecessary suffering can be and should be prevented, and that efficient obstetrical services would reduce the present loss of life. The urgency of the plea is for progress to be expedited.

By her handling of the subject the author has appealed more to the lay public than to the medical profession, and in doing so she has at times been unfair to both. The far-reaching effects of the cumulative influence of the Royal College of Obstetricians and Gynaecologists have not been mentioned, although it is through the activity of the college that the desired goal will almost certainly be reached. The lay reader unacquainted with the facts would believe from Dr. Summerskill's book that progress is delayed because of the callousness of man, be he doctor or politician, to the sufferings of women. This is contrary to fact and

savours of political agitation, which should have no place in even a pseudo-scientific publication. The lament that midwives are not taught to give anaesthetics and "repair any tear of torn tissues" is strange when one considers the serious implications of such a policy and realizes that it is sponsored by an advocate of safer motherhood. Readers are asked to believe that Vera Brittain's harrowing description of the confinement of Janet gives a fairly realistic picture of childbirth without an anaesthetic, and are told that every doctor knows there is nothing exaggerated in this description. This is but one example of the overstatements which weaken the value of the book, for if the author believes what she asks others to believe her experience of obstetrics cannot have been wide and must have been unfortunate. Dr. Summerskill's crusade is noble in purpose but faulty in execution.

A BOOK OF VERSE

Childhood and Other Poems. By Sir G. Frederic Still, K.C.V.O., M.D. (Pp. 152. 5s. net.) London: John Murray, 1941.

That this slender volume of verse is now available to a wider public than was the original intent of their author is a matter for congratulation, and we are glad that the counsels of those friends for whom they were first of all privately printed have prevailed. "An artless song—Tuned like some old-world melody to themes of quaint simplicity"—thus does Sir Frederic Still at once define his sense of poetry and what the reader may expect to find. And in the frank simplicity and sincerity of these little poems there is solace in these days which are harsh for the gentle of heart. More than this, the reader may if he will learn much of the writer, for in each "artless song" there is apparent the clear-sighted observer of childhood who sees with a depth of affection but who sees clearly; and a man at peace amid "books and the running brooks." Nowhere does he point a moral, but inherent in his writing are the beauty and satisfaction of truth and love and duty. The dedicatory sentence, "As one that gleaneth after the grape gatherers," is of a characteristic modesty, since it is clear that Sir Frederic venerated the masters who have caused our English tongue to sing and was well aware of his indebtedness. In short, this is a little book blessedly free of whimsy in which it is clear that to the author children and Nature were best evidence of "the day-spring from on high."

We had written thus far when came the sad news of the author's death, which deprives medicine of a singularly gracious influence. As if in anticipation of his approaching end he expresses the hope in one of his last poems

That so of me,
Shall nothing live that might work other's ill,
No legacy
Of harm to lead one single soul astray,
Thus may it be,
When I shall die.

that wish is fulfilled.

Notes on Books

The Ministry of Health has issued a booklet which is Part I of Emergency Medical Services Instructions and deals with medical treatment in special centres. It is pointed out in a foreword that the instructions have reached such proportions that it has become difficult for those who have to carry them out to see that this is done. The wise decision has therefore been made to consolidate these instructions into booklets, a step which will be welcomed by those whose desks are now beginning to be piled high with leaflets of every description. The booklet just issued covers all the separate instructions on

medical treatment and special subjects issued as E.M.S.I.s: E.M.S. Gens. from the beginning of the Emergency scheme until the end of May, 1941, with the exception of E.M.S.I.s 1278, and 289. Subsequent amendments and additions will be issued in bulletin form from time to time. The booklet consists of sixty pages, and a detailed contents list makes it easy to find one's way about. The booklet is not on sale generally but is issued to officers of the Emergency Medical Service only.

An Index of New Remedies, by Mr. W. MAIR, contains a list of recently introduced remedies, together with short notes of the therapeutic purposes for which they are recommended. The desire of manufacturing firms to label their products with names registered as trade marks has always been a major obstacle to the development of any rational nomenclature for new drugs. The situation has been aggravated recently, in some cases dozens of new names have been devised for the description of a single drug. For example, the index gives a list of 33 proprietary names for sulphanilamide. It is obviously impossible for medical practitioners to keep abreast of nomenclature of such crazy complexity: hence this index is a very useful work of reference. It will at least enable the practitioner to know whether a new name refers to some important therapeutic advance or is merely one more unnecessary ally of some well-known compound. It is published at 1s. 6d. free by the *Scottish Chemist*, 240, Albert Drive, Pollokshields, Glasgow.

A textbook which reaches a seventh edition evidently appeals to the medical public. Prof. LOGAN CLENDENING'S *Methods of Treatment* (Henry Kimpton, 25s. net) now appears with collaboration of Dr. HASKINGER as editor, and with the help of twelve associates on special subjects is an excellent introduction to modern therapeutics. As before, the first part describes the physician's armamentarium not only of drugs, diet, hydrotherapy, and physical therapy, but also the minor surgical procedures of treatment, such as venesection and blood transfusion, spinal and cisternal puncture, thoracentesis and gastric lavage. The second part is devoted to special discussion of therapeutic measures in particular diseases, and the practitioner will find a readable and reliable account of treatment of the system diseases. Tropical diseases are not included under a separate heading. The editor has a strong bias towards the physical aspects of medicine; not that he neglects the neuroses and psychoneuroses, but he takes what might be regarded as the practical view in discussing and treating them. The physician is to demand of himself the answer to the question, Why is this man unsuited to his world? The individual may have a body which in so many ways is a drag, or may find the conditions of living and work difficult. Treatment, then, of the psychoneuroses involves taking account of all these aspects of the patient and all aspects of his work, and endeavouring to establish the patient's relations with reality. Throughout the author introduces appropriately a useful and interesting historical background by quoting classical descriptions of original observers—for example, Withering on digitalis, and Bodington on rest and fresh air for tuberculous. This book of a thousand pages is worthy of a place in the practitioner's consulting room and will attract and delight by the racy character of the instruction.

Preparations and Appliances

QUININE DIASCORBINATE

Orgakinine (Organon Laboratories, Ltd.) is a new synthetic compound—namely, quinine diascorbinate. It is prepared in ampoules for injection and in tablets for oral use. The tablets each contain 36 mg. of quinine base and 39 mg. of ascorbic acid. The manufacturers quote evidence in support of the view that fevers cause loss of ascorbic acid. Parenteral administration of orgakinine is suggested as an improvement on the traditional method of quinine therapy in lobar pneumonia. The tablets are recommended for treatment of colds and influenza. A suggested dosage of six tablets a day would provide about 216 mg. of quinine and 0.2 gramme of ascorbic acid.

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PHARMACY AND MEDICINES BILL

A leading article in the *Times* the other day cited the new Pharmacy and Medicines Bill, which received a second reading in the House of Commons on July 8, as an example of hurried wartime legislation. True, the reasons given by the Chancellor of the Exchequer, in his Budget statement, for proposing to take up Parliamentary time just now with a Bill to repeal the Medicine Stamp Duties were hardly convincing. Doctors did not need to be reminded that the Medicine Stamp Duties had become "administratively unworkable" and were largely ineffective in controlling the sale of "quack" remedies, nor were they much concerned with the fact that the Purchase Tax on medicines created the anomaly of a tax on a tax. They were concerned, however, lest the Bill should, in the absence of clauses controlling the sale and advertisement of proprietary medicines, undo even the little that has so far been achieved and encourage the indiscriminate sale and purchase of secret remedies. But the Bill now before the House allays many of these early fears and even promises a greater measure of control than hitherto. It is well known that the medical profession would like to see put into operation all the recommendations of the Select Committee on Patent Medicines of 1914, but experience has shown that such an ideal cannot be attained in one step. The new Bill—admittedly piecemeal legislation—will, if it becomes law, make a useful beginning and pave the way to eventual full control.

Briefly the Bill makes it illegal to advertise remedies for the relief or cure of Bright's disease, cataract, diabetes, epilepsy or fits, glaucoma, locomotor ataxy, paralysis, or tuberculosis, or substances to procure miscarriage. Exceptions are made for advertisements published by a local authority or voluntary hospital or in journals of a technical character for circulation to doctors and other professional classes. The diseases named are substantially those proposed by the Select Committee. The prohibition does not apply, however, to surgical appliances, deaf aids and similar articles, or to articles offered for the cure of habits associated with sexual excess or indulgence. The Bill also forbids the retail sale of medicines on or after January 1, 1942, without the disclosure on the container, wrapper, or label of their composition or active constituents either in specific terms or by reference to the *British Pharmacopoeia* or the *British Pharmaceutical Codex*, unless the medicine is prescribed for the needs of a particular person and supplied for his own use. (This follows the recommendation of the Select Committee.) After September 2, 1941, articles recommended as medicines may not be sold retail by any person who is not a registered medical

practitioner, a dentist, an authorized seller of poisons, or a person who has served an apprenticeship and is carrying on business as a druggist at the date of the passing of the Act.

So far so good, but if the provisions of the Bill are to be effective there must be some means of enforcing them, perhaps in the same way as the Food and Drugs Acts are enforced, with an Advisory Committee to watch over administration. Further, it is not sufficient to disclose only active ingredients; as Sir Francis Fremantle pointed out in the debate, not only should all ingredients be named but the quantities should also be stated. Nor does the Bill say how the ingredients should be described. The disclosure might be in such pseudo-scientific terms as to constitute no disclosure at all. This clause of the Bill, to achieve its purpose, should make it compulsory to describe the ingredients in common terms readily understood by the general public. Finally, it is regrettable that there is no control of what may conveniently be termed "fear advertising"—that is, of advertisements which seek to persuade the public that they may not be so well as they feel. It is to be hoped that these matters will receive attention during the passage of the Bill through Parliament.

HYPOCHROMIC ANAEMIA

The criteria by which authors have collected cases of idiopathic hypochromic anaemia have often been biased by a special interest in individual symptoms such as achlorhydria or dysphagia; and anaemias due to malnutrition or pregnancy have been included in spite of evidence that the anaemia was normocytic. If hypochromic anaemia is to be characterized at all it must be on the basis of the anaemia, and hypochromia must signify that the red cells are incompletely filled with haemoglobin. Ideally it would be defined in terms of mean corpuscular haemoglobin concentration, or the ratio between the haemoglobin content and the mass of the red cells, but such measures require a centrifuge and are likely for some time to be omitted in routine blood examinations. Lundholm¹ therefore quite simply defines hypochromic anaemia as anaemia with a colour index less than 0.75. Although hypochromic anaemia is usually curable by iron, it is by no means synonymous with iron deficiency, for there is no doubt that iron deficiency can exist without anaemia.²

Lundholm's material comprised 306 cases, of whom 201 came to hospital for treatment of their anaemia, 71 were discovered incidentally, and 34 were discovered on examining relatives of the patients; 92% were in women. Lundholm stresses the diagnostic value of the typical facies, by which he means an aged, sallow, wrinkled face which often contrasts with a smooth, white, and transparent body skin. We need not go into his analysis of the haematological data, but will give his figures for the common clinical symptoms, which are achlorhydria (Ewald) in 67% of cases, glossitis in 44%, koilonychia in 42%, typical facies in 35%, Plummer-Vinson syndrome in 19%, and splenomegaly in 9%. These symptoms were all commoner in the more anaemic

¹ *Acta med. scand.*, 1939, Suppl. 102.
² *Ibid.*, 1938, Suppl. 90, 380.

cases, and splenomegaly was uncommon except in the most severe. Achlorhydria is about twice as common as in the ordinary hospital population. Both achlorhydria and the Plummer-Vinson syndrome cause subjective discomfort which induces the patient to seek advice, and they are therefore more common in patients who come for treatment than in those in whom the anaemia is found by chance. It is clear that achlorhydria is neither the cause nor a *sine qua non* of the anaemia. As achlorhydria is more common when the anaemia is severe, and probably also when it is of long duration, and as a number of the patients lost their ability to secrete hydrochloric acid while under observation, Lundholm is inclined to believe that the anaemia may gradually cause such changes in the mucous membrane of the stomach as result in achlorhydria. The latter may therefore be temporary and reversible to begin with, but later becomes permanent. An alternative hypothesis is that both anaemia and achlorhydria are the result of iron deficiency.

Working with a fairly homogeneous population whose daily intake of iron averaged about 9 mg., Lundholm could find no correlation between diet and anaemia in individual cases. He reviews the various iron-balance experiments recorded in the literature, and shows that the results are often discordant and do not stand close scrutiny. A negative balance of only 1 mg. iron a day would mean the loss of 10% of the body's store of iron in a year; but the relative inaccuracy of the chemical methods, the great variation in the iron content of food-stuffs, the difficulty of differentiating the amount of faeces derived from a given diet, and the inaccuracies in sampling the diet and the excretions, all render it doubtful whether this degree of accuracy can be attained in balance experiments. He concludes that dietetic conditions alone are not a sufficient explanation of the anaemia, nor is it due to the loss of iron in menstruation and pregnancy, for there is no difference in these functions between the anaemic women and those who remain normal. These are merely predisposing factors, and the fundamental fault appears to be a difficulty in absorbing iron from the food or in mobilizing it from the depots. He suggests that this is an inborn error of metabolism, and calls the disease hereditary hypochromic anaemia in consequence. This is probably going too far for most people's taste, but it is to be hoped that this uncompromising title will not prevent his monograph's being studied as widely as it deserves.

In a much smaller series of women in Newcastle-on-Tyne, Khan² has likewise shown that there is no close correlation between the incidence of anaemia and the individual intake of iron. No one can put aside the great mass of data which show that the incidence of anaemia in different peoples, and in different sections of the same people, bears a direct relation to the iron content of the diet, but with iron, as with the vitamins, other factors come into play in deciding which particular individuals will develop a deficiency. Achlorhydria and menstrual losses are obviously not the only factors which may determine the onset of iron deficiency on a given diet, and we can say no more about the other factors except that in some cases they appear to run in families.

AGGREGATION OF TODDLERS

In a recent letter to the *Times* on the provision of nurseries for "under fives," Lady Allen of Hurtwood suggested that "urgent need for the appointment at the Ministry of Health of a second Parliamentary Secretary to initiate experiments to educate the public, and to focus all aspects of this vital work." This is precisely what, for over half a century under the expert direction of the medical officers of health throughout the country, has been a main effort of the public health authorities. During this period a vast amount of fact has been accumulated, and, if public assimilation has lagged, some outstanding principles have emerged for the guidance of zealous but uninformed social reformers. "Under fives" of the toddler period were very well provided for, so far as mere buildings and excellent staffing could do this, in the infant departments of the public elementary schools. Yet, as a result of the experience of medical officers of health and school medical officers this excellent provision has largely been abandoned for the all-important reason that it has been found incompatible with the health of those for whom it was made, or even dangerous to life. At the tender ages of early childhood, human beings, like other mammalian species, cannot be aggregated without grave danger. Susceptible to infections to a degree not experienced by older children or adults, toddlers succumb disastrously when, with aggregation, exposure to infection is increased. They contract infections which in later life might be regarded as minor and die from them at a rate that is higher than at any subsequent age period. These are commonplaces of medical knowledge. Yet with the perversity which in England characterizes so much misdirected effort, expert opinion is flouted or ignored, and uninformed philanthropic enthusiasm displaces an equally well-intentioned yet informed and sane direction. For instance, no sooner had we attended the effort to raise the minimum school age than nurseries and crèches, subject to exactly the same danger as the infant departments for which they were substitute sprang up like mushrooms everywhere. The fact is that for some children, care and provision other than that of the mother and the family circle is necessary, and it is this residuum that affords at once excuse and incentive for a campaign for publicly provided nurseries and crèche. Compromise with unavoidable evil may be necessary, but it should not be regarded as a virtue. Since already local authorities have covered the ground, experiment by amateurs in so sensitive a field as that of the unmothered toddler is the less permissible. This is no time for ignorance in direction in vital affairs, for by-passing those with knowledge and putting in their place Parliamentary Secretaries who can only properly function when trained and experienced officials continuously inform Ministerial policy. The Ministries abound in technical advisers. Just as in the Army the generals must be unfettered by political interference, so in matters that concern health the medical advisers should not be trammelled by the piling up of Parliamentary Secretaries. Neglect of this elementary principle is bound to yield an aftermath of sickness and deaths which will be revealed in the vital statistics of the coming years. A.R.P. work, uninformed at first by medical direction, has been responsible in certain of its activities for putting back the clock to pre-sanitary days. The nation cannot afford similar mistakes to be made in the care and supervision of infants in the peculiar circumstances of the war. One inexorable fact dominates a situation which is a political manoeuvring can ultimately disguise. Aggregation of the young in schools, in hospitals, in nurseries, crèches is unnatural, and this departure from the normal law of domesticity, wherever necessity has imposed it, has

² *Lancet*, 1941, 1, 11.

had unfortunate results. The dangers to the highly susceptible children of tender years are such that aggregation should only be sanctioned when unavoidable, and then it calls for the most skilful and knowledgeable control. Far better to subsidize the mothers within the seclusion of temporary homes, if there be occasion, rather than to employ deputies in institutions. A proposal to withdraw little children from the care of their mothers, to aggregate them in tens, in scores, in fifties, under the care of "suitably trained friendly aliens" or others, in order that mothers may engage in war work should be critically watched by the medical profession. It is on record that in the Franco-Prussian War, during the siege of Paris, the infant mortality of that city fell to a phenomenally low figure. This was a result not of the provision of nurseries to relieve mothers of their duties, or to set them free to discharge others for which they were less fitted, but of an enforced reversion to natural maternal conditions where breast-feeding and maternal care were inescapably imposed. This significant historical fact should be well considered.

SULPHANILAMIDE AND SEAWEEDS

The following formula for a satisfactory base for a sulphanilamide ointment appeared recently¹:

1. Dissolve 10 parts of sulphanilamide in 25 parts of hot water (almost boiling). Filter.
2. To 4 parts of sodium alginate add 75 parts of boiling water, emulsify, and then strain the resulting mucilaginous mixture through fine gauze. Mix the filtered sulphanilamide solution and the sodium alginate while hot, and stir this mixture until cool.
3. Add 16 parts of anhydrous wool-fat, 1 part of sodium chloride dissolved in 4 parts of water, and 78 parts of white petrolatum base to the sulphanilamide-sodium alginate mixture, and mix until smooth.

Subsequently it was stated² that the object of this was to get a base for sulphanilamide and its derivatives which would not be greasy and would be non-irritating. Ointments with a base of hydrous wool-fat or cod-liver oil are not used because they tend to "cake" in the wounds. The ointment described here is smooth. Not only has it been used on surface wounds, but it has proved to be non-irritating and non-toxic when applied to mucous membranes such as the conjunctiva and the sclera and cornea. The use of sodium alginate to economize in substances such as glycerin and tragacanth is of particular interest to prescribers in this country. Sodium alginate is manufactured from seaweed, and is mentioned under this heading in the Medical Research Council War Memorandum No. 3, "Economy in the Use of Drugs in Wartime." It has a formula resembling those of cellulose and pectic acid, and is used in industry for stabilizing suspensions and emulsions, thickening solutions, forming gels, and preparing films and coatings. The main disadvantage of sodium alginate, which has hindered its use as a wartime substitute, is that it is chemically reactive, and on this account it cannot replace glycerin and tragacanth in a number of familiar suspensions and emulsions used in medicine. Occasions on which it can be used should, therefore, be the more thoroughly exploited, and this is especially true of sulphanilamide ointment, which is likely to be prepared in bulk and used on a large scale. The economic importance of seaweeds has recently been discussed by Moore,³ and their uses were described in a presidential address to the Botanical Section of the Southern

Union of Scientific Societies by Miss E. M. Delf.⁴ Seaweeds have at various times been used as foods for animals and man, as manures, and as sources of potash, soda, iodine, and mucilages. In the animal economy they probably have no caloric value, but serve as flavouring agents and sources of minerals and vitamins. As seaweed is relatively expensive to collect, costing from 12s. 6d. to 15s. a ton to gather and cart only a few miles, the seaweed industry in Great Britain languished when cheaper sources of alkalis and iodine became available. In America, too, the large plant at San Diego, designed mainly for the production of calcium acetate, acetone, and cognate substances from seaweed in 1914-18, was dismantled soon after the end of the war. To-day, however, there are increasing uses for colloids and plastics, and the need for these may revive the seaweed industry once more. Seaweeds differ from other plants in that their supporting tissues contain no lignin or cellulose. Instead, the thick-walled mechanical elements are highly mucilaginous, giving greater flexibility and more elasticity than are found in the tissues of higher plants. These mucilages are of two kinds: *agar*, which is produced from red seaweed, and *algin*, which is extracted from brown seaweed. Agar is closely similar to the gelatinous products derived from carrageen or Irish moss (*chondrus*, B.P.C.). Up to date little success has attended efforts to produce a good bacteriological agar in this country, and owing to the scarcity and dispersion of suitable red seaweed it is doubtful whether it can ever become an economic proposition here. The brown seaweeds from which algin is derived are much more abundant, and it is probable that the future will see increasing applications of algin and its derivatives.

MAGNESIUM AND TOOTH FORMATION

Although it has been known for some time that magnesium is a constituent of the inorganic material of teeth, very little experimental work has been done on the effects of a dietary deficiency of this element on the composition and structure of teeth. Watchorn and McCance⁵ produced a partial deficiency in young rats by reducing the amount of magnesium in the diet to forty parts per million. The teeth showed an increased water content, capillary dilatation, and reduction of the magnesium content to about one-half after ten weeks on the diet. According to Duckworth and Godden⁶ a more severe deficiency (only six parts magnesium per million) in young rats resulted in tetany and death from the sixth day of treatment onwards. These rats grew normally, and their incisors increased in weight, but the total amount of magnesium in the teeth remained constant. Hence, since abrasion of the ends of the incisors was continually going on, there must have been some deposition of magnesium during the deficiency period. Meanwhile the magnesium content of the teeth of the control animals fed on a complete diet had increased. During the same period the magnesium content of the femurs of the animals on a deficient diet fell by about 30%. When the rats were again given magnesium, it was deposited in the teeth and femurs at a normal or slightly increased rate. The histological changes in the teeth during the period of magnesium deficiency involved a change in the calcification rhythm, widening of the predentine, and, in certain parts, shrinking of the odontoblasts. Recovery when magnesium was again given was rapid; the calcification cycle was resumed immediately, the odontoblasts became normal in about six days, and predentine of normal width

¹ *J. Amer. Med. Ass.*, 1941, 116, 356.

² *Ibid.*, 1336.

³ Moore, L. B., Department of Science and Industrial Research, New Zealand, Bulletin No. 25, 1941.

⁴ Delf, E. M., *Proc. Trans. S. U. Sci. Soc.*, 1940, 45, 15.

⁵ *Biochem. J.*, 1937, 31, 1379.

⁶ *J. Physiol.*, 1940, 99, 1.

⁷ *Ibid.*, 99, 8.

was made. The wide predentine formed during the deficiency was not altered; it was lost only by the continued growth of the rat's tooth and abrasion of the distal end. The behaviour of magnesium in being withdrawn from the skeleton but not from the teeth during a period of deficiency is similar to that of calcium. Gaunt and Irving¹ showed that calcium and phosphorus were withdrawn from the skeleton more than from the teeth, and Schour *et al.*,² in experiments on the effects of parathyroidectomy, fasting, repeated pregnancies and lactations on the incisors of over 100 rats found no histological evidence of calcium being taken from the teeth. Thus it seems safe to conclude that both calcium and magnesium stay in the teeth when once deposited there. They are not withdrawn from these organs during a sudden acute deficiency in the diet.

INTRAPERITONEAL GLUCOSE

The technical difficulties and the uncertainties of the intraperitoneal route for the administration of fluids have combined to restrict its usefulness, and it is only rarely employed to-day. Totten,³ in a review of the literature on the intraperitoneal injection of hypertonic glucose solution, states that the reports and evidence are confusing and conflicting. Buchbinder, using 20% glucose solution intraperitoneally at intervals, found that encapsulation of drains could be prevented and their patency maintained for several days. At the same time a transudate was formed which prevented not only fibrin formation but also the development of adhesions after chemically induced peritonitis. Where there was infection, however, the intraperitoneal glucose led to a more rapid spread of peritonitis. Totten now records the results of a series of experiments in which 20% glucose was injected into animals by the intraperitoneal route. This injection was harmless apart from a controllable degree of dehydration: there was a rapid transudate which was completely absorbed within twenty-four hours, but no formation or re-formation of experimentally produced adhesions. In the presence of peritoneal contamination the glucose solution interfered with the production of fibrin and hastened the spread of peritonitis. It is well that these findings should be confirmed and restated. The potential advantages of controlling fibrin formation and the development of adhesions by a "wet" peritoneum will be greatly outweighed by the added risks of spreading any infection and of inhibiting localizing processes. The control of infection remains a much bigger problem than the control of adhesions.

VASCULAR SURGERY

The name of Dr. Rudolph Matas is an honoured one in the field of international surgery and of outstanding importance in the sphere of vascular surgery. It is all the more honoured since he started his internship at the Charity Hospital, New Orleans, in the year 1877, at the dawn of the Listerian era, and he is still contributing to the subject he has made so much his own. The unsettled conditions which prevailed in the State of Louisiana during the early part of last century provided surgeons with opportunities for treating many wounds of the peripheral blood vessels and their sequelae. Thus the surgeon's traditional interest in this field was maintained and continued at a time when abdominal and other branches of surgery were

claiming more and more adherents. It is worth remembering that in the past the surgeons who achieved the greatest international fame were those who had won their reputations largely through their own work in the surgery of the blood vessels. Matas's early training and experience were thus in a school where the surgery of vascular lesions was a day-to-day problem. In 1888 he carried out the first endo-aneurysmorrhaphy for the treatment of aneurysm and reported the case in the same year. The *Annals of Surgery* for November, 1940, which is a symposium on aneurysms and vascular surgery, contains a review by Matas of a personal series of 620 operations performed upon the blood vessels for all causes between the years 1888 and 1940, a further article from him on aneurysm of the abdominal aorta at its bifurcation into the common iliac arteries, and contributions from other workers on various aspects of vascular surgery and the treatment of aneurysms. Of Matas's total of 620 operations, 417 were on the common carotid or its branches and 203 at other sites, while 260 were for aneurysm and 360 for other conditions. The different anatomical sites and the operative and technical details are analysed and classified. Suture methods were employed in 101 cases, and ligation, including aluminium bands, in 519. There were only thirty deaths in the series, or a mortality of 4.83%. This detailed record, which concludes with a list of 108 contributions by Matas to the literature of vascular surgery, is a monument to his wide clinical interests, technical skill, and critical and scientific outlook. His work has served and should still serve as an inspiration and encouragement to younger men the world over.

CALCIUM THERAPY IN CARDIAC FAILURE

Lauder Brunton, in 1907, recommended calcium chloride for the treatment of cardiac failure. A synergic action on the heart by calcium and digitalis was demonstrated a few years later by A. J. Clark,¹¹ and O. Loewi¹² advanced the theory that the action of the digitalis depended on sensitizing the heart to calcium ions. During the last twenty years the action of calcium, with or without digitalis, in cardiac failure has been investigated by many authors, but the results have varied widely. There is a fairly general agreement that calcium salts given orally are not effective, but that intravenous injections cause slowing of the heart rate. This method calls for caution because rapid administration may lead to severe toxic manifestations. The introduction of calcium gluconate, however, has greatly facilitated intravenous administration. Rozen¹³ gave this preparation to forty-one patients with varying degrees of cardiac failure, and in most of them there was a notable slowing of the pulse. This was much greater where the rhythm was regular than in cases of auricular fibrillation. The effect is probably due to vagal stimulation, because in ten cases out of fifteen in which atropine was previously given there was no calcium bradycardia. Clinical improvement was noted in fourteen cases, and the author concluded that intravenous cardiac therapy should be adopted for patients with cardiac decompensation who have not responded to digitalis.

At the quarterly meeting of the Council of the Royal College of Surgeons of England on July 10 Sir Alfred Webb-Johnson, C.B.E., D.S.O., was elected President for the ensuing year, in succession to Sir Hugh Lett, Bt.

¹ *J. Physiol.*, 1939, 85, 51P.

² *Amer. J. Path.*, 1937, 12, 945.

³ *Surgery*, 1940, 8, 456.

¹¹ *Proc. roy. Soc. Med.*, 1912, 5 (Therap. and Pharm. 181).

¹² *Arch. exp. Path. Pharm.*, 1918, 82, 131.

¹³ *Glasgow Med. J.*, 1940, 134, 147.

CHEST SURGERY IN WAR

This is one of a short series of articles based on lectures given at the British Postgraduate Medical School, Hammersmith

SOME ASPECTS OF CLOSED WOUNDS OF THE CHEST*

BY

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Major, R.A.M.C.

Suggested Programme of Treatment

Prophylactic chemotherapy should be given as early as possible in every case, on lines similar to those recommended for other war wounds (Fuller and James, 1940). The possibility of prophylactic local application of sulphphonamide drugs to the pleura by injection of suspensions of the drugs in a suitable vehicle seems as yet to be unexplored; local application to wounds elsewhere has been successfully used. Though local application to the pleura in cases of established infection with empyema has been disappointing, the method seems well worthy of trial as a prophylactic against the development of infection.

Immediate surgical treatment is necessary for cases showing the indications already described under "Surgical Intervention." Wherever possible, this and other forms of treatment should be planned after study of radiographic appearances.

In cases with "closed" wounds not showing indications for immediate surgical intervention, and those in which after necessary surgical treatment the chest has been closed (according to the indications outlined above), treatment should be planned to keep the pleura free from blood and exudate by aspiration, and to manage the pneumothorax most advantageously. These questions receive further consideration below.

Surgical intervention on the usual lines is required later for such conditions as empyema, pulmonary abscess, etc.

Management of the Closed Thorax after Penetrating Wounds

In most cases there will be varying amounts of blood and air in the pleura. The advantages of keeping the pleura free from blood and exudate seem overwhelming; the risk of infection, especially by anaerobic organisms, developing in spite of prophylactic chemotherapy is probably much less, and the occurrence of disabling pleural thickening and pulmonary fibrosis by partial organization of the slowly absorbing blood and exudate is avoided. The drawbacks are that unless efficiently performed early aspiration may be exhausting to a shocked patient; that aspiration may be difficult on account of fibrin clot which blocks the needle; and that simple aspiration may result in the recurrence or increase of bleeding by causing re-expansion of the partially collapsed lung. The latter danger may be avoided by air replacement at all early aspirations; this should certainly be done if there is evidence of pulmonary haemorrhage in the form of bright haemoptysis. With these points in mind the following list of indications may be suggested:

(i) *Aspiration and Air Replacement.*—These are indicated in all cases in which within a few days of wounding there is a considerable haemothorax. The indication for air replacement is not so strong if no haemoptysis occurs, but if there is haemoptysis early aspiration should be accompanied by air replacement.

Air replacement is contraindicated if there is evidence of a pleural infection.

(ii) *Simple Aspiration.*—This is required in cases seen later in which there are signs of considerable effusion into the pleura but without haemoptysis, and in cases in which a pneumothorax has been present for several days, haemoptysis has ceased, and there is a reaccumulation of fluid, especially if the temperature and pulse are rising, suggesting incipient infection. In the latter type of case the object of treatment should be to secure re-expansion of the lung to minimize the size of the empyema that may develop.

(iii) *Artificial Pneumothorax.*—The cases considered under heading No. i will be left with an artificial pneumothorax. In a few instances a wound of the lung may be causing haemoptysis without any considerable haemothorax or traumatic pneumothorax. In these, if haemoptysis continues, the formal induction of an artificial pneumothorax may be a very satisfactory line of treatment. In any case, when an artificial pneumothorax is induced by either of these methods it should be maintained for a few days only; possibly no refill, or at most only one, will be required. As soon as active pulmonary haemorrhage has ceased, as shown by the disappearance of bright blood from the sputum, no further refills should be given, and the lung must be allowed to re-expand slowly by spontaneous absorption of the air in the pleura. The value of artificial pneumothorax has been emphasized, on a basis of practical experience, by Kretzschmar (1940).

Technique of Aspiration

A few words about the technique of aspiration of the chest may be useful. Three points require attention: first, the patient must be supported comfortably in a convenient position, both so that he is not exhausted by the effort of



FIG. 2.—A useful position for aspiration of the chest, air replacement, etc.

maintaining it and so that the operator is not incommoded by difficulty of access to the chosen site; secondly, the common error of inserting the needle too low must be avoided; and, thirdly, a needle of adequate bore for the type of fluid present must be used.

Posture.—There may be factors, such as the site of external wounds, which influence decision about the most suitable posture. In most cases, however, that shown in Fig. 2 is possible and is very convenient. The patient sits propped up in a rather upright Fowler's position; with the arm of the sound side he clasps a blanket or blankets rolled into a cylinder about sixteen inches to eighteen inches

long, while the arm of the affected side is placed so that the hand rests on the opposite shoulder and the elbow rests on the top of the rolled-up blanket. This posture leaves the whole of the lateral wall of the chest accessible to the operator sitting by the bedside. It can be maintained without distress even by an ill patient.

Insertion of Needle.—In most cases of effusions into a free pleura the needle should be inserted in the fifth or sixth intercostal space in the mid-axillary line with the patient in the position described. The disadvantage of inserting the needle lower than this is that it is apt to get intermittently blocked by the diaphragm at the height of its excursion, that fibrinous particles are more numerous in the costo-phrenic "gutter," and that this "gutter" is in any case more narrow in its lower part, so that it may easily be almost obliterated by fibrinous deposit on the pleura. These troubles are minimized by inserting the needle higher up; if this has been done the last part of the fluid may be withdrawn by leaning the patient over towards the affected side.

Size of Needle.—The importance of using a needle of adequate bore seems too obvious to require emphasis. There is one difficulty, however—namely, that most large-bore needles are made much longer than necessary for pleural aspiration. Those supplied with most of Potain's aspirator sets are an example of this. Very few chest walls require a needle more than two inches in length; and unnecessary length partly defeats the purpose of a wide-bore needle by increasing the resistance to flow. Aspiration of a haemothorax may prove very difficult on account of repeated blockage of a needle of the usual sort, even of wide bore. In such cases it is tentatively suggested that larger trocars and cannulae, such as are used for the insertion of intercostal catheters or for thoracoscopy, might be tried. A trocar and cannula of this size can be inserted painlessly if the technique is sufficiently careful. The chosen site must be adequately anaesthetized, 20 c.cm. of local anaesthetic solution being required; the presence of fluid is confirmed; a small incision is then made with a fine scalpel or tenotomy knife, and through this the trocar and cannula are steadily thrust between the ribs into the pleural space. Aspiration through such a large cannula, if thoroughly performed, would rarely need to be repeated. It might be advisable to irrigate the pleura with normal saline at the end of such an aspiration to ensure that no fibrinous debris is left to interfere with subsequent aspiration through a more normal needle, should it prove necessary. During this procedure the interpleural pressure should be controlled by introducing or removing air through a second needle inserted higher up, as described below under "air replacement." After withdrawal of the trocar the small wound should be closed by a single stitch, and a dressing, firmly supported by elastic plaster, applied.

Technique of Air Replacement

Air replacement requires, in addition to aspirating apparatus, devices for measuring the intrapleural pressure and for admitting air, preferably in measured volume, into the pleura. These are, of course, both provided by any form of apparatus used for artificial pneumothorax work. Preparations having been made for aspiration as outlined above, a second needle is introduced, in the manner described for measuring the intrapleural pressure, higher up above the level of the fluid. Through this, as the fluid is withdrawn through the lower needle, air is admitted at such a rate that the intrapleural pressure is kept as constantly as possible at the desired level. The pressure required in the individual case can be judged from the degree of lung collapse initially present and the initial pressure before aspiration is begun. In general, in order to main-

tain constant pressure within the pleura rather less volume of air must be introduced than fluid withdrawn. The pressure required to produce a useful degree of lung collapse varies greatly: it will always be below atmospheric in men with previously healthy lungs—generally the mean pressure will lie between 0 and -4.

If a pneumothorax apparatus is not available the pressure may be measured with the manometer described on page 57, and the aspiration stopped occasionally to allow time to be injected through the lower (aspirating) needle with a large syringe, the amount being controlled by observation of the intrapleural pressure. This is a safe procedure, provided it is certain from the free flow of fluid on aspiration that the needle is in the fluid-containing space.

If there is a large haemothorax with no considerable space above it, and an air replacement is indicated, the easiest procedure is to start as for simple aspiration. When about 100 c.cm. of fluid has been withdrawn inject 80 c.cm. of air through the aspirating needle, and continue thus until a useful air space is present above the fluid. Insert the upper needle into this, and proceed as in the cases with initial air space.

Infection.—This complication should be watched throughout. So long as fluid accumulates in the pleural space specimens must at intervals be examined bacteriologically by both aerobic and anaerobic culture, especially if the temperature rises or fails to fall. It is to be hoped that the incidence of infection will be reduced to a very low level by prophylactic chemotherapy and thorough early aspiration. When it occurs the case must be treated on the general principles of the treatment of pleural infection which cannot be discussed here. It may be stressed that so long as there is a pyothorax—i.e., a collection of purulent fluid in a free pleura—aspiration or drainage by an efficiently closed method must be used; only when the condition has settled into a localized walled-off empyema may an open method of drainage be employed.

Tension Pneumothorax

This is a rare complication of chest wounds; it results from a pleuro-bronchial communication of valvular type, so that air can enter the pleura in inspiration and cannot leave it during expiration. The pleura thus becomes distended by air under pressure, causing gross mediastinal displacement and dangerous respiratory distress.

The presence of a tension pneumothorax may be suspected when there is extreme respiratory embarrassment with cyanosis, and on examination the affected side of the chest is immobile, possibly distended, hyperresonant on percussion and either silent or (rarely) with curious amphoric respiratory sounds on auscultation, and the heart and possibly the trachea are displaced on the opposite side. The diagnosis is made precise by measurement of the intrapleural pressure, which will be above atmospheric.

Such a case calls for immediate measures for its relief. In emergency, with no apparatus to hand, relief may be obtained by simply thrusting a needle into the pleural space through one of the upper intercostal spaces. The outward hiss of air is easily audible if a tension pneumothorax is present, and confirms the diagnosis. This simple insertion of a needle brings the intrapleural pressure to atmospheric and results in considerable relief of urgent symptoms. If the apparatus is available more information about the site of the valvular opening may be obtained by measuring the pressure, withdrawing a measured volume of the pleural gas to reduce the pressure a little below atmospheric, and watching for a time to see whether the pressure rises again. If it does not the needle may be withdrawn and the patient watched for recurrence of distress. If the pressure mounts rapidly or, after the needle has been withdrawn, distress

recurs rapidly, a suitable needle may be inserted and connected to a rubber tube attached to a simple under-water drainage bottle as used for closed drainage of empyemata (Fig. 3). This will afford great relief, but has the disadvan-

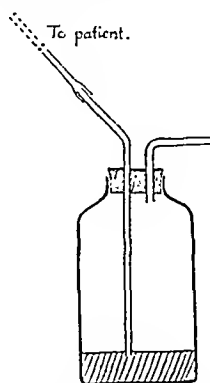


FIG. 3.—Simple under-water drainage bottle.

tage that, as air is expelled during cough, it may result in the development of a low intrapleural pressure, with too rapid re-expansion of the lung, giving the pleuro-bronchial fistula no chance to heal. It may be more satisfactory, in a patient who is not distressed by an intrapleural pressure equal to atmospheric, to leave a needle *in situ* open to the air, preferably through a loose cotton-wool filter. If, however, the patient is distressed with an atmospheric intrapleural pressure the arrangement shown in Fig. 4 may be

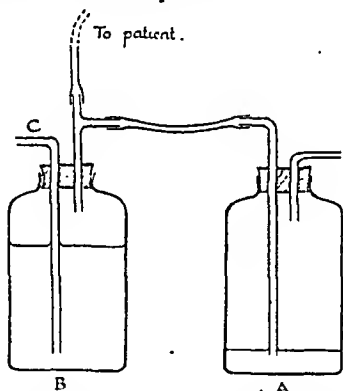


FIG. 4.—Apparatus for under-water drainage of tension pneumothorax, with safety-valve.

used. In this, bottle B is added to the simple under-water drainage bottle A to act as a safety-valve, letting air into the system whenever the pressure gets below a level equal to that number of centimetres of water below atmospheric by which the tube C projects below the surface of the water in bottle B. This is of course adjustable to whatever level is required for relief of the patient's discomfort. The other more complicated apparatus described by Marriott and Foster-Carter (1940) may be used for the same purpose.

In general, in the treatment of valvular pneumothorax as little air as possible should be withdrawn or the pressure maintained as near atmospheric as it can be, in order to keep the lung as firmly collapsed as is consistent with the patient's comfort, since only thus has the pleuro-bronchial opening the best chance of healing. In valvular pneumothorax due to wounds surgical intervention will often be indicated; but the measures outlined above may be necessary life-saving preliminary steps.

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HEALTH INDICES FOR GREATER LONDON AND NEW YORK, 1931-40

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In a leading article (*Journal*, February 8, p. 201) dealing with the provisional notification and death rates from certain causes in the city of New York for the year 1940 regret was expressed that no recent death rates were available for London with which these could be compared. The February issue of the Quarterly Bulletin of the Health Department of New York City contained the death rates in each year from 1931 to 1940, at appropriate ages, from diphtheria, scarlet fever, measles, whooping-cough, tuberculosis, pneumonia, appendicitis, suicide, homicide, accidents, and some other causes. Greater London and New York are at present not far apart in their total populations, and it is of interest from a public health standpoint to compare the changes which have occurred in the death rates from these causes in the two cities since 1931. In such a comparison it must be remembered that while the New York figures do not include deaths of residents which occurred outside the city and do not exclude those of non-residents which occurred within the city, the Greater London rates have been corrected for inward and outward transfers and represent the total mortality suffered by residents. The effect of this can be illustrated from the following example. In 1940, 227 deaths from diphtheria, scarlet fever, measles, and whooping-cough were registered in Greater London, but of these only 104 were of residents; in addition 163 deaths of Greater London residents from these causes were registered in other administrative areas of England and Wales, making a total of 267 residents, compared with 227 registrations. If the same conditions hold for New York this would account for an apparent excess of 18% in the combined rate for these diseases in Greater London, but if a larger proportion of New York's infectious disease hospitals lie outside the city's boundaries a still greater apparent excess might result. The same considerations apply to tuberculosis, from which cause a large proportion of deaths of town dwellers occur in institutions situated in the country, and unless these are transferred to the towns of residence the death rates of the latter are fictitiously low. In New York it has been ascertained that the addition of deaths from tuberculosis of residents occurring outside the city would increase the rates by about 10%. Causes such as pneumonia and appendicitis are not likely to be affected to the same extent, but the general death rate of Greater London is raised appreciably by the process of allocation of all deaths to the place of residence of the deceased. In the December quarter of 1939, for example, 19,309 deaths from all causes were registered in the area, 6,360 of these being of non-residents, while 7,512 residents died elsewhere; the corrected death rate was consequently 6% in excess of the uncorrected rate.

Since it is uncertain to what extent the New York death rates are understated owing to this absence of correction, the best method of comparing the progress made in the two cities since 1931 is to study the changes in the ratio of the Greater London death rate to that of New York. Changes since 1931 in the distribution of hospital cases in and around New York are unlikely to have seriously affected the ratio, and if it has consistently increased the conclusion may be drawn that progress in reducing mortality from the disease in question in Greater London has not kept pace with that in New York, and vice versa.

For diphtheria the London/New York ratio in 1931-4 ranged from 2.0 to 6.5, but in 1937-40 it ranged from 6.0 to 8.6, for whilst New York has reduced the toll of this disease by more than 85% since 1932, Greater London's rate has fallen by little more than half. For scarlet fever, however, the ratio has not changed consistently, the average death rate in Greater London having fallen from 66 in 1931-4 to 15 in 1937-40 and in New York from 49 to 12—that is to say, by more than 75% in each city.

Diphtheria and Scarlet Fever. Death Rates per Million Children Under 15 Years of Age

Year	Diphtheria			Scarlet Fever		
	Gr. London	New York	Ratio	Gr. London	New York	Ratio
1931	242	110	2.2	58	50	1.2
1932	251	124	2.0	66	79	0.8
1933	330	51	6.5	67	35	1.9
1934	450	61	7.4	75	31	2.4
1935	293	40	7.3	27	45	0.6
1936	224	21	10.7	36	38	0.9
1937	216	36	6.0	29	19	1.5
1938	219	36	6.1	29	11	2.7
1939	116	16	7.2	7	10	0.7
1940	121*	14	8.6	7	9	0.8

* Provisional rates.

For measles the annual London/New York ratio has fluctuated greatly owing to epidemics occurring in different years, but when the average rates in 1931-4 and 1937-40 are compared it is evident that a parallel decline in mortality of children under 5 has occurred in the two cities, the London rate remaining at 5 times that of New York. For whooping-cough a slight fall has taken place in the ratio in recent years.

Measles and Whooping-cough. Death Rates per Million Children Under 5 Years of Age

Year	Measles			Whooping-cough		
	Gr. London	New York	Ratio*	Gr. London	New York	Ratio*
1931	221	252	0.9	817	403	2.0
1932	1,871	112	16.7	904	281	3.2
1933	187	425	0.4	850	257	3.3
1934	2,093	228	9.2	731	221	3.3
1935	86	228	0.4	444	321	1.4
1936	1,505	185	8.1	757	107	7.1
1937	75	61	1.2	634	106	6.0
1938	579	93	6.2	285	233	1.2
1939	11	2	5.5	39	87	0.4
1940	132	7	18.9	70	108	0.6

* Ratio of average annual rates - Provisional.

Greater London's tuberculosis death rate in 1931 was 1.27 times that recorded for New York, but as it is estimated that the latter would be increased 10% by inclusion of deaths of New York residents occurring away from the city, the real excess in the crude death rate must have been about 15%. The ratio declined from 1.28 in 1933 to 1.10 in 1936, indicating a more rapid improvement in London in that period and bringing the crude death rate to equality with that of New York. Since 1936, however, the ratio has risen again year by year to 1.25 in 1939, this being due to an accelerated decline in New York in recent years combined with a setback in London in 1939.

Tuberculosis and Pneumonia. Death Rates per Million Persons of All Ages

Year	Tuberculosis (All Forms)			Pneumonia		
	Gr. London	New York	Ratio	Gr. London	New York	Ratio
1931	893	704	1.27	581	1,323	0.67
1932	825	645	1.28	747	1,113	0.67
1933	831	647	1.28	736	1,056	0.68
1934	776	621	1.25	725	948	0.77
1935	706	610	1.15	591	891	0.66
1936	702	636	1.10	709	908	0.78
1937	684	585	1.16	740	896	0.83
1938	626	525	1.19	630	649	0.97
1939	640	520	1.23	555	576	0.96

New York's pneumonia death rate was much above that of Greater London during 1931-5, but in the short period 1936-8 the excess was reduced until approximate equality was attained in 1938 and 1939. There can be little doubt that this achievement may be credited to the great efforts made in the United States to combat pneumonia by serum therapy, and that the parallel decline noticeable in both cities since 1938 reflects the application of the new discoveries in chemotherapy.

Another cause from which New York has for long recorded a much higher death rate than London is appendicitis, but, as in the case of pneumonia, the rate of improvement since 1931 has been more rapid in the former city, with a resulting increase in the ratio between the average annual death rates from 0.47 in 1931-3 to 0.55 in 1934-6 and 0.57 in 1937-9.

Appendicitis. Death Rates per Million Persons of All Ages

Year	Gr. London	New York	Ratio	Year	Gr. London	New York	Ratio
1931	75	166	0.45	1936	72	145	0.50
1932	74	151	0.49	1937	72	129	0.56
1933	78	162	0.48	1938	65	113	0.57
1934	78	141	0.55	1939	60	109	0.55
1935	80	123	0.63				

The suicide rate (which in Greater London is not appreciably affected by allocation of deaths to the place of residence) was high in both cities during the years of economic depression, but since 1934 there has been little change. London rate being about four-fifths of that in New York. For other violent deaths the ratio has tended to increase. Greater London's death rate being 54% of that in New York in the years 1931-2, rising to 68% by 1939. Correction of this death rate by allocation to place of residence brings about an increase of 6% in Greater London, and the same is true of New York the corrected ratios will be 6% less than the figures tabulated.

Suicides and Other Violent Deaths per Million Persons of All Ages

Year	Suicide			Other Violence		
	Gr. London	New York	Ratio	Gr. London	New York	Ratio
1931	135	215	0.63	401	747	0.54
1932	154	227	0.68	376	690	0.54
1933	154	190	0.81	405	675	0.60
1934	159	174	0.86	409	691	0.59
1935	128	163	0.79	378	656	0.58
1936	125	155	0.81	385	639	0.60
1937	134	157	0.85	353	627	0.56
1938	134	171	0.78	350	566	0.62
1939	122	162	0.77	390	573	0.68

Turning finally to infant mortality rates from all causes, 22,934 deaths of infants under 1 year of age occurred in New York City in the period 1934-8, and when all deaths in New York State had been allocated to the place of residence the number was 22,744, or 1.7% less. But were affected to a similar extent, however (504,436 be reduced to 497,504, or by 1.4%), and the infant mortality rates based on live births may be regarded as free from substantial error and comparable with those of Greater London. The increase in the ratio since 1935 shows that London has not kept pace with New York in its reduction in infant mortality, for whereas Greater London's

Infant Mortality per 1,000 Live Births

Year	Gr. London	New York	Ratio	Year	Gr. London	New York	Ratio
1931	59.0	55.6	1.06	1936	56.5	45.6	1.24
1932	59.6	50.9	1.17	1937	53.9	43.7	1.23
1933	54.2	53.2	1.02	1938	49.7	38.3	1.30
1934	57.2	52.2	1.10	1939	43.5	37.1	1.17
1935	51.2	47.6	1.08	1940	47.4*	34.9	1.36

* Provisional estimate.

average rate in 1931-3 was 8% above that of New York, the excess was 13% in 1934-6 and 24% in 1937-9. War conditions must inevitably further retard improvement in London rate and increase the widening gap for the time being, but when the reconstruction period is reached careful consideration will need to be given to the reasons why New York began to draw ahead about 1936 in this important matter of infant survival, notwithstanding a more difficult climatic and racial background. The average annual death rates per 1,000 live births in the five years 1934-8 from some of the important causes are compared below.

	Greater London	New York
Prematurity	13.2	13.2
Injury at birth	2.4	4.4
Congenital malformations	5.3	4.4
Congenital debility	1.5	0
Diarrhoea and enteritis	5.6	4.4
Diseases of respiratory system	10.6	8.8
Other causes	12.1	6.6
All causes under 1 year	53.7	45.8
" " under 1 month	24.1	28.1
" " 1-12 months	29.6	17.7

* Births, Stillbirths, Maternal Mortality, and Infant Mortality in New York State, 1934-8. State Department of Health, 1940.

Greater London's post-natal death rate compares favourably with New York, the excess being amongst infants between 1 month and 1 year of age, and towards the total excess of 8 per 1,000 live births diarrhoea and enteritis contribute one-half and pneumonia and bronchitis about one-fifth. Infantile diarrhoea is sometimes regarded as a subjugated disease which has ceased to be an important cause of death, but it is well to realize that 8 or 9 infants out of each 1,000 born are still being certified as dying from this cause in London. Small though this may appear in comparison with figures of thirty years ago, the time for complacent self-congratulation on past achievements in public health has surely come to an end, and the point to be considered is why that which is being achieved now in New York cannot be also achieved in London. A keen rivalry between cities in the matter of their health indices, particularly for infants and children, comparable to what we have witnessed in the financial and other phases of our war efforts, should be our aim in the future, and in the case of Greater London, with its complex administration, this will entail team-work if New York's health record is to be overtaken in the post-war period:

HOSPITALS AND AIR RAIDS

ORGANIZATION OF A CITY CASUALTY HOSPITAL

It is the aim of our wartime medical services, albeit in the face of new, varying, and often difficult conditions, to provide with as little delay as possible the best possible initial treatment and to secure the fullest possible restoration to health and efficiency for each individual casualty. Stresses and numbers may sometimes necessitate, but must not become an excuse for, lower standards. Planning in advance can achieve much, but plans must be elastic and susceptible of quick change. Mistakes must be freely admitted and experiences constantly shared. Those severally responsible for the collection, transport, and treatment of wounded should have a proper understanding of each other's tasks and difficulties. More intensive aerial bombardment may yet await us.

In these notes the organization of a city hospital for the reception, treatment, and evacuation of casualties and associated duties are briefly reviewed. The notes are based on experience gained at a London teaching hospital working as a casualty clearing station and possessed, therefore, of the advantages of an ample student personnel for the provision of dressers, clerks, stretcher-bearers, runners, etc. The assistance which students have given can scarcely be overstressed. It is fully appreciated that, with their different constitution and prevailing shortage of male civilian personnel, other types of hospital must needs employ alternative measures. The suggestions outlined, however, with local variations, should be generally applicable to most large city hospitals equipped for the direct admission of casualties on a large scale.

It is well worth considering application to local Scout organizations for the night-time services, in return for supper and breakfast, of squads of Rover Scouts to assist with such duties as those of stretcher-bearer, tally clerk (for stretchers and blankets), or runner. For help as well as training the presence of St. John Ambulance men can also be arranged. As many wheel-trolleys as possible should be accumulated to lighten the work of the bearers.

In hospitals serving cities already bombed or liable to be bombed provision must be made for: (1) reception of cases from the ambulance; (2) preliminary inspection of injuries in the receiving room followed by administration of A.T.S. (unless it be decided to make a routine of giving it in the theatre when the patient is under the anaesthetic), the sorting of cases into categories according to severity, and the recording of particulars; (3) resuscitation; (4) operation; (5) subsequent treatment; (6) evacuation to a "base" hospital; and (7) mortuary identification and disposal.

Ideally the personnel required on duty at night during a raid in a hospital capable of receiving up to or over 100 casualties

should include: (1) a Medical Officer in Charge of staff rank; (2) a senior member of the surgical staff to supervise the surgical decisions of the resuscitation ward, the theatre, and the surgical wards generally; (3) operating surgeons sufficient for the available tables, say from three to five, preferably men of the standing of surgical registrar and sometimes including members of the general or specialist surgical staff; (4) a staff physician in charge of the resuscitation ward and for consultation with the surgeon in cases of wound shock or of chest or neurological injuries; (5) a receiving-room officer—either a member of the specialist staff or an experienced senior house-surgeon; (6) anaesthetists, of whom one should, if possible, be of staff and one of junior staff rank; (7) a radiologist or experienced radiographer; (8) house officers; (9) matron, sisters, nurses, and almoners; (10) engineering and domestic staff, porters, stretcher-bearers, and fire-watchers.

Duties of Senior Officers

1. The Medical Officer in Charge has numerous functions to perform during an air raid. He should be assisted by a responsible secretary or telephonist and a runner: the first of these at his office or night control room, the second either at the control room and kept informed as to his moves or accompanying him on his rounds. He must keep an eye on the number and rate of admissions, and when the hospital's capacity from the point of view of efficient surgery is nearing saturation must make contact by telephone (when possible) with Controls or through the local police with the ambulance service, or with a neighbouring hospital, stating his desire to divert convoys. In practice direct communication in any case with the neighbouring hospital is valuable in order to maintain a friendly reciprocity and to discover how far its staff may be working under stress or able and willing to receive. If other means of communication fail messages should be sent by a returning ambulance. He must tour the wards frequently during the raid to see that all is well and to reassure and encourage nursing staff and patients. It may be necessary for him to visit other parts of the institution or to look into some reported incident or difficulty. He may have to order the evacuation of a ward which has sustained damage or had its windows blasted, or call up extra personnel to deal with incendiary bombs, or summon the fire brigade. He must keep in touch with the matron and with the hospital engineer, who is one of his most valuable lieutenants and under whose direction the fire-watchers and their reliefs should usually be disposed. He must see that operating surgeons and theatre and resuscitation ward staff are relieved without undue delay after an all-night session. He must consult with the surgical officer in charge on matters of policy, and particularly in regard to the pressure of work and the evacuation of casualties on the following day.

2. The surgical O.C. visits the resuscitation ward (which should be a separate unit but as conveniently situated as possible for both the theatre and other casualty receiving wards) as soon as it begins to fill. He should there keep the personnel to a reasonable minimum to avoid congestion and the "too many cooks" tendency. When the first admissions have been attended to and have begun to benefit from the rest and warmth he should make a systematic tour of inspection, dictating a statement of the injuries in each case, ordering in consultation with the physician-in-charge (who remains in the ward) a transfusion here, a dressing or a dose of morphine there, marking up cases for examination with the portable x-ray plant, and entering against the names of the operating surgeons on a conveniently placed blackboard at the entry to the ward the bed-numbers of the cases selected for them in order of need and paying due regard also to the skill and experience of the individual surgeons. He has the same functions to perform in respect of the ward or wards to which the less severe cases are admitted and from which cases are drawn for the theatre pending the resuscitation of the more severe. The graver cases may be conveniently returned after operation to the resuscitation ward to ensure continuity of treatment. He may at intervals give advice in the theatre, and when admissions are few or his other tasks are done he may elect to take a table himself for a selected case or cases. Operating should never, however, be considered his prime function. On the morning following a raid he should help his operating colleagues and their house-surgeons with the selection of cases for immediate evacuation, and he may here need to be guided

by the situation and "bed state" as put to him by the medical officer in charge. It is most important for him to establish communication with surgeons responsible for special lesions in special centres with regard to consultations on or transfer of cases of neurological, thoracic, or facio-maxillary injury.

3. The physician in charge of the resuscitation ward has a special responsibility on the spot for all the more serious cases and (with a transfusion officer or experienced resident to help him) for the transfusion of blood, plasma, or other fluids, or the withholding of these. He directs the sister in charge of the ward in the matter of fluids to be given by mouth or rectum, the administration of oxygen, and the undressing or movement of patients—decisions of considerable moment with the badly shocked cases. He should supervise the keeping of records with full notes of pulse, blood pressure, haemoglobin estimations, vomiting, blood loss, etc., in all grave cases, and should assist his surgical colleague with the difficult decisions as to the optimum time for operation—decisions which his closer and more continuous contacts will materially assist. When the admissions are few he should take the opportunity of making detailed continuous observations on a selected case or cases with a view to increasing his own and the general body of information on the varied manifestations composing the picture of traumatic shock and to advancing treatment. In this work valuable guidance may be obtained from the Shock Committee of the Medical Research Council. His judgment should be sought in the case of thoracic wounds and cranial or other neurological injuries. It has not been found necessary to arrange for separation of the sexes in the resuscitation ward; uniformity of administration and treatment and valuable economy in time and skilled personnel can thus be secured.

4. The receiving-room officer, who should be assisted by a sister and nurses and where available by a junior house officer or by students, and also by the almoner's clerical staff and a sufficiency of stretcher-bearers, should make only a very superficial examination of the casualties, his aim being to decide whether they should be admitted to the resuscitation or casualty ward in the case of stretcher casualties, or to a casualty ward or rest room for discharge in the morning in the case of the walking wounded. At this stage it is quite impossible to form any considered judgment of extent of wounding, operability, etc. Approximately ten minutes per ambulance load of four stretcher cases for his inspection and decision, for the administration of A.T.S. (if given at this stage), and for the taking of particulars should suffice once his team is trained. He may judge that a case is too bad for any of these formalities and pass it direct to the resuscitation ward; in this event it is the duty of the almoner's clerical staff to follow and secure the particulars later. He should err in the direction of sending lighter cases for resuscitation rather than in that of burdening the other wards with serious cases. Among the admissions will be many not requiring operation—concussions, severe bruising, fractured ribs, simple fractures, etc. It has been found that about 50% of all admissions require operation. Upwards of 25% of all admissions may require resuscitation. A resuscitation ward in a hospital equipped for 100 or more casualties should, therefore, when possible, accommodate between twenty and thirty patients and include a side room for necessary equipment.

Radiography

Out of consideration for the patients, and to lighten the task of the stretcher-bearers and preserve quiet and diminish traffic in wards and passages, radiography by night should be carried out with the portable apparatus. Casualties requiring a fuller examination will generally be in a fitter state for this on the following day.

Identification and Other Mortuary Duties

Unless the mortuary is conveniently situated and commodious, separate accommodation must be set aside for persons brought in dead or dying during the night. With an admission of 100 there may be from ten to twenty persons dead on arrival or dying soon afterwards. A most unpleasant but very important duty is that of cleaning up these pitiful victims to make them presentable for those who come to identify them later in the night or in the morning, of carefully collecting and making an inventory of their belongings and placing them in a bag, of

discovering identity cards, which are commonly lacking (the general use of identity disks is much to be desired), and of searching for physical marks or other evidences which may assist what is sometimes a very difficult task of recognition. At one teaching hospital student volunteers have been found to carry out these duties while a kindly and tactful sister and a medical officer of junior staff rank interview relatives. The usual mortuary assistant should report as early as possible on the morning after the raid to arrange the bodies which have received initial attention during the night, to assure the cleanliness of the viewing room, and to give other assistance pending removal of the bodies to the public mortuary or elsewhere. A proper liaison should be established with the local authority to ensure the removal of bodies to the public mortuary within twenty-four hours. Brestles and a supply of old stretchers should be kept in the mortuary in order to free the standard stretchers for cleansing and further use in the hospital. When permission can be obtained, it is of real importance for the advancement of knowledge to carry out post-mortem examinations in certain types of injury. Up to date various difficulties and delays have tended to thwart such inquiries.

Evacuation

When casualties have been numerous during the night as complete an evacuation as possible will be necessary on the morrow to clear the wards for further admissions. The medical officer in charge will have obtained directions from his Hospital or Group Officer as to the destinations of casualties, including those requiring transfer to special centres. A house-physician or other house officer who has not been actively engaged during the night should superintend the loading of ambulances and hand over the lists and notes to the nurses allocated by the matron to accompany them. It will rarely be possible to start the evacuation before 2 p.m., by which time the night surgical and other staff should have retired to rest. One of the most difficult things to cater for is the filling in of the E.M.S. forms and the duplication of the fuller and permanent clinical notes for retention by the hospital and transfer to the "base" respectively. For the comfort of the more serious cases in transit to the "base" many layers of blankets are necessary to serve as mattresses. Where money or gifts are forthcoming there can be no better benefaction than a set of one dozen "sorbo" mattresses with washable covers to fit the standard metal stretchers. These must be checked and sent back with the ambulance conveying nurses and equipment on the return journey.

Reliefs

Relief surgical teams, when not available from a visiting staff, should come from peripheral hospitals. They should work to a rota. After a raid the teams "on call" should communicate with or be warned by the Hospital or Group Officer. If, however, all communications have broken down they should proceed to the hospital which they serve without instructions. The night teams should stop working as soon as possible after 8 a.m. and the reliefs be ready for action by 10 a.m. When arrangements for the diversion of ambulances have been satisfactory it has been rare for the admissions to one hospital to be so numerous that the necessary theatre work could not be finished by midday or early afternoon following a night raid.

As the honorary staff in the case of the voluntary hospitals have many other calls upon their time a rota should be arranged for night duties by the surgeons, physicians, and anaesthetists or others available. At least one surgeon, one physician, and one anaesthetist should be on duty in the hospital during a raid. This is necessary, since it is unfair, when they live at a distance, to summon them during the raid. Furthermore, communications may break down and the approaches to the hospital become difficult. When, however, they live close to the hospital it should be reasonable for them to regard an alert as the indication to go on duty. No large city hospital in a danger zone and lacking a medical superintendent should be without the services of one member at least of the senior staff during the night hours.

Discipline and Other Matters

Practices and lectures should be arranged at intervals for stretcher-bearers, the decontamination and gas treatment units (male and female), and fire-watchers. In the long winter evenings a weekly lecture on general topics, concerts, and debates

make a useful contribution to the maintenance of a good morale and good feeling, and serve to bring together as one family the workers in the many departments, which otherwise carry on from day to day almost in ignorance of each other's functions. Pride in the institution as a unit and in its efficiency is as important for the successful working of a civilian war hospital as it is for a battalion in the field. The medical superintendent and hospital engineer must ensure that there are sufficient sandbags and buckets at all strategic points and that hoses are in order and extinguishers are regularly inspected.

A canteen, running all night and preferably situated close to the receiving room, plays an important part during a raid as a place of meeting and for physical and mental refreshment for internal staff, roof watchers, stretcher-bearers, ambulance drivers, and sometimes for police or firemen working in or near the hospital. If operating has started in the earlier part of the night the whole theatre staff should have at least half an hour off for refreshment between midnight and 3 a.m. It may be necessary for the Medical Officer in Charge to insist on this when the list is long and the surgeons are eager and insufficiently alive to the effects of "industrial fatigue."

In spite of frequent damage by bombs or fire the majority of the large hospitals in London and the other cities affected have thus far been able to carry on their work as casualty clearing stations without serious interruption to their essential work. Certain lessons have, however, been learned. The windows of all important offices and services should be bricked up; these should include the night operating theatres, receiving room, resuscitation ward, and connecting passages. The blasting of windows, apart from the dangers of broken glass, immediately cripples or altogether prevents work owing to the claims of the black-out and the ingress of cold air in winter-time. The theatre in use by night should not be above the ground floor, and wherever possible the same rule should apply to the resuscitation and other casualty wards. Reserve water supplies and lighting should be provided for, and, since gas is especially liable to fail, reserve heating in the form of primus or oil stoves is also necessary. All the alternative routes of exit from wards and the hospital should be in good order and carefully studied by the Medical Officer in Charge and should be known to sisters, house officers, and stretcher-bearers. Plans of evacuation from each occupied ward should be arranged and practised.

Correspondence

Chronic Sick

SIR.—The problem of caring for the "chronic sick" during this war is both a real and an urgent one, and all who have the welfare of sick people at heart must feel compassion for these unfortunates. The solution of the problem is, however, not made any easier by suggestions that the Ministry of Health has not made any attempt to solve it, and that the fact of its existence shows a lack of humanitarianism. A short survey of the position as it affects the Midlands may explain some of the difficulties of the present situation and show that attempts have in fact been made to cope with them.

The number of chronic sick requiring hospital attention in large industrial areas which have been bombed has increased, and is likely still further to increase, because: (1) the destruction of houses has reduced the accommodation available for the chronic sick in their own homes; (2) patients have had to be admitted to hospital because the increased demand for female labour has removed those who would have cared for them in their own homes; (3) the lack of shelter accommodation at the home of the sick person. For these reasons patients who normally would be sent home for convalescence have to stay in hospital; furthermore, the hospital treating these chronic sick may itself have to be evacuated because it has suffered damage or because it is situated in a target area. This problem, therefore, is already an urgent one in some large towns in this area, but it has been made even more acute by the reception of considerable numbers of chronic sick from London and other areas. Sir Frederick Menzies, in his last letter (July 5, p. 31), states

that the number of chronic sick in London is 5,000. I do not know the actual number of chronic sick in London when evacuation started, but judging from the number received in this region, and knowing that certain other regions shared our experience, it seems probable that the greater proportion of London's chronic sick have already been evacuated.

A recent letter in the *Journal* by "De Senectute" (June 28, p. 987) suggested that these patients should be accommodated in rural areas and in those country houses which have been taken over by the British Red Cross, but that they must not be sent to "institutions where the stigma of 'workhouse' still prevails," which, I presume, means the Public Assistance Institutions. The only hospitals situated in quiet rural areas are: voluntary hospitals in small towns which for this purpose can be regarded as rural areas; Public Assistance Institutions; "upgraded" Public Assistance Institutions, with or without additional huts; mental hospitals taken over by the E.M.S.; the auxiliary hospitals of the Joint War Organization of the British Red Cross and Order of St. John of Jerusalem. The small towns are in many instances reception areas, and the strain on their hospital beds has been increased by the presence of official and voluntary evacuees. For instance, one such town which has a peacetime population of 40,000—estimated now to have increased to 70,000—is served by a Public Assistance Institution and a voluntary hospital. In normal times the hospital accommodation can perhaps be regarded as adequate, but to-day, owing to the increase in population, an influx of chronic sick, and of patients from casualty clearing hospitals in other towns, there are only twenty-six empty beds in the two hospitals. While it is true that the voluntary hospital could, by erecting beds in corridors, etc., increase this number by sixty-four, it is clear that there is not even an adequate reserve for calls which may come from the town itself, and that it is quite impossible to accept further chronic sick from London or other large industrial towns.

I gather that "De Senectute" would not allow the chronic sick from large towns to be treated in Public Assistance Institutions, which, however, treat the chronic sick from their own districts, and therefore should surely be able to treat those from other districts. It is true that some of the smaller and older of these institutions leave much to be desired, but many of those which have been "upgraded" are first class in every way, and will bear comparison with voluntary hospitals. Indeed, except for those special facilities for investigation which are usually found only in teaching hospitals, it would be difficult to improve upon them. These, with a few mental hospitals which have been taken over by the E.M.S., are the only general hospitals to be found in truly rural districts. It is true that the auxiliary hospitals have never been used to anything like capacity, many indeed having only a few beds occupied and a staff which is intensely bored and discouraged by a long wait for patients. The Joint War Organization does not, however, allow them to be used for chronic sick, and, as a matter of fact, if in this region every bed were occupied by a "chronic sick" patient it would be impossible to accommodate in them all the chronic sick who have been received into the region. In my opinion the Organization would still further help the medical services of this country if they would relax their regulations, but they can plead at least three good reasons why they should not do so:

(1) Auxiliary hospitals are only equipped to deal with convalescent patients whose lengths of stay, without reference back to the parent hospital, is limited to three weeks.

(2) These hospitals are by way of an insurance providing a reserve of beds into which Service patients and civilian casualties can be emptied if a large number of casualties have suddenly to be catered for.

(3) There is a small minority of chronic sick whose behaviour is reprehensible.

Another difficulty in the present situation is that in many instances the chronic sick are occupying beds provided for acute and Service sick and air-raid casualties. As a result there may be inadequate accommodation for those whose immediate need may be even greater than that of the chronic sick. According to "De Senectute" humanitarianism demands evacuation of the chronic sick from the large towns, and the "thousands of beds" thus set free would be invaluable for air-raid casualties, but if it is too dangerous to treat chronic sick in large towns, it could

surely be argued that air-raid casualties should also be treated elsewhere. It seems clear, therefore, that further accommodation must be sought for the chronic sick, and I believe that in some districts large houses, etc., have been set apart for this purpose. I have tried to obtain houses in rural areas in the Midlands for this purpose, but so far without success. There is a great opportunity for the philanthropically minded owners of large houses to offer them for this purpose, although a sufficient number may not be available because so many large houses and institutions are earmarked by one of the various Ministries.

The nursing of the chronic sick also presents problems which should be faced. Many members of the C.N.R., Red Cross, and Order of St. John joined these organizations to nurse soldiers and air-raid casualties, and protest loudly at being called upon to nurse chronic sick. They find the work uninteresting, complain bitterly of the behaviour of some of their patients, and some have resigned. Surprise has been expressed that nurses should resign for these reasons, but when it is remembered that many of them are young girls experiencing their first contacts with rather sordid conditions, and that some of the patients, possibly as a result of senile mental changes, use foul language and have been known to throw their dinner at them or on the floor, it is, perhaps, understandable that some feel they cannot face the conditions. In this connexion it should also be remembered that if these patients wilfully disobey instructions they cannot be dealt with as an ordinary voluntary hospital patient and sent home. In more than one instance a disgruntled patient, particularly if he has been evacuated from a distance, has written to his Member of Parliament complaining about the food and treatment he has received, and a question, perhaps couched in indignant terms, has been asked in the House. Machinery is thus set in motion which results in a medical officer of the Ministry of Health having to visit the hospital and inquire into the complaint. In a typical case, which involved 140 miles of motor travel and the greater part of a busy medical officer's day, the report eventually appeared in the daily Press and contained the following sentences: "I spoke to many of the patients, and all expressed themselves satisfied with their treatment. The master and the matron and all the staff have done everything possible to make everybody comfortable. . . . In my opinion this group of sick and infirm patients from London has been treated very efficiently, both medically and otherwise."

It should be stated quite clearly that these displays of bad behaviour and complaints only come from a very small section of the patients, the great majority being extremely grateful for the care taken of them. I cannot say that all complaints are as groundless as the one mentioned above, but I can say that it is only rarely that a complaint is justified; indeed, these patients are looked after in a way which reflects the greatest credit on the nursing, medical, and administrative staff of the local authorities. I would like to bear testimony to the generous way in which the staff of one particular emergency hospital in the northern part of this region has responded to every call made upon them to receive chronic sick from many places in the Midlands and still further afield. I do not believe that this hospital has received a single acute case since it has been an E.M.S. hospital, but it has earned the gratitude of the many chronic sick who have been treated within its precincts and of those who have to administer the Emergency Medical Service in this region.—I am, etc.,

Birmingham, July 7.

LEONARD G. PARSONS.

Protecting Eye-shields

SIR.—In the *Journal* of June 14 (p. 914) I read: "Captain Margesson, replying to Mr. Purbrick on June 10, said that at the request of the War Office the question of affording additional protection against eye injuries in the Army had been very carefully examined by an expert committee of the Medical Research Council in the light of evidence provided by this war and the last. Several tests of various kinds of protective devices had been carried out. As a result, the committee had now recommended that *no special vizor in any material was required other than the present anti-gas eye-shield.*" (My italics.) At the Congress of the Ophthalmological Society of the United Kingdom held in April, 1940, over which I had the honour to preside, the Society passed a unanimous resolution stating that in its opinion

at least half the injuries to the eyes of our fighting men would be prevented were they wearing the vizor invented by Richard Cruise.

Here we have two conflicting opinions. The Medical Research Council decide that a sheet of cellophane is sufficient to avert injuries to the eye by flying fragments of steel; the Ophthalmological Society think that a plate of duralumin is necessary. I leave it to the common sense of the readers of this *Journal* to decide between these two opinions. The Cruise vizor was invented during the last war, but the War Office did not adopt it. Every ophthalmic surgeon who treated wounded eyes during the war knows what the result was: hundreds of men were blind and many more received serious injury. Some at least of the might have been saved by the vizor. Since that time Sir Richard has greatly improved the vizor, and in its present form it affords a very high degree of protection. It consists of a plate of duralumin perforated by small holes. It is fitted to the steel helmet between the steel shell and the interior bandeau. With a tweak of the fingers it springs down, covering the top of the nose and the eyes. My own tests have shown me that when I wear it I can read the last row of the test types, 6/3, with ease, and that a myope can see better through the holes than with a naked eye. Tests with a choke-bore shotgun show that duralumin is hardly dented at twenty yards. Would the cellophane anti-gas eye-shield keep these shot from perforating the eye? The question is ridiculous. However, the War Office has decided that our soldiers are to have no protection for their eyes under conditions when they might use the vizor, so must leave it at that.

Let us turn to the civil population—the police forces, the fire-fighters, A.R.P. men, and the general public who act as fire-watchers. These are expected to approach incendiary bombs many of them explosive, and extinguish them. They are recommended when approaching a fire-bomb to hold a sandbag before their eyes, or to use the lid of a dustbin. Now, to begin with they do not carry dustbin lids about with them, nor sandbags, but they do wear steel helmets. If these were provided with the Cruise vizor they could snap it down and approach the bomb knowing that their eyes were reasonably safe. The dustbin lid would be perforated by the fragments of the bomb propelled by high explosive, and the sandbag is a heavy semi-solid mass needing two hands to lift it and hold it up. How could one do anything to a bomb when holding up a sandbag with two hands or when holding a dustbin lid unless it were perforated with sight-holes?

Perhaps it may be argued that eye injuries are not common in air raids. I would refer you to the paper published in the *Journal* of June 28 (p. 966) by my colleague at Coventry, Mr. Dorothy R. Campbell, in which she describes her experience after the raids on Coventry. During the past two months she has been acting as Regional Ophthalmic Adviser to the Ministry of Health, and it has been my duty to visit Emergency Hospitals in the Midlands and examine eyes injured during the blitzes. I have also seen cases at the Birmingham Eye Hospital and elsewhere. The facts are that after every raid a large number of eyes are injured: some slightly, some seriously; a some are blinded. A considerable number of these injuries have been sustained by attacking fire-bombs which have exploded. Two of my patients were blinded in both eyes from this cause, and both would have been saved by the Cruise vizor.

A well-known chain-store has recognized the necessity for some protection, for they had on sale, and may now have, an eye-shield of steel with a central adjustable crucial peep-hole. This is good, but the opening is too large and the shield cannot be attached to the helmet. In my own village I have a fire-watching corps, and the members ask for the vizor but cannot obtain it. I have heard that certain constables have tried to get the Cruise vizor for their men but have not succeeded. What is the objection to this excellent protective device? It cost 3s. 6d., it weighs about two ounces and is quite perfect for its job. Is there no possibility that the Government, or the public services who want it, can be allowed to buy it? Perhaps a chain-store would market it. The fact is there: the public want it, and cannot get it, but must run the risk of blindness. It is a Gilbertian situation. Men are being blinded by bombs; there is a certain protection, it cannot be obtained. Cellophane is done? Must this risk of blindness go on being

an expert committee consider that a bit of cellophane will keep out fragments that will perforate a bit of three-ply at twenty yards?—I am, etc.,

Birmingham, July 8.

T. HARRISON BUTLER, F.R.C.S.

* * We published an article by Sir Richard Cruise on his vizor in the *Journal* of May 18, 1940 (p. 825). In an annotation in our issue of June 1, 1940, we stated: "Protective vizors are indeed a greater need now than in the last war. . . . There are thus vital reasons for effective vizors as part of the civil defence outfit no less than that of the combatant."—ED., *B.M.J.*

Staphylococcus aureus in Nasopharyngeal Infections

SIR,—I am gratified at being quoted in your excellent leading article on acute otitis media (July 5, p. 20). With regard to the question "whether *Staphylococcus aureus* attacks the middle ear as a primary nasopharyngeal infection," I believe never. My opinion is based upon making cultures at operation over a period of twelve years by the method mentioned by you. I have not found *Staphylococcus aureus* before the eighth week, except where the technique was faulty, and it might have been picked up from the skin. I believe, therefore, that it must be added to the organisms causing cutaneous infection, which are always secondary to the nasopharyngeal ones after perforation of the drumhead.

If, therefore, all nasopharyngeal infections were got well by the end of eight weeks of the date of perforation, cutaneous (chronic) otitis media would die out in the course of a generation. Chemotherapy will, I believe, help us to approach this ideal. Once chronic disease has resulted it is, in my opinion, an incurable disease except as the result of the processes of Nature at some time in the life of the human being, which, I believe, is between 14 and 18.—I am, etc.,

Guy's Hospital, S.E. 1, July 9.

T. B. LAYTON.

Dangers of Posterior Pituitary Extract in Labour

SIR,—Your annotation on the dangers of posterior pituitary extract in labour (May 3, p. 675) states: "It is to be noted that in the discussion following the papers no speaker rose to defend it." May I call your attention to the remarks made by Dr. D. P. Murphy of Philadelphia (*J. Amer. med. Ass.*, 1940, p. 1325) on this subject: "The danger which results from the improper use of solution of posterior pituitary is more a problem of dosage than a question of which patient should receive it, and for that reason I think that those who oppose its use have missed the point entirely. Solution of posterior pituitary has a place in the treatment of certain patients in labour, but only when a non-tetantizing dose is employed, and that dose is in the neighborhood of 1-2 minims." Following Dr. Murphy's discussion I remarked: "The introduction of solution of posterior pituitary more than twenty-five years ago as a means of initiating and reinforcing labour pains constitutes a landmark in the development of the science and art of obstetrics."

May I also refer in this respect to the opinion of Dr. Fr. Irving, professor of obstetrics at Harvard, as expressed in his article in the *Amer. J. Obstet. Gynec.* for November, 1940: "We have used solution of posterior pituitary in the first and second stage of labor in about 20,000 cases and have seen no harmful effect, neither in the mother nor in the baby." The magnitude of the subject requires stress on such authoritative statements.—I am, etc.,

Cincinnati, June 15

J. HOFBAUER.

Is the Safe Period Safe?

SIR,—The safety of the safe period is again being questioned (July 5, p. 23). Much wider agreement on its usefulness would result from a knowledge of its limitations. It is applicable to women with regularly recurring menstrual cycles who lead regular or rather uneventful lives, but no reliance can be placed in it: (1) for up to six months after a miscarriage or confinement; (2) immediately after febrile diseases or an accident; (3) after drastic alteration in ordinary routine, such as change of climate or severe exertion; (4) after emotional upsets or long partings.

The even tenor of university life has provided numerous and unchallengeable records of the success of the method under ideal conditions.—I am, etc.,

London, W.1, July 7.

REYNOLD H. BOYD.

Silicosis without the Crystal Unit of Quartz

SIR,—In a recent paper entitled "Fibrotic Nodules in the Tracheobronchial Lymph Glands of the Mouse Produced by Breathing Precipitated Silica" (*Brit. J. exp. Path.*, 1941, 22, 76) it was demonstrated that silicotic nodules can be produced by silica precipitated from sodium silicate by nitric acid. Since there was some doubt as to whether or not this precipitated silica was amorphous, a sample of it was sent recently for analysis to the Physics Department of the National Physical Laboratory. I am indebted to the acting superintendent for the following report: "We find that the sample of silica supplied for test with your letter of June 30 does not give an x-ray spectrum. The material is, therefore, amorphous and does not possess any characteristic crystalline unit of appreciable definition or size. We regret that the x-ray test for quartz in this case is not applicable."

The conclusion from this is that natural crystalline quartz is not essential for the production of the silicotic nodule, since it has been produced also by an amorphous precipitated silica. Previously Drs. Gye and Purdy (*ibid.*, 1922, 3, 75) found that colloidal silica produces some degree of fibrosis, but so far as I know it did not produce the nodule. It is probable that, when administered appropriately in the correct dose and for a sufficiently prolonged period, colloidal silica would also produce the nodule.—I am, etc.,

London, N.W.3, July 5.

J. ARGYLL CAMPBELL.

The National Loaf

SIR,—The Medical Research Council has issued two documents recently in connexion with the above. In the first it was stated that the addition of calcium was necessary because of the unsatisfactory condition of the bones of part of the population. If this disease does not merely exist in imagination, let the authorities produce and exhibit, say, a dozen adults suffering from it at the Royal Society of Medicine. In the second document the addition of calcium is advocated because of war conditions—inadequate milk, etc. Now there is no evidence whatsoever that the population is suffering from calcium deficiency: it can be said definitely that there is no calcium deficiency. Under present conditions we are short of many substances. Why then is the loaf to be "fortified" with this substance only? It will be remembered that originally the scheme was meant as a permanent "reform," based on pre-war conditions. Now it is advocated merely as a war measure, for which not a scintilla of evidence exists that it is necessary. If I can trust my memory, according to a statement of Lord Woolton the milk consumption at present still does not fall below the pre-war level. In any case milk contains as many items of food as vital as calcium. As in any case an adequate supply of this article of diet is necessary for the sake of the many vital items it contains, the requisite calcium will be forthcoming. Moreover, all available evidence points to the fact that calcium is ineffective without vitamin D. Those of us who have experimented with substances such as calcium have become convinced that its action depends to a vital extent on a number of other items contained in the diet. To concentrate on one item and neglect others as vital as this is scientifically unsound—indeed, the whole scheme has all the characteristics of a nostrum. It would be better if the Government were to make it compulsory to swallow calcium in pill form—in this way at least it would be ensured that each individual got the same dose. But under the proposal, since some people eat twenty times more bread than others they would get twenty times more calcium.

It is a sound physiological principle that the consumption of substances in quantities greater than required is not conducive to good health. According to the Medical Research Council there is no evidence that the added calcium can do harm in any type of disease. But surely this is not enough. The authorities must make sure that chalk can effect no injury in any circumstances. They must prove this, for forty million people cannot be used as experimental rabbits. I know the assertion that

added calcium can do no harm in any type of disease is contrary to actual facts. A large amount of work—some of it dating a generation back—has proved conclusively that under certain conditions calcium is injurious to health. Public interest demands that an exhaustive inquiry into the matter should be instituted by a board comprising men familiar with different aspects of the problem—physiologists, physicians, pathologists, biochemists, food experts, pharmacologists. Members of this body ought to have no connexion with the Medical Research Council or the Food Ministry. The inquiry should be open and detailed evidence published. I trust that the Government proposals will not become effective until the pronouncement of such a body becomes available. The British Medical Association would render a public service by instituting such an inquiry under its aegis.—I am, etc.,

Liverpool, July 9.

I. HARRIS.

Differential Diagnosis of Contusion of the Brain and Psychoneurosis

SIR.—My excuse for this note is that I had the good fortune to call in the late Wilfred Trotter to see a head injury case. He gave me a private lesson. On my asking him how he diagnosed contusion of the brain, he answered, "Headaches, brought on especially by changes of posture—for example, stooping, sneezing, coughing, etc.—giddiness, mental apathy, mental degeneration, and congestion of the retinal veins." Whereupon I asked him how he came to a decision about congestion of the veins. With a twinkle in his eye he replied, "That comes with experience, and after that you fix your own index."

I regret that, despite this lesson, the mysterious secrets of the retinal veins have not yet been successfully fathomed by me. Finally, I have also had the advantage of seeing a number of head injuries with Dr. W. A. Brend in the last fifteen years.—I am, etc.,

Solva, Pembrokeshire, July 8.

J. STEPHEN LEWIS.

Ether Convulsions

SIR.—I have been very much interested in the correspondence on this subject, as I have seen a few cases since the war when I have had to operate in overheated, sandbagged, and steaming theatres, and when the anaesthetic administered has been ether. Three cases were serious and one ended fatally. I agree with Mr. Charles Wells's description (June 21, p. 945) of ether convulsions as being typically expiratory, and I would like to add that, in my experience, the correct procedure is the immediate administration of chloroform. I have always found the convulsions cease almost at once, and the fatal case I mentioned happened when there was no chloroform available. I have had no experience of the use of evipan for this purpose.—I am, etc.,

Newport, Mon., July 7.

J. T. RICE EDWARDS,
Surgeon, E.M.S.

Trichlorethylene as Anaesthetic

SIR.—In view of the large number of anaesthetists who have written to the makers for supplies of trichlorethylene following the publication of our paper in the *Journal* of June 21 (p. 924), we feel that a note of warning might not be amiss.

While we are only too glad for as many workers as possible to try out this drug, we must make it quite clear that we cannot accept responsibility for any untoward effects that may occur. As mentioned in the paper, the total number of administrations made so far is much too small for any definite conclusions as to safety, etc., and the individual anaesthetist must accept the responsibility himself.—We are, etc.,

C. F. HADFIELD,
C. LANGTON HEWER.

St. Albans, July 10.

The Middlesex Hospital has received, as a gift from the Scarsdale (New York) Branch of "Bundles for Britain," a mobile x-ray set and four portable theatre lights. This new equipment, of the latest design, enables work to be transferred quickly to a basement or sub-basement in the event of an upper theatre being wrecked.

Obituary

SIR WILLIAM H. WILLCOX, K.C.I.E., C.B., C.M.G.,
M.D., F.R.C.P.

Consulting Physician, St. Mary's Hospital

The death of Sir William Willcox, which took place suddenly and peacefully on July 8 at his home in Welbeck Street, W., where he had carried on a consulting practice for many years, removes from the foremost rank of his profession a highly individual figure. To the man in the street, or in the public galleries of courts, the name of Willcox stood out from the general anonymity of the medical profession owing to his appearance over many years in famous criminal cases. But the same exceptional industry and knowledge which he brought to toxicology in particular and forensic medicine in general he devoted also to the clinical study of disease, and he once declared that to him rheumatic fever or acute rheumatism was the most fascinating subject in the whole of medicine.



William Henry Willcox was a native of Melton Mowbray. Brought up in the heart of a famous hunting country, he never lost his love for the horse and the open—indeed, in late life his horseback exercise cost him a severe accident—and his build and countenance always suggested the robust country squire. He was educated at the Wyndham Grammar School, Oakham, and then at the Wyggeston School, Leicester, and from there he went to University College, London, and to St. Mary's Hospital Medical School. His college career was brilliant. He was gold medallist in anatomy, organic chemistry, materia medica and therapeutics, and forensic medicine, and at St. Mary's he gained the Cheadle gold medal for clinical research. He took his M.B. Lond. in 1900, and proceeded M.D. in the following year, taking also the diploma in public health. From 1904 to 1906 he was medical registrar at St. Mary's, and a year later was elected to the visiting staff of that hospital, so remaining until 1935, when he was made consulting physician. In the war of 1914-18 he served as consultant to the armies in Mesopotamia, and was four times mentioned in dispatches and received the C.B. and C.M.G. There he accumulated fresh clinical experience, especially with regard to malaria, on which he continued to draw for the rest of his life.

His appointment as medical adviser to the Home Office dated from 1919, though he had been associated with the late Prof. Pepper in many criminal cases before then. This brought him into prominence in Crown prosecutions. He was the most deliberate and painstaking expert witness who ever stepped into the box. His hesitating manner at first produced an unfortunate impression, and occasionally even aroused irascibility in a judge who did not know him well. But it soon came to be taken for granted in the legal profession that this slowness of speech was due to conscientiousness and sense of responsibility. The present writer recalls his appearance at the famous Hadwen trial at Gloucester in 1924. When he began his halting testimony one wondered whether at the end of the evidence for the

prosecution the jury might not stop the case, but it gradually dawned on the court that, few as were his words, they each of them, as Morley said of Gladstone's, weighed a pound, and the tilts of Sir Edward Marshall-Hall for the defence made no dent at all in that heavy armour. At about that same time, at a meeting of the Hunterian Society, Willcox gave a description of the duties of a medical witness; it is too long to quote here, but it could not be bettered.

It was the same in his public utterances: he would make a hesitating beginning, and one was inclined to think that he was talking complimentary nothings when there would come a shrewd clinical observation, a description of an unusual case, an exposition of some aspect of pathology, or a warning against a drug fashion of the moment. At the time when the barbiturates came into common use Willcox made up his mind once for all, and never lost an opportunity to warn the profession against their indiscriminate employment. In recommending vaccines, too, he never tired of urging the greatest care lest some condition such as exophthalmic goitre had sensitized the body. Again with anaesthetics, he held that avertin should only be used by the most experienced, and by them with the greatest caution, owing to its liability to cause liver damage. No one was more cautious, painstaking, and exhaustive in what he undertook. His writings are spread over medical journals and the transactions of societies, but even casual communications are marked by thoroughness, and in such a contribution as the Lumleian Lectures to the Royal College of Physicians in 1931 the subject—toxic jaundice—was so fully explored that there seemed to be nothing left to be said. The lecture table was his chosen medium for imparting knowledge. At St. Mary's for thirty years he was lecturer on chemical pathology, and for almost the same period on forensic medicine.

He was a member of the British Medical Association for thirty-five years. In 1932, the year of the Association's Centenary, he was president of the Section of Forensic Medicine, and made a plea for more public recognition of that subject, particularly urging his old University of London to establish a professorial chair. When the Annual Meeting was held at Melbourne in 1935 he was president of the Section of Pharmacology, Therapeutics, and Anaesthetics. On that occasion Melbourne University conferred on him its M.D. *honoris causa*. Ten years ago he was chairman of the Marylebone Division, and he served on a number of special committees at headquarters, notably one on causes and treatment of arthritis, and another on tests for drunkenness. There were few medical societies in London whose chair he had not filled. He was president of the Harveian Society in 1922, of the West London Medico-Chirurgical Society in 1923, of the Medico-Legal Society in 1928, and of the Medical Society of London in 1936, when he delivered a noteworthy presidential address on clinical immunity. During the last two years he had been president of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine. In 1935 he was Master of the Society of Apothecaries, of which he had become a licentiate thirty-six years before. He was elected F.R.C.P. in 1910, and served on the Council of the College in 1931-3. Other offices which he held were those of examiner in pharmacology and therapeutics to the University of Cambridge and visitor for the Privy Council to the examinations of the Pharmaceutical Society. He was senior physician to the London Fever Hospital and to St. Luke's Hostel for the Clergy. The latter benevolent enterprise was very near his heart. He was a man of great kindness and of unlimited private generosity.

The honour of knighthood in the Order of the Indian Empire was bestowed upon him in 1921. He married a Northamptonshire lady, who survives him with three sons and a daughter.

[The photograph reproduced is by J. Russell and Sons.]

F. G. LAYTON, M.R.C.S.

The sudden death of F. G. Layton on July 3 removes one of the best-known figures in the medical profession of the Midlands. Born in 1872, he was the son of the vicar of a South London parish; he was educated at King's College School, London, and at St. Thomas's Hospital; took the M.R.C.S., L.R.C.P. in 1894; and filled resident appointments at his own hospital, Brompton, and Great Ormond Street. Settling at Walsall, he identified himself with the Walsall General Hospital, to which, at the time of his death, he was consulting physician. He took a prominent part in local public life and was a Justice of the Peace, an office in which he took a special interest, as is shown by his book *Psychology in Court*. He had a very prolific pen, and wrote several books dealing in a light but sympathetic vein with the life of a general practitioner among poor folk. These included *The Little Doctor* and *Behind the Night Bell*. He also for many years edited the *Midland Medical Journal*. He joined the British Medical Association in 1895, and took an active part in its local work. From 1913 to 1922 he was honorary secretary of the Walsall and Lichfield Division. In 1935-6 he was chairman of the Division, and at the time of his death was president of the Staffordshire Branch.



DR. ALFRED COX writes:

The death of Layton brings back many recollections of happier times when he was not only the life and soul of B.M.A. activities in his Division but a most watchful and constant critic of our activities at headquarters. He was essentially an individualist, but combined with his individualism a strong sense of his duty to the community and a real love and understanding of the "under-dog." This he showed both in his life and in his books, which could only have been written by a real "family doctor" whose sense of his responsibilities to his patients was equalled by his sense of humour. With Layton the style was essentially the man both in writing and conversation.

In the early days of the new constitution Walsall was not an easy district from the B.M.A. point of view, and had it not been for Layton its record would have been much less honourable than it is. He used his pen and his tongue on his colleagues just as he did on us at the office; but all of us took his jibes and criticisms more or less meekly just because they came from Layton and because we knew his bark was worse than his bite. He had a horror of "bureaucracy," and used to chaff me unmercifully (in letters which were always a joy to receive and to answer) about the style of our official communications. More than once he sent me a free translation of such documents as they should have been written (in Laytonese) and as a model to which we ought to aspire.

His long B.M.A. record deserves handsome recognition, for the labours of such men as he have made the path of their successors so much easier. But those of us who knew him well and loved him will always think of Layton the man—honest, direct, and always arriving like a breeze of fresh air whenever he appeared on the scene either personally or in writing.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

FINAL M.B.—Part I (Surgery, Midwifery, and Gynaecology): R. M. Archer, J. D. Attwell, R. C. Barclay, D. V. Bateman, K. F. C. Brown, L. J. H. Burton, H. Butler, W. H. Chase, R. E. W. B. Comerford, E. D. Cullen, P. M. Daniel, B. Dansie, F. M. P. Eckstein, E. J. S. Evans, C. L. Grandage, R. E. A. S. Hansen, D. V. Harris, A. Holmes-Smith, E. B. Jarrett, R. Jenkins, J. S. Johnstone, K. H. Lim, L. R. McLaren, H. L. McMullen, J. M. Mungavin, P. H. Nash, T. P. Pattinson, A. G. E. Pearce, G. E. Pinkerton, G. K. Riddoch, P. Sainsbury, J. L. S. Smith, A. G. Stansfeld, J. H. Tasker, H. D. Teare, D. E. Thompson, D. G. Vulliamy, A. Waymouth, H. G. Wolskel. **Women:** H. M. Comely, A. Davies, D. H. King, M. Redfern Davies.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—Part II: M. Altmann, R. D. Caton, A. Elkeles, J. E. Glasgow, Mrs. Grace M. Griffith, M. Halberstaedter, P. C. Phelps.

UNIVERSITY OF ABERDEEN

At a graduation ceremony on July 10 the honorary degree of LL.D. was conferred on Dr. Arthur Wellesley Falconer, C.B.E., D.S.O., M.D., F.R.C.P., Principal and Vice-Chancellor of the University of Capetown (*in absentia*).

The following medical degrees and diplomas were also conferred:

M.B., Ch.B.—*G. E. Swinney, *A. R. Taylor, T. M. Allan, A. L. S. Anderson, Marie L. Anderson, J. B. Barnett, W. H. F. Boyd, A. A. Brockie, B. E. Brooks, J. L. D. Brown, J. Bruce, N. B. Carmichael, Alison Clarke, A. M. W. Coburn, H. D. Collins, J. Cramond, J. Cran, Eunice M. Duncan-Brown (*née* Auty), A. H. Dunnett, Marguerite N. L. Erskine, J. W. Gammie, A. G. Gibb, R. A. S. Gibb, Vera W. D. Hall, Helen D. Harkins, J. A. Harrow, G. A. M. Hendry, M. I. Hepburn, T. Hunter, F. L. F. Innes, J. M. E. Jewers, P. O. Leggat, J. J. McNair, J. G. Matheson, R. F. Menzies, P. Milne, W. H. P. Minto, R. G. Murray, K. O'Brien, J. Slater, A. Stephen, Florence Stewart, W. D. Swinney, P. Theron, E. J. Valentine, S. W. Watson, R. A. S. Watt, Lily White, Margaret O. Will, D. MacG. Williamson, L. A. Wilson, A. J. Witt, J. F. Woolcott.

DIPLOMA IN PUBLIC HEALTH.—W. Lamb, J. A. F. McLean.

* Second-class honours.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Message from the King

The following letter from the King's Private Secretary has been received by the Royal College of Surgeons of England and was read to the Council at a meeting held on July 10:

Dear Sir Hugh Lett,

I write to thank you for your letter of yesterday, which I have laid before the King as Visitor to the Royal College of Surgeons of England. I am to assure you that it is a source of deep regret to His Majesty to learn of the damage to the Museum buildings and the loss of valuable specimens resulting from enemy action. The King is, however, much gratified to hear of the further generous gift made by the Bernhard Baron Trustees towards the endowment of the professorship of research which will go far to prevent any of the regrettable interruption which might otherwise have occurred in the scientific work and development of the College.

Yours very truly,
(Signed) A. H. L. HARDINGE.

Election of President

At a meeting of the Council of the Royal College of Surgeons of England, held on July 10, with Sir Hugh Lett, President, in the chair, Sir Alfred Webb-Johnson was elected President for the ensuing year, and Surgeon Rear-Admiral G. Gordon-Taylor and Mr. L. R. Braithwaite were elected Vice-Presidents. Prof. A. H. Burgess, Mr. H. S. Souttar, and Mr. V. Zachary Cope were readmitted, and Mr. E. Finch was admitted to the Council.

Lecturers

The following professors, lecturers, and demonstrators were elected for the ensuing year:

Hunterian Professors.—Surgeon Rear-Admiral G. Gordon-Taylor, one lecture on the Surgical Anatomy of the Lower End of the Common Bile Duct and the Adjacent Head of the Pancreas; Surgeon Rear-Admiral C. P. G. Wakeley, one lecture on War Burns; Lieut-Colonel A. E. Hamerton, one lecture on Primary Degeneration of the Spinal Cord in Monkeys; Mr. W. T. Warwick, two lectures on Observations on the Growth of Long Bones; Prof. F. Davies, one lecture on the Conducting System of the Vertebrate Heart; Mr. N. Asherson, one lecture on the Orogenic Cerebellar Abscess, with Special Reference to its Operative Treatment and the Posterior Fossa Cerebrospinal Fluid Syndrome; Surgeon Commander E. R. P. Williams, one lecture on Blast Injuries in Warfare; Mr. A. Sorsby, one lecture on Aetiology of Pteryctenular Ophthalmia; Mr. J. T.

Chesterman, one lecture on Evaluation and Treatment of Factors involved in Post-lobectomy Collapse of the Lung; Mr. F. W. Willway, one lecture on the Role of Surgery in Mental Disease; Mr. D. N. Matthews, one lecture to Investigate the Value of Sulphanilamide and Sulphathiazole applied locally to Infected Wounds and Burns.

Arris and Gale Lectures.—Prof. J. Beattie, two lectures on Physical and Chemical Changes in the Blood associated with Shock and Haemorrhage; Dr. P. Cuthbertson, one lecture on Certain Aspects of the Physiological Reaction to Injury—the Post-shock Metabolic Response.

Erasmus Wilson Demonstrations.—Mr. L. E. C. Norbury, two demonstrations on the pathological contents of the Museum; Mr. R. Davies-Colley, two demonstrations; Mr. C. E. Shattock, two demonstrations.

Arnott Demonstrator.—Mr. A. J. E. Cave, six demonstrations on the contents of the Museum.

Appointments

Sir Frank Colyer, Honorary Curator of the Odontological Collection, and Mr. C. J. S. Thompson, Honorary Curator of the Historical Collection, were reappointed for the ensuing year.

The Hallett Prize, granted on the result of the Primary Examination for the Fellowship, was awarded to S. Oleesky of the University of Manchester; the twelfth Macloghlin Scholarship was awarded to D. L. Kerr of Whitgift School, Croydon; and a Leverhulme Scholarship was granted to Miss H. B. Collard for a year beginning August 1, 1941. Subject of research: Study of the change in blood volume following haemorrhage.

Diplomas

Diplomas were granted, jointly with the Royal College of Physicians of London, as follows:

DIPLOMA IN PUBLIC HEALTH.—C. A. Boucher, M. Coke, Nancie I. Faux, H. J. Griffiths, W. E. MacDougall, H. C. Price.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—R. A. Blair, Edith M. Booth, E. W. Dunkley, A. M. Edwards, S. T. Hayward, J. J. H. Lowe, J. S. McGregory, Sigrid M. Pribram, W. A. M. Robinson, J. S. F. Sutton, Mary E. E. Ward.

DIPLOMA IN LARYNGOLOGY AND OTOTOLOGY.—D. A. Barley, N. L. Crabtree, O. C. Lord, J. E. Rees.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on July 7, with Mr. Roy F. Young, President, in the chair, A. McPhater, M.B., Ch.B., and H. H. Pinkerton, M.B., Ch.B., D.A., were admitted Fellows of Faculty.

The Services

ARMY AWARDS

The following honours have been conferred in recognition of distinguished services in the Middle East during the period December, 1940, to February, 1941:

C.B. (Military Division): Colonel (Temporary Major-General) P. S. Tomlinson, D.S.O., late R.A.M.C.

C.B.E. (Military Division): Lieutenant-Colonel (Temporary Colonel) F. G. A. Smyth, O.B.E., R.A.M.C.

O.B.E. (Military Division): Major (Temporary Lieut.-Colonel) B. J. Daunt, R.A.M.C.

M.B.E. (Military Division): Captain (Temporary Major) P. L. E. Wood, R.A.M.C.

MENTIONS IN DISPATCHES

The following have been mentioned in dispatches for distinguished services in the Middle East during the period December, 1940, to February, 1941.

Army Medical Corps: Lieut.-Colonels A. J. Cunningham (since deceased), H. G. Furnell, D.S.O., and L. E. Le Soeuf; Majors E. Bailhache (since deceased) and J. O. Smith; and Captains L. V. Armati, K. J. J. Dorsey, N. R. Godby, and R. H. MacDonald.

Royal Army Medical Corps: Major (Temporary Lieut.-Colonel) D. Bluet; Captains (Temporary Majors) D. R. Hood, R. B. Robertson, and R. A. Stephen; and Captains W. J. A. Craig, T. G. S. James, J. J. Justice, R. H. Spurrier, and M. H. Webster.

Indian Medical Service: Lieut.-Colonel A. N. Sharma; Captain (Temporary Major) J. Revans; and Captains D. R. Cattanach, R. Y. Taylor, and D. D. Verma.

New Zealand Army Medical Corps: Captain A. L. Lomas, M.C. Temporary Surgeon Lieut. John Fawcett Hughes, R.N.V.R., has been mentioned in dispatches for good services when H.M.S. *Exmoor* was sunk.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

The name of Surgeon Lieut. DUNCAN LORIMER, R.N.V.R., is included in an Admiralty casualty list published on July 9 as "Missing, Presumed Killed" in H.M.S. *Jersey*. After graduating B.A. at the University of Cambridge in 1935 he studied medicine at the University of Edinburgh, where he took the degrees of M.B., Ch.B. in 1938. He was a member of the British Medical Association and of the Royal Medical Society of Edinburgh.

Surgeon Commander ARCHIBALD ROBERT EWART, R.N., lost his life by enemy action at sea in June. He was the eldest son of the late Mr. Thomas Ewart and Mrs. Ewart of Limerick, and was educated at the University of Dublin, where he graduated M.B., B.Ch., B.A.O. in 1928. Soon afterwards he entered the Royal Navy as surgeon lieutenant, was promoted to surgeon lieutenant-commander in 1934, and to surgeon commander last year. He had been a member of the British Medical Association since 1929.

Surgeon Lieutenant ARCHIBALD THOMAS LEGGATE has been killed by enemy action while on active service. He was last seen attending the wounded on the deck of his vessel and went down with the ship. Dr. Leggate, who was 30 years of age, was the third son of Dr. and Mrs. Leggate of Liverpool, and his wife, whom he married recently, was formerly Dr. Joan Thomson. He had a distinguished scholastic career. At Liverpool College, where he was a member of the First rugby and cricket teams, he was awarded many prizes and won a scholarship to Emmanuel College, Cambridge. At that stage his main interests were philosophy and history, and he seemed destined for the Church. The family tradition of medicine, however, proved too strong, and after graduating at Cambridge he entered Liverpool University and qualified M.B., Ch.B. (with distinction in surgery) in 1937. Following a period as house-physician at Liverpool Royal Infirmary, he helped in his father's practice, and rapidly became a most conscientious and resourceful practitioner, combining dignity and knowledge with good humour and understanding. It was doubtful whether he intended to stay in general practice, and specialization in psychiatry greatly attracted him. Archie Leggate (writes a colleague) had an exceptionally wide range of interests—music, history, and literature—and amongst his major delights he always counted the wild grandeur of the North-West Highlands. Transcending all was his love of humanity; he had tremendous faith in man and in the ultimate triumph of truth and goodness. Essentially a man of peace, he became imbued with the courageous spirit of a Crusader, and with conviction based on the highest Christian ideals he joined the R.N.V.R. at the outset of the war.

In an Admiralty casualty list published on July 9 Probationary Temporary Surgeon Lieut. ALAN KENNETH BEARDSHAW, R.N.V.R., is posted as "Missing, Presumed Killed" in H.M. Yacht *Fiona*. He was educated at the University of Sheffield, where he graduated M.B., Ch.B. in 1938. He was a member of the British Medical Association.

ROYAL AIR FORCE

Acting Squadron Leader DAVID ALAN HOPE ROBSON was killed in June. He was born on July 11, 1908, and received his medical education at the University of Edinburgh, graduating M.B., Ch.B. in 1933. After holding house appointments at the Children's Hospital and City General Hospital, Sheffield, he spent four years in general practice at Beddington, Surrey, and became honorary medical officer to the Carshalton and Beddington War Memorial Hospital. He entered the Medical Branch of the Royal Air Force on a short service commission, and served in France from September, 1939, until April, 1940, when he was posted to an operational unit. Acting Squadron Leader Robson was keenly interested in flying, and qualified as a pilot in February, 1941.

Flight Lieut. DENIS WILLIAM MAHON was seriously injured in June, and died shortly afterwards. He was born on February 19, 1915, and received his medical education at the London Hospital, qualifying M.R.C.S., L.R.C.P. in 1938. He was a member of the O.T.C. After holding the post of demonstrator in applied physiology, histology, and applied pharmacology at the London Hospital Medical College and house appointments at Poplar Hospital, and the Royal Berkshire Hospital, Reading, he was commissioned in the R.A.F.V.R. on November 28, 1939. From February till June, 1940, he served in France, and since then had been medical officer to a bomber squadron.

Medical Notes in Parliament

The National Health Insurance, Contributory Pensions, and Workmen's Compensation Bill was introduced by Mr. ERNEST BROWN on July 1 and was read a first time. Its purposes are "to increase the rates of sickness and disablement benefit and the rates of contribution payable under the Acts relating to National Health Insurance, to extend the said Acts to persons employed otherwise than by way of manual labour at a rate of remuneration exceeding £250 a year," and also to make changes in the Acts relating to Pensions and Workmen's Compensation. The text of the Bill is published.

Speaking in a debate on production on July 9, Mr. HAROLD MACMILLAN said the Ministry of Supply was buying medical and surgical supplies for the Air Force.

Research into Gas Decontamination of the Eyes

Mr. HAROLD MACMILLAN, replying on July 8 to Mr. Groves, said research on the medical treatment of gas casualties had been carried out in the Chemical Defence Research Department and elsewhere by teams of fully qualified men, with the personal assistance and supervision of well-known research workers in the physiological and pharmacological fields. The findings of these workers had been scrutinized by a medical committee consisting of distinguished civilian specialists and Service medical men, to which additional specialists had been co-opted. Increasing pressure of work on eye treatment was found in the summer of 1940 to necessitate the whole-time employment of an ophthalmological specialist, but owing to the difficulty of obtaining a suitably qualified man this appointment was not made till August, 1940. It was then also found possible to engage the assistance in addition of leading ophthalmologists, working in independent laboratories. The intensive research which thereby became possible included re-examination of all methods tried previously.

Fracture and Orthopaedic Treatment in Scotland

On July 8 Mr. JOHNSTON, replying to Dr. Morgan, said that while he was aware that facilities for fracture treatment in Edinburgh and Glasgow were not generally in full accordance with the recommendations of the Delevingne Committee, some progress had been made since the publication of the report. Moreover, in developing the Emergency Hospital Services special attention had been given to arrangements for the treatment of fractures, including the provision in Scotland of six entirely new orthopaedic units (with associated provision for occupational therapy providing 2,000 beds). As announced by the Minister of Health on April 3, these facilities were available not only for the treatment of civilian war casualties but for certain manual workers whose early return to work was of special importance. As regards conditions which occasioned crippling other than fractures, he had encouraged schemes initiated by voluntary bodies for the improvement and extension of facilities for their treatment. He was not aware of any official report on this subject other than that of the Delevingne Committee.

Care of Wounded in Invasion

On July 8 Mr. GROVES asked the Minister of Health if he would state the arrangements made by the A.R.P. for the care of wounded civilians in the event of invasion making road or telephone communication impossible over large areas, particularly in those coastal regions upon which the brunt of invasion might be expected to fall. Mr. BROWN said that the arrangements made to meet the contingency described could not in the national interest be set out in detail, but his Regional Officers and the scheme-making authorities had been fully alive to it when reviewing the first-aid posts, first-aid points, and ambulance services in their areas.

Children's Health in Camps.—Mr. JOHNSTON stated on June 25 that quarterly reports submitted by the camp medical officers showed residence at the camps provided in Scotland under the Camps Act, 1939, had a markedly beneficial effect on the health and physical condition of the children. Most gained in height and weight and had shown an increased resistance to infection. When Belmont Camp was reopened those children who returned were found to have lost in weight during their absence of three months.

Wartime Nurseries: Medical Supervision.—Mr. GROVES, having regard to the additional duties imposed upon medical officers of health by reason of the war, asked whether arrangements had been made or recommended for the services of available local general practitioners to be utilized for the regular medical inspection and supervision of the children at wartime nurseries. Mr. BROWN told Mr. Groves on June 24 that detailed arrangements for the medical supervision of children in wartime nurseries were a matter for the medical officer of health of the welfare authority establishing the nursery. Such arrangements would usually take the form of an extension of the authority's existing scheme for the medical supervision of young children, whether by whole- or part-time medical officers.

Notes in Brief

Mr. E. Brown told Mr. Viant on June 17 that of the 15 cases of post-vaccinal encephalitis which came to the notice of his Department in 1940, 5 were fatal. Two of the fatal cases were in soldiers. The others had recovered.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

In England and Wales the incidence of enteric fever and cerebrospinal fever has declined slightly, and both diseases are now less prevalent than at this period last year. Dysentery and whooping-cough are on the increase and are respectively over twice and six times more prevalent than last year. The incidence of diphtheria has also shown a tendency to rise in the last two weeks. The persistent high incidence in Birmingham, where the same number—31—was notified in each of the last three weeks, and the virulent type of the prevalent infection, have been causing concern to the public health authorities. In the first six months of this year there were in Birmingham 600 confirmed cases of diphtheria compared with 336 last year, and 56 deaths compared with 16. Although facilities for immunization are ample and much advertised, it appears that less than one-half of the child population have been inoculated. In Scotland notifications of cerebrospinal fever have risen from 42 to 50: the principal notifiable diseases are less prevalent than in 1940, with the exception of whooping-cough and enteric fever.

Enteric Fever and Dysentery

Enteric fever is present in twenty-seven areas in England and Wales, compared with twenty-six in the previous week, but only in three were more than 10 cases notified—namely, Lancaster 45 (Blackpool 1, Bootle 9, Liverpool 26, Bacup M.B. 1, Eccles M.B. 1, Kirkham U.D. 1, Litherland U.D. 1, Urmston U.D. 1, West Lancashire U.D. 1, Widnes M.B. 3); Warwick 13 (Birmingham 7, Nuneaton M.B. 3, Solihull U.D. 2, Sutton Coldfield M.B. 1); Chester 11 (Birkenhead 7, Wallasey 3, Bebington M.B. 1). Although only slightly less prevalent than enteric fever, dysentery appeared in no more than sixteen areas, and in two only were there more than 10 cases—namely, Brecknock 40 (all in Brecknock M.B.) and Lancaster 27 (Blackburn C.B. 4, R.D. 13, Liverpool 2, Preston R.D. 1, Warrington R.D. 4, Whiston R.D. 3). In Scotland there were 4 cases of typhoid fever (Greenock 2, Motherwell and Wishaw 2), and 15 of paratyphoid B fever (9 in Duodee, and 1 each in the counties of Angus, Ayr, and Roxburgh, and in the burghs of Kirkcaldy, Glasgow, and Edinburgh). Dysentery was more prevalent, affecting the counties of Argyll 1, Laoark 5, Renfrew 1, Stirling 1, and the burghs of Aberdeen 9, Duodee 1, Glasgow 6, and Edinburgh 3.

Whooping-cough

Whooping-cough is present in every administrative area in England, and in one (Rutland 7) was the only disease notified during the week. Only the three Welsh counties of Anglesey, Cardigan, and Montgomery were free. Areas chiefly involved were Lancaster 519, West Riding of Yorkshire 443, Middlesex 334, Durham 330, Surrey 301, Essex 222, Derby 164, London 160, Kent 143, Warwick 143, Stafford 135, Northumberland 102, Northampton 101. In Scotland notifications were received from the county of Lanark 13, and the burghs of Glasgow 174, Edinburgh 40, Paisley 8, Dundee 8, Greenock 7, Rutherglen 7, Kirkcaldy 4, Aberdeen and Dunfermline 1 each, but this disease is notifiable only in particular areas when it is prevalent or a method of "intimation" is employed.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 21.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	211	13	50	5	14	264	23	68	2	7
Deaths	—	—	1	—	—	—	—	3	—	—
Diphtheria	919	36	184	29	21	735	30	193	23	31
Deaths	24	—	6	—	2	22	1	8	—	1
Dysentery	113	9	27	—	—	51	2	29	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	6	1	—	—	—	3	—	1	1	—
Deaths	—	—	—	—	—	—	—	3	—	—
Enteric (typhoid and paratyphoid) fever	127	1	19	4	—	205	16	1	6	2
Deaths	2	—	—	—	—	2	1	—	—	—
Erysipelas	—	—	39	8	3	—	17	37	6	3
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	—	—	—	—	—	—	—	—	—	—
Deaths	32	1	10	9	2	25	3	8	5	5
Measles	8,958	293	107	1	10	9,366	30	1,957	12	27
Deaths	10	—	8	—	—	4	—	12	—	—
Ophthalmia neonatorum	75	1	8	1	1	81	6	23	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza*	668	22	14	2	1	444	17	6	1	2
Deaths (from influenza)	6	21	2	—	9	12	1	—	1	1
Pneumonia, primary	—	—	206	11	—	—	21	163	5	6
Deaths	—	—	—	10	—	—	—	—	—	—
Polio-encephalitis, acute	—	—	—	—	—	4	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Polio-myelitis, acute	9	—	1	—	—	24	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	1	1	10	3	1	3	3	11	4	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	115	2	9	4	—	124	18	15	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	955	36	124	75	13	884	32	116	48	68
Deaths	—	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	4,837	160	263	—	7	720	3	55	—	11
Deaths	34	3	4	—	—	3	—	4	—	—
Deaths (0-1 year)	278	16	67	35	17	277	30	65	30	19
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still-births)	4,214	512	626	197	145†	3,983	616	572	210	126
Annual death rate (per 1,000 persons living)	—	—	13.6	13.1	—	—	—	11.6	14.0	11.0
Live births	4,612	321	881	433	187†	6,296	593	836	418	270
Annual rate per 1,000 persons living	—	—	17.9	23.7	—	—	—	17.9	29.9	23.7
Stillbirths	213	17	25	—	—	220	27	40	—	—
Rate per 1,000 total births (including stillbirths)	—	—	23	—	—	—	—	43	—	—

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Owing to recent movements of population, birth and death rates can no longer be given for Northern Ireland.

Medical News

Papers on "Some Soviet Contributions to War Surgery" will be read by Dr. Janet Vaughan and Mr. Ruscoe Clarke, F.R.C.S., on Friday, July 25, at 7.30 p.m., at the Medical Society of London, 11, Chandos Street, London, W.1. Invitation cards may be obtained from the Society for Cultural Relations with the U.S.S.R., 98, Gower Street, London, W.C.1 (Euston 2315).

Owing to the large numbers of wounded German officers and men arriving back from the Russian front, the German Government has ordered the mobilization of Jewish doctors and nurses in the Third Reich to assist in the care of the wounded. Similar mobilization orders have been issued in Hungary, Rumania, and Slovakia.

The Association of Special Libraries and Information Bureaux (ASLIB) is undertaking a national survey of the present position concerning enemy and enemy-controlled publications, especially the current issues of periodicals. Previous inquiries have confirmed the impression that since the early part of 1940 only very limited supplies have been arriving in this country; that they consist mainly of imperfect sets of a few periodicals restricted very largely to departmental libraries that are not accessible to the general public; and that only a detailed survey can reveal the inadequacy of the present supplies. Through the good offices of the Royal Society, the Rockefeller Foundation has now provided funds for such a survey, which will be completed by a committee of the association by the autumn. A memorandum is being circulated to some two thousand institutions and individuals to ascertain what publications they need and the extent to which they are locally available. Those who do not receive a copy of the memorandum and are interested to do so should communicate with the ASLIB Foreign Periodicals Committee, 31, Museum Street, London, W.1.

A Venezuela Society of Microbiology, Parasitology, and Tropical Medicine has recently been founded at Caracas.

In 1940, 5,715 taxi-drivers in Germany had their licences withdrawn, in 1,672 cases owing to being drunk while driving.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS of their articles must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Urticaria

"B. M. E." (Middlesex) writes: In reply to "H. S." (June 28, p. 922), a case of severe urticaria some years ago in which drugs were of no avail cleared up after a few doses of an autogenous intestinal vaccine, the organisms found being of the Gaertner group. There has been no return—the case had lasted some months.

Dysmenorrhoea

Dr. A. C. F. HALFORD (Brisbane) writes: I was very interested to read Mr. A. J. Hobson's advice (February 1, p. 182) to use calcium lactate for the relief of dysmenorrhoea. His prescription is the formula of the late Dr. Blair-Bell, *mistura calci lactatis recentis*, under which name Mr. Hobson's prescription may be written. I have used this preparation for many years, and have always

regarded calcium as a very useful drug for many conditions described in its pharmacology, notably in that valuable publication the *Extra Pharmacopoeia*. It is very effective at all stages of pregnancy, especially during the latter months, to remove oedema, albuminuria, headache, and cramp—pre-eclamptic states, in fact. *Liquor calcis lactatis* (Martindale) is claimed to be a more stable preparation and so should be remembered. Calcium, combined with tinct. *cannabis indica*, both in full doses, should be tried out in all cases of menorrhagia before any surgical procedures are undertaken. And so also for dysmenorrhoea hot baths and plenty of exercise should take first place in therapeutics. Proprietary preparations are in no way superior to *calci lactatis recentis*, which is much cheaper.

Exercises for Arteriosclerosis

"J. B." writes: I should be grateful for advice in the treatment of the following case. A man aged 77 suffers from arteriosclerosis, chiefly in the right foot and leg, accompanied by some coldness, slight redness, numbness, and loss of sense of light touch in the toes. The pulse in the arteries at the ankle is imperceptible. Other symptoms are: claudication, pain, cramp, weight, and tired feeling in the calf on walking 150 to 200 yards. The kidney and liver are in good condition; blood pressure is 142/90; slight angina pectoris on exertion for seven years. Two years ago I saw it stated that Buerger's exercises were of "definite value." I should be glad to know if these are really useful. They require forty-five minutes thrice daily, and include: (1) raising and blanching the foot; (2) hanging and reddening it; and then (3) placing the limb in a horizontal position for three minutes in each cycle.

LETTERS, NOTES, ETC.

Nurse Anaesthetists

Dr. J. R. J. BEDDARD writes: Having read with great interest the correspondence concerning nurse anaesthetists in the *Journal*, I hope you may find space for a few further remarks by way of postscript. Those surgeons who support the retrograde step taken at Addenbrooke's Hospital do not seem to realize that their own art lends itself to division among trained technicians. Might it not be beneficial to the patient if he were under a physician who could prescribe all treatment, treating the patient as a whole and calling in the technicians when indicated? The day of the "hemin nurse," the "whitlow nurse," and the "haemorrhoidal porter" may yet come! I think the real answer is that a person who is doing one job all the time will always be better than one who does it occasionally, or one who is recently qualified and is exploring vast new territories in the continent of medicine and surgery. In a given case the type of anaesthetic to be employed in the best interests of the patient can only be accurately assessed by the physician-anaesthetist; surgeons are apt to be parochial in this matter. If mere technicians are to be employed in surgery or anaesthesia it is an end to progress, and this branch of medical science will remain stationary.

Coined Medical Words

Dr. W. A. BREND writes: I am grateful to Dr. Sutton for pointing out (July 5, p. 38) that hyperphobesis is preferable to hyperphobosis as a term for "excessive fear reaction." I do not, however, care for *phobēn* (shuddering) as an alternative, since hyperphobesis is more likely to be readily understood and memorized by those already familiar with the significance of the prefix "hyper-" and of the word "phobia" in psychiatry.

The Golden Rule in Reception Areas

The National Baby Welfare Council (29, Gordon Square, W.C.1) has produced a sensible and simply worded leaflet (No. 87, "To Hosts and Guests") which it hopes will help to solve some of the difficulties caused by evacuation. The key phrase of this leaflet is "Give and Take." Supplies may be obtained from the Council at 2s. a hundred. A specimen copy will be sent on receipt of a penny stamp.

Corrigenda

An error occurred in Captain R. E. BURKITT's article "Flat-foot in Recruits" at page 967 of our issue for June 28. In the paragraph dealing with alterations to boots, the phrase "I had a rise of one-quarter of an inch or one-third of an inch put on the under side of the heel and sole of both boots" should have read: "I had a rise of one-quarter of an inch or one-third of an inch put on the inner side, etc."

In Captain WILLIAM E. SMITH's paper on the control of gastric hyperacidity and peptic ulcer published in the *Journal* of July 5 (p. 13) two corrections were received too late owing to delay in the post: (1) Page 13, column 2, line 39—for "reference" read "inference." (2) Page 14, column 1, line 15—for "9" read "10"; and column 2, lines 1 and 8—for "4" read "5."

DEPRESSIVE STATES IN THE SOLDIER

THEIR SYMPTOMS, CAUSATION, AND PROGNOSIS

BY

R. F. TREDGOLD, M.B., B.Ch., D.P.M.

Captain, R.A.M.C.

Among the patients of a military hospital for psychotics the number of cases of depression appeared to be noteworthy. These cases were of many different types, they had been precipitated by a number of causes in various personalities, and their course varied. An attempt was therefore made (i) to differentiate the types; (ii) to analyse the factors in each case and to correlate them if possible; and (iii) to describe the course, and response to treatment, of the various cases.

Differentiation of Types

In 1926 began the considerable controversy in this country on the question of differentiation between psychoses and neuroses, which unfortunately still continues. This had been provoked by Mapother (1926), who stated that the distinction had grown out of practical differences and that he could find no other basis for it. This was hotly contested by many speakers, their protagonist being Ross (1926), who has since defined his views more concisely (1937), stressing the differentiation of anxiety states from depressive psychoses. In point of fact he does not mention depression as a symptom occurring in an anxiety state, but his distinction of the latter from the depressive psychosis is based on the extent of its dependence on environment, as well as on the absence of retardation and presence of insight.

Gillespie (1929) set up a group of neurotic depressions, separated from the psychotic in their greater reactivity—that is, the greater dependence of their affect on conscious factors, internal or external. He also gave a list of criteria suggested for the distinction of neuroses from psychoses (Gillespie, 1930). Yellowlees (1930) also held these views, basing his distinction on the patient's possession of insight.

Rogerson (1940) has based on the above views a classification into psychoses and neuroses, each again subdivided into anxiety and depressive states, the distinction—the integrity of the rationalizing power of the mind—thus resting on a study of the extent of the dependence of the mood-change on external reality and conscious strivings. He holds also that in a psychotic a defence mechanism operates in a far more wholesale way than in a neurotic.

It may here be interesting to note that many of this school base their sharp distinction on one criterion—but this criterion is itself a matter of degree. Thus Rogerson diagnosed the psychotic type by the far more wholesale appearance of a defence mechanism, and Yellowlees by the possession of insight, a quality whose assessment (as Curran points out) Lewis (1934b) has shown to be extremely difficult, while Gillespie's most important criterion was of comparatively less reactivity. It would, however, seem more helpful to look for a distinction, if any, in the mechanism of the reaction. Thus it might be held that neurotic depression is an exaggeration of a normal reaction—that is, an attribution of failure to insurmountable difficulties—while the psychotic depression is com-

pletely abnormal, being, in its admission of total failure, biologically dangerous.

The basis of such a distinction was thus held by the authorities quoted as resting on psychopathology, and its use was justified in that it indicated also a complete distinction of treatment and prognosis, as will be mentioned later. Completely opposite views have, however, been given in classic phrases by Mapother and Lewis (1937), who, speaking generally, stated that distinction between neurosis and psychosis is at times convenient but without substance. Lewis (1934a) condemns a sharp distinction between depressive states as not found in Nature and of no help to thought and action, and stresses that, like every other illness, depression is the result of environment working on the organism: there will be a great number of possible combinations according to the individual's inherited endowment and training, and the particular constellation of environmental forces. Applied to his cases Gillespie's criteria gave contradictory results. Lewis's view was supported by Curran (1937), who also attacked the criteria of distinction suggested by Gillespie, and in various cases showed an entire absence of correlation. He proposed that the types of depression should be regarded as a graded sequence. He also attacked the sharp distinction in recommended treatment. Symonds (1939) considered the difference in types to be merely one of degree.

Grouping of Cases

Of 274 consecutive cases admitted to the hospital in the first six months 70 were selected as "depressions." This diagnosis was made on the criterion of "anyone who was unhappy and ill with his unhappiness" without any other significant illness to cause this (Lewis, 1938). The cases were first studied from a clinical standpoint; it appeared that they could be separated into several types entirely from overt symptoms, and it must be emphasized that not until they had been so grouped was their psychopathology considered. Since the symptoms varied during the patient's progress, the most acute phase during their stay in hospital was taken to determine the group. The cases may be classified as follows:

1. *Agitated Melancholia*.—The symptoms were acute misery, apprehension at times amounting to terror, delusions and hallucinations of persecution, and self-reproach. There were occasional periods of calm, which usually ended abruptly. Suicidal attempts were common. These patients showed a complete lack of insight or co-operation.

2. (a) *Anxious*; (b) *Hypochondriacal*.—These patients showed depression accompanied by preoccupation of (a) disaster, or (b) bodily ailment, respectively. Though lacking in self-confidence, they possessed some self-control and could respond to reassurance. There was in some cases a knowledge that their worries were probably exaggerated. The more acute cases of both these subgroups were practically indistinguishable from the milder ones in Group 1.

3. *Emotional*.—Symptoms in this group were a deeper depression with marked emotional instability, sometimes repetition and retardation, with feelings of unworthiness and disaster which in

general the patient realized to be irrational but were none the less distressing. These remains of insight were not, however, associated with any power of co-operation.

4.—This group may be regarded as midway between Groups 2 and 5, anxiety being on the decrease but retardation the reverse.

5. *Retarded*.—Retardation was here pronounced, and in some cases amounted to stupor. No agitation or repetition occurred, and there was little emotional instability. The patient often expressed himself as desiring merely to lie curled up in bed and to be left alone. Suicidal attempts had frequently been made before admission. Co-operation varied with the degree of retardation.

6. *Recovering (?)*.—The last group consisted of five patients whose symptoms had disappeared to a great extent by the time of admission but who had attempted suicide while acutely depressed; their history was, however, not adequate enough to decide into which of the above groups they should fall.

There are thus a number of cases ranging from the acutely agitated to the acutely retarded, which, though they have here been subdivided, could accurately be described as a sequence. Groups 1, 2, 4, and 5 present a more or less regular sequence; Group 3, though placed

TABLE I

Case No.	FACTORS (Column 1)				SYMPTOMS (Column 2)					(Column 3)			Specific Treatment	Result
	Familial	Person-ality	Long-standing	Sudden	Onset	Anxiety	Retard-ation	Repe-tition	Emotl. Instab.	Insight	Attribution	Co-operation		
GROUP 1 :														
1		Normal	B†	D		+++		+	+	0	In	0	See Table IV	M.H.
2		M.D.		E		++		+	+	0	In	0		H.
3		"		E		+++		+	+	0	In	0		
4		"		E		+++		+	+	0	Ex	0		
5	+	Worrying	F†	D	A	+++		++	+	0	Ex	0		M.H.
6		Inferior			A	+++	+	+	+	0	In	0		Improving
7		Worrying		F†	A	+++	+	+	+	0	In	0		Recovered
8		M.D.		F†	A	++	+	+	+	++	Ex	0		Recovered
GROUP 2(a) :														
9		Worrying	F	D	A	+	+	+		++	In	0	S	Recovered
10		M.D.	F	F†P		+	+	++	+	0	In	0		"
11		"		FP		+		+	+	++	Ex	0		"
12	+	Worrying		E		++	+	++	+	++	Ex	+		"
13	+	"			A	+	+	+	+	++	Ex	++		"
14	+	"	B†		A	+	+	+	+	++	In	++		"
15		Normal	B†		A	+	+	+	+	++	Ex	++		"
16		Inferior	B†		A	++	+	+	+	+	Ex	0		"
GROUP 2(b) :														
17	+	Dep.	B†	F	A	++		++		+	Ex	+	S	Recovered
18		Worrying	B†		A	+	+			0	Ex	+		"
19		Dep.	B†		A	+	+		+	+	Ex	+		"
20		Normal	B†	B†	A	+	+	+	+	+	In	+		"
21		"	F†		A	+	+		+	+	Ex	+		"
22		"	B†		A	+	+	+	+	+	Ex	+		"
23		Worrying	P			+	+	+	+	+	Ex	+		"
24		Hysteric	B†	D		+	+	+	+	+	Ex	+		"
25		"	B†			+	+	+	+	+	Ex	+	S	"
26		Worrying	D†			+	+	+	+	+	Ex	+		"
GROUP 3 :														
27	+	Worrying	B	E	A	+	+	++	++	+	In	0	S	Recovered
28		Normal		D		+	+	+	+	0	In	0		"
29		Inferior		B†P		+	+	++	++	+	In	0		"
30		Dep.		F		+	+	+	+	++	In	0		"
31	+	"	B†	E		+	+	+	+	+	In	+		"
32		M.D.				+	+	+	+	+	In	+		"
33		"			A	+	+	+	+	+	In	+		"
34		Dep.*		P	A	+	+	+	+	++	Ex	++		"
35		Dep.*		F		+	+	+	+	++	Ex	++	S	"
36		"		D		+	+	+	+	++	Ex	++		"
GROUP 4 :														
37	+	Inferior	B†	P	A	+	+			++	In	+	S	Recovered
38	+	Dep.		E		+	+			++	In	+		"
39		Normal	B†		A	+	++			++	Ex	+		"
40	+	Dep.		D		+	+			+	In	+		C.E.S.
41		Worrying				+	+			+	In	+		Recovered
42		Inferior			A	+	+			+	Ex	+		C.E.S.
43		M.D.		P	A	+	+			+	Ex	+		Recovered
44		Dep.			A	+	+			+	Ex	+		"
GROUP 5 :														
45		Dep.	B†	F†	A	++				0	In	0	S	"
46		Inferior		F†		++				0	In	0		"
47		M.D.				++				0	Ex	0		"
48		"		E		++			++	0	Ex	0		"
49		Worrying		P	A	++				0	In	0		"
50		"		E		++				0	Ex	0		"
51		M.D.		E	A	++				0	In	0		"
52		Worrying		F†	A	+				++	In	+	S	"
53	+	Dep.		D	A	++				0	Ex	+		"
54		Dep.*			A	++			+	+	In	+		"
55		M.D.	F†	D	A	++				+	Ex	+		"
56		Dep.*				++				+	In	+		"
57		M.D.		D	A	++				+	Ex	+		"
58		Dep.*			A	++				++	In	+		"
59	+	Dep.	F†	F†		+				++	Ex	+	S	C.E.S.
60		M.D.				+				+	In	+		Recovered
61		Dep.	P			+				+	Ex	+		"
62		M.D.		E		+				+	In	0		"
63		"	D		A	+			+	0	In	+		H
64	+	"	B†	F	A	+				+	Ex	+		"
65		Dep.*		E		+				+	Ex	+		"
GROUP 6 :														
66		Normal	F	F†	A	++			+	+	Ex	+	S	Recovered
67	+	"	B†	D	A				+	+	Ex	++		"
68		Inferior	F		A	+			+	+	In	++		"
69		M.D.		F†	A	+			+	+	Ex	++		"
70		Worrying	D	D		+			+	+	In	+		"

FACTORS.—Dep.: Depression. *—Previously certified. M.D.=Mental defective. B=Bombardment. D=Uncongenial discipline. E=Enlistment. F=Family troubles. P=Physical illness. †=Major. SYMPTOMS.—A=Acute. Ex=to external causes. In=to internal causes. SPECIFIC TREATMENT.—S=Somnifaine. C=Cardiazol. RESULT.—C.E.S.=Discharge to sheltered civil employment. H=Discharge home to c/o friends. M.H.=Discharge to a mental hospital.

between Groups 1 and 5, may be regarded as a little off the direct line, being characterized by emotional instability (with little anxiety).

Once these cases had been grouped on clinical grounds their possession of insight and their response to environment were noted; the exact assessment of each of these factors in any individual was extremely difficult, but an attempt was made to represent their relative strength by symbols as in Table I, Column 3. It was also noted whether the patient placed the blame for his depression on his environment or on himself.

If these were regarded as the criteria by which to distinguish psychosis from neurosis the more acute clinical states either of anxiety or of retardation could be grouped as psychoses, and the milder as neuroses. However, the contention is here put forward that efforts at such distinction are both false and misleading, and that it is correct to regard the cases as a graded sequence

Transition

Transition from one condition to the other seems to have evoked curiously little remark in recent literature. Rogerson, moreover, quotes Ross's figures of the follow-up of 1,043 cases of neurosis discharged from the Cassel Institute (and of which only 5% later developed psychosis) as evidence that a distinction between the two types existed. In any case, there seems no particular reason why a mild type of illness should be more severe on recurrence. A similar follow-up of recovered psychotics would be interesting. Recently, however, Symonds (1941) commented on the frequency of diurnal variations from "neurotic" to "psychotic" type.

A study of the individual cases in our series showed that a number of those convalescing passed from a condition undoubtedly psychotic to one that was neurotic (by the above criteria), and a number of those relapsing did the reverse. Thus Case 6 on admission was agitated, inaccessible, and had repeated delusions of impending disaster, coupled with auditory hallucinations; his delusions faded as he recovered, but he showed some anxiety and repetition, and increasing insight and co-operation. In contrast, patient No. 5—who when admitted was mildly anxious and lacking in self-confidence, who worried over real financial matters and lack of Army promotion, but was moderately co-operative—relapsed into a condition of acute terror, with vivid delusions of persecution by Germans and a complete lack of insight or co-operation. Here the rapid transition of such cases certainly supports the hypothesis that the difference between the psychotic and the neurotic is merely one of degree.

Factors Influencing the Onset

Probable causative factors were next studied, although it must be admitted that several cases showed very inadequate personal and family history. The following were the factors considered:

A. Internal.—(1) Family history of any psychopathic weakness. (2) Previous personality.—The cases were here grouped under three headings: (a) mental defectives; (b) psychopathic types, including those who had (i) suffered always from ideas of inferiority, hysterical reaction, or had been of a worrying disposition, or (ii) had had previous attacks of depression (which may or may not have led them into a mental hospital); (c) those previously apparently entirely normal.

B. External.—(3) Long-standing factors.—(4) Sudden factors.—Factors 3 and 4 were each subdivided into Physical Illness; Family Worry; Bombardment; and Incompatibility with Military Discipline. Where the mere fact of enlistment seemed the only cause, this was noted. These factors were major, such as bereavement, infidelity of wife, etc., or minor—certainly an arbitrary division.

Table I shows the incidence of these factors in each group (Column 1); Tables IIa and IIb summarize them.

TABLE IIa.—Internal Factors (70 Cases)

Previously normal	..	..	..	..	..	..	..	9
Psychopathic	..	..	..	..	..	..	..	24
Inferiority	..	..	..	..	..	..	..	7
Worrying	..	..	..	..	..	..	..	15
Hysterics	..	..	..	..	..	..	..	2
Depression (5 previously certified)	..	..	..	..	..	..	..	16
Mental defectives	..	..	..	..	..	..	..	21

A psychopathic family history was traced in 14 patients (of whom 6 were "chronic worriers").

TABLE IIb.—External Factors

	Total	Long-standing		Sudden	
		Major	Minor	Major	Minor
Bombardment	19	16	1	2	—
Family troubles	22	4	4	9	5
Incompatibility to discipline	15	1	2	—	12
Enlistment	13	—	—	—	13
Physical	9	—	2	—	7

NOTE.—In 17 cases more than one external factor was evident: in 2 of these both major.

These conclusions may be drawn from Tables IIa and IIb in connexion with Table I: (1) No particular correlation could be traced between any type of previous personality and any clinical group. (2) Out of 18 cases in the anxious and hypochondriacal group 9 had previously been subjected to severe bombardment at Dunkirk and had later broken down, in response at most to a minor precipitating factor; one other case had suffered recent bombardment. (3) Apart from those cases no particular correlation could be traced between any external factor and any clinical type.

TABLE III.—Analysis of Cases, showing Incidence of Minor and Major Factors

	Major	Minor only	Nil Ascertained	Total Cases
Normal	8	1	—	9
Psychopathic	10	10	4	24
Depression	4	8	4	16
M.D.	8	12	1	21

NOTE.—In some cases several minor factors were together; these are shown under "Minor only."

But here again no correlation could be found (see Table IIb) between these and any clinical type. It is, however, noteworthy that in fact, as might be expected, the proportion of major to minor factors is far greater in the previously normal than in psychopathics and mental defectives, especially in previous depressives. A recent publication by Curran and Mallinson (1941) has shown that no clear-cut clinical distinction could be found between "endogenous" and "reactive" (so-called) cases of depression in the Navy, and that the cases formed a graded sequence, being borderline. They hold, nevertheless, that there are, at the two extremes of the sequence, distinct clinical types—namely: (1) the "endogenous," which might or might not have been precipitated by external stress, mainly characterized by certain typical symptoms such as retardation, ideas of reference and self-reproach, and a "depressive content"; and (2) the "reactive," mainly characterized by the dependence of the illness upon traumatic experiences which gave rise to a "topical content," but not showing the typical "endogenous" symptoms mentioned above with the same frequency or intensity. In the former they find 25 adequate factors and in the latter 48, thus suggesting that the external factors produce a clinical type distinct from the internal.

Such a suggestion is not supported by the figures of this series, in which, it must be noted, the proportion of previously normal individuals is much lower; for clinically similar cases resulted from a completely different set of interacting factors. It seems only possible to conclude

that any state of depression is the result of the interaction of external factors upon a personality; and that, so far, there is not enough evidence to predict the occurrence of any particular syndrome in any particular individual.

Treatment

1. *Rest*.—The patients were kept in bed for at least twenty-four hours, practically all for forty-eight hours, and some for a week. During this time the question of future treatment and of narcosis therapy was considered. The majority of the patients, however, were those whose progress appeared satisfactory; they were got up and given in the first place light jobs, usually in the ward, requiring little concentration, responsibility, or perseverance. Their existence was ruled by a fairly strict routine time-table; it included regular fresh air and adequate meals. Gradually their occupation was made more interesting and more vigorous, and so far as possible in tune with their own hobbies or occupations. This, of course, was not always feasible, and rug and basket making, digging, and weaving proved valuable substitutes, with the help of much-varied physical training and entertainment such as cinemas and organized games.

2. *General Psychotherapy*.—This consisted in giving individual encouragement and reassurance, and later included a series of talks, leading the patient to adjust his personality to cope with his difficulties so far as was possible and stressing the fact that he had passed through an illness caused, like any other, by physical factors. There can, however, be little doubt that a number of patients for whom no individual attention was then available recovered as completely, though perhaps more slowly.

3. *Prolonged Narcosis*.—Those patients whose progress appeared unsatisfactory after a few days' observation or who suffered acute anxiety were recommended prolonged narcosis. Thus it was advocated for all members of Group 1 and several of Groups 2, 3, and 5. For some of such cases, however, it was not available by reason of administrative difficulties in the early days of the hospital. Thus a series of clinically similar controls is provided. In all, 19 cases were treated. The technique adopted was that described by Ström-Olsen (1933, 1934), using somnifaine, insulin, and glucose; or that suggested by Palmer (1937), using somnifaine and paraldehyde. Average daily sleep varied from twelve to eighteen hours, and was in most cases over fifteen and a half hours. In cases other than Group 1 it can scarcely be said that narcosis improved the number of recoveries, for the rate was exceedingly high in any event, but those treated with narcosis did appear to recover more quickly. In cases of Group 1, however, the results were extremely interesting, and may be set out thus:

TABLE IV.—Results in Group 1

Case No.	Narcosis	Progress	Subsequently	Further treatment	Progress	Result
1	No	Unchanged	Remained so	Nil	—	M.H.
2	Yes	Improved	Relapsed	Narcosis	Slightly improved	H.
3	..	Improved	..	Nil	—	H.
4	..	Slightly improved	..	Nil	—	M.H.
5	..	Improved	..	Insulin	Improving	Not yet discharged
6	..	..	..	Cardiazol	Recovered	To civil life
7	..	..	..	Insulin	Improving	Not yet discharged
8	..	..	Remained well	—	—	To civil life

There are as yet insufficient data on the question of relapse; but it must be stressed that at least two patients, after apparent recovery, became far worse than on admission, showing an acute agitation, with marked delusions of persecution.

4. *Shock Therapy*.—This was recommended for the cases of relapse and also for the case that was unchanged after narcosis, as well as for one which showed only very slight improvement after some weeks. Owing to relatives' objections, however, it could be given to only 4 cases, 2 of which received cardiazol and 2 insulin. Considering first those in Group 1, one which was given cardiazol was discharged recovered. Two given insulin are steadily improving but are not yet discharged. The three which were given no further treatment, as well as Case 3, which was given further somnifaine, were, as persons of unsound mind, only able to be sent either to their relatives or direct to civil mental hospitals—two are known to be in the latter. The eighth case in Group 1, as was seen, recovered without narcosis. The only other case given cardiazol recovered.

Prognosis

Prognosis must be regarded as very good, apart from the cases of agitated depression (Group 1). For of 62, only 2 were classified as "unfit for civil employment," and 3 others as "fit only for sheltered employment." Of Group 1, however, 4 showed practically no improvement, while 4 did improve. The dependence of recovery on adequate treatment (if necessary, shock) appears probable. Of the above-quoted 9 failures 5 were mental defectives. The follow-up of such cases is not yet adequate, but an effort is being made to keep in touch with them: so far none marked "fit" are known to have relapsed—the longest time after discharge, however, is only five months. It will be noted that no men returned to duty, whereas 57 went back to normal civil employment. This result is due to the instructions of medical boards, which have insisted till recently on the elimination of all those at any time diagnosed as depressive cases, discussion of which is beyond the scope of this paper.

Summary

The incidence (25.5%) of cases diagnosed as depression in admissions to a military mental hospital is noted.

These were classified into groups entirely on clinical grounds: no sharp differentiation could be observed between such groups, which could be regarded rather as a graded sequence of cases.

An analysis is made of various factors—predisposing and precipitating. No correlation between such factors and any one clinical syndrome could be found, with the exception of a syndrome following some time after severe bombardment. The occurrence of any type of depression does, however, appear to be the result of the interaction of external and internal factors.

The treatment is described.

The prognosis is considered good—59 cases out of 70 making a complete clinical recovery.

I am extremely grateful to Lieut.-Colonel J. I. Russell for permission to publish these cases and also to him and to Major H. A. Palmer for much help and interest in the discussion of the material.

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THE CLASSIFICATION OF CASES OF ALBUMINURIA

BY

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The careful medical examination of large numbers of entrants to the Services has provided a new opportunity for the study of groups of young adults in whose urine albumin is discovered on routine tests. Analysis of the data collected in the present work has substantiated the figures of previous investigations. In addition, since examination was possible in more complete detail than in earlier observations of this kind, it has been shown that subacute nephritis is relatively common as a sequel of transitory respiratory infections and that early types of chronic nephritis exist in which the condition is unsuspected symptomatically and in which the disease may progress until the later stages become manifest.

Previous Work on Classification

The basis of classification of cases of albuminuria was established during the war period 1914-18. MacLean (1919) investigated 50,000 soldiers in training and observed an incidence of albuminuria of 5.8%: in 2.8% the amount of albumin passed in the urine was large, and in 1.1% it was accompanied by an abnormal urinary deposit showing hyaline and epithelial casts and occasionally red blood cells. MacLean concluded that 1.1% of soldiers under training showed some degree of renal damage or nephritis. Similar investigations amongst untrained men suggested that these renal changes were not caused by training and that men showing such changes were capable of the strain of vigorous military preparation. From later work on trench nephritis MacLean concluded that the incidence of albuminuria had no influence on the occurrence of that disease; of 161 cases of trench nephritis among the group of 50,000 men originally examined, only 28 had been albuminuric and only 15 had shown casts in the urinary sediment. This reasoning would be correct only if exposure to the infective agent of trench nephritis were equally distributed.

Although the intervening years of peace added but scanty information to the data, various workers have commented on MacLean's statistics and conclusions. Gulland (1927) analysed data collected for insurance work, and was of the opinion that albumin in the urine accompanied by epithelial casts indicated a desquamative catarrh of the kidneys, which might be trifling or serious, temporary or permanent. He believed that slight degrees of nephritis were more common than was usually thought to be the case. In many instances such mild nephritis was associated with upper respiratory infections. That author was not impressed by the value of renal function tests in cases of mild nephritis; he felt that to accept the view that only renal efficiency tests gave evidence of defective kidneys might be misleading. Fox (1921) also discussed adolescent albuminuria in relation to life insurance and described 20 such cases which satisfied his criteria for diagnosis and which had been observed for upwards of twenty-five years. Five deaths had occurred in this series, but none from renal diseases. Diehl and McKinlay (1932) examined the urine of 20,000 students who entered the University of Minnesota from 1921 to 1930, and found albumin present in 1,065 samples (5.3%). Persistent albuminuria was observed in 118 students (0.6%), and 65 (0.3%) showed evidence of nephritis. Of 606 students in whom albuminuria was discovered, 404 had no

albumin in the urine at later examinations. This group the authors called transient albuminuria. Ashburn (1928) examined 1,115 Army cadets from two to six times during the years 1924-6. Albumin was found in the urine of 16%, with hyaline casts in 41 instances, granular casts in 14, and red blood cells in 15.

The material investigated in the present work consisted of 110 men who showed albuminuria on more than one occasion when examined for recruitment to the Services. This incidence occurred in the examination of 20,000 men (0.55%). The method of investigation adopted was as follows.

Investigation of Cases of Albuminuria

A sample of oxalated blood and a sample of urine were collected when the patient reported. A set of three bottles with suitable labels and a bottle containing 15 grammes of urea in 100 c.cm. of water were provided, along with the following instructions:

INSTRUCTIONS

Have nothing to eat or drink after 8 o'clock to-night.
Go to bed at 9 p.m. and pass water at 10.30 p.m.
At 7 a.m. pass urine and keep in Bottle 1. Take draught (15 grammes of urea).
At 8 a.m. pass urine and keep in Bottle 2.
At 9 a.m. pass urine and keep in Bottle 3.
Report to laboratory at 9.30 a.m.
Have nothing to eat or drink in the morning.

A further specimen of urine, collected when the patient reported, provided a sample after exercise.

The blood-urea value was determined and the urea-concentration test was performed. All samples of urine were tested for albumin, and microscopical examinations of the centrifuge deposits of the single sample of urine and of the first and last samples of the urea-concentration test were made. From the data thus obtained, from the relevant history, and from the examination of the patient it was possible in practically all instances to decide whether the case was one of orthostatic albuminuria or whether some degree of renal pathology was present.

Classification

Analysis of the data collected in this study showed that patients with albuminuria could be divided into five main groups, as shown in Table I.

TABLE I (110 Cases)

A. Orthostatic albuminuria	..	..	..	..	31
B. Albuminuria without evidence of nephritis	..	..	..	..	22
C. Subacute nephritis	..	..	..	..	14
D. Chronic or subchronic nephritis	..	..	..	..	31
E. Urinary infections; haematuria; various	..	..	..	..	12

Although statistics are of relatively little value in arriving at a decision in the individual case, these figures show that roughly 30% of cases of incidental albuminuria can be classified as orthostatic in type. On the other hand, 40% are found on investigation to reveal some evidence of renal pathology. In Table II typical instances of Groups A, B, C, and D are collected for comparison. The gradation in abnormality, in ability to concentrate urea, in the amount of albumin, in the character of the urinary deposit, and in blood pressure is demonstrated in this table.

Orthostatic Albuminuria

This term has been chosen for Group A in preference to adolescent albuminuria as the age group (18-35) is beyond the period of adolescence, and also in preference to benign

TABLE II.—*Typical Cases of Groups A, B, C, and D*

Case No.	Age	Blood Urea	Concentration Test				Albumin				Deposit				B.P.	Remarks
			1	2	3	4	1	2	3	4	Casts	R.B.C.	Pus	Crystals		
4	21	29	3.5	3.2	3.8	—	0	trace	trace	trace	0	0	0	0	128/78	Orthostatic
11	24	28	3.3	3.6	3.9	4.0	0	0	0	0	0	0	0	0	124/78	
27	21	27	2.4	3.2	3.7	3.6	0	trace	trace	..	0	0	0	Ca-oxal.	110/70	
39	24	32	3.2	3.3	3.2	2.9	ft. trace	..	..	..	0	0	0	0	132/104
47	28	28	2.7	3.0	3.2	3.8	0	0	..	..	0	0	0	0	136/72
77	—	37	2.8	3.2	3.1	3.3	trace	trace	Occas. hyaline	0	few	0	132/80	No evidence of nephritis
82	18	36	3.4	2.8	2.8	3.3	..	..	..	..	Rare granular	0	0	0	126/76
108	32	—	2.9	2.8	2.9	2.6	..	..	+	+	0	0	0	Ca-oxal.	130/80
5	—	20	2.7	2.8	3.6	3.4	..	+	++	++	Epithelial ; granular	0	0	0	150/78	Subacute nephritis
23	20	34	3.3	3.1	2.9	3.4	..	+	+	+	Epithelial	+	+	Ca-oxal.	120/72	
59	20	23	3.2	2.8	3.4	3.1	..	+	+	+	Granular	+	+	0	120/76	
86	30	30	2.4	2.3	2.6	2.7	++	+	+	+	Epithelial ; granular	+	0	0	150/68	
97	26	40	3.1	3.3	2.8	3.2	+	+	+	++	..	+	0	0	132/86	
17	24	29	1.0	1.2	1.4	1.7	++	+	+	++	Hyaline ; granular	+	+	0	138/80	Chronic nephritis
46	38	1.5	1.4	1.4	1.7	+	+	+	++	++	"Granular"	+	+	0	154/86	
55	34	30	1.7	1.6	1.7	2.1	+	trace	+	+	+	+	0	0	140/90	
89	40	44	2.3	2.1	2.0	2.4	+	+	+	++	Epithelial ; granular	+	+	0	158/92	
94	32	52	2.1	2.0	2.3	2.5	+	+	+	+	Granular	+	0	0	164/94	

albuminuria, a term which would include some cases in Group B. For inclusion in this classification the following criteria are essential:

- Albuminuria is transient and the urine passed during rest is free of albumin.
- The urinary deposit shows no pus cells, red blood cells, or renal casts.
- The urea concentration reaches over 3% and the blood-urea value is normal.
- There is no history of illness, particularly a recent illness, which might result in nephritis.
- The blood pressure is normal and there are no clinical evidences of nephritis or anatomical abnormalities of the urinary tract.

The amount of albumin present in the urine during activity varies from traces to considerable amounts (up to 0.2% Esbach). In 18 out of 32 cases the quantity of albumin seen at the first examination was large. In samples of urine collected next day, only traces of albumin were found, except in one case. There is suggestive evidence that the amount of albumin passed is increased with the temporary rise in blood pressure, which often occurs during medical examinations as one manifestation of adrenal stimulation. In the centrifuge deposit an occasional hyaline or granular cast seen in the first sample of urine may be neglected. This happened in six instances in this group. Calcium oxalate crystals occur frequently, but unless accompanied by red blood cells are not of pathological significance.

The aetiology of the condition is still in doubt. One or more of a number of factors, including constitutional diathesis, lordosis, and pressure on the left renal vein, have been postulated as causative by various workers. In the present group five individuals had had scarlet fever between the ages of 9 and 14 years, two had had diphtheria, and one had had typhoid fever. The influence of previous fevers is still in doubt. Russell (1925) called attention to the fact that orthostatic albuminuria was often a phase of scarlatinal or diphtheritic nephritis and possibly of other forms of the disease, the sequence being: constant albuminuria—orthostatic albuminuria—none. Diehl and McKinlay (1932), on the other hand, could find no statistical significance in the incidence of precursory diseases. With this in mind, it should be emphasized that, although no evidence of renal involvement can be elicited, the diagnosis of orthostatic albuminuria is nevertheless one of personal opinion and not of absolute certainty. But in view of the accumulated evidence regarding the innocuous nature of the condition, men classed as cases of orthostatic albuminuria can be accepted for service in the Forces in the higher grades and frequently in Grade I.

Albuminuria without Evidence of Nephritis

The cases in this group could not be classed as benign albuminuria or orthostatic albuminuria. In each instance some feature was present which raised doubt, although there was not enough evidence to be certain of interference with renal function. The urea concentration was below normal in six instances, with maximum concentration between 2.2 and 2.9% urea. In the rest the urea concentration reached normal figures. Albuminuria was persistent in eight cases even at rest. In the others the resting sample of urine was free of albumin. Occasional polyuria was found in two patients along with reduced figures for urea concentration but without other abnormality in findings. In the urinary centrifuge deposits an occasional granular or hyaline cast was present in five, a few red blood cells in two, and pus cells in six instances. The blood pressure was above normal in five cases, ranging up to 160/80; in this instance the resting blood pressure was 142/80, and in another the pressure was 154/90 during activity and fell to 120/74 during rest. Only three patients in the group had suffered from scarlet fever, in one instance in conjunction with diphtheria and in another with rheumatic fever.

In this group the individual case is difficult to evaluate. Such cases cannot be classified as orthostatic or benign albuminuria, nor, on the other hand, can they be placed among the nephritides, since there is no actual evidence of renal lesion. In all instances the grading suggested was II or III. The following is a description of a typical case.

A painter aged 32, married, with two children, this patient had never had scarlet fever, diphtheria, or other illness, and had never been off work. There had been oedema, dysuria, polyuria, or nocturia. He had had a septic finger in January, 1940, and an injury to the nose and displacement of septum at the age of 20. The pulse rate was 64 and blood pressure 130/80, and the heart sounds were good and pure. No abnormality was found on examination of the chest and abdomen. The kidneys, spleen, and liver were not palpable. The pupils were central and equal, and reacted normally. The reflexes were normal. The blood urea was 28 mg. per 100 c.cm. A urea-concentration test with 15 grammes of urea gave:

1. Fasting urine	2.9% urea	Albumin trace
2. At 1 hour	2.8% "	" +
3. " 2 hours	2.9% "	" +
4. " 3 "	2.6% "	" +

The centrifuge deposits in Sample 1 showed numerous calcium oxalate crystals. No pus cells, red blood cells, or casts were found. The deposit in Sample 4 showed an occasional leucocyte but no casts, red blood cells, or crystals. This case was summed up as persistent albuminuria with urea-concentration values rather below standard, but without evidence of nephritis.

Subacute Nephritis

This group included 14 individuals between the ages of 18 and 37 who showed either clinical or pathological evidences of recent nephritis. Various factors suggested the conclusion that the lesion present was of recent origin and could be classified as acute or subacute nephritis. In all these cases, with two exceptions, there was a history of illness, including sore throats, severe chills, influenza, and cellulitis, within the previous two months. Scarlet fever had not been present in any instance. In two cases oedema of the hands and puffiness of the face were found. The blood-urea value was increased to between 40 and 50 mg. per 100 c.cm. in four instances. The albumin in the urine was considerable in amount (up to 0.3% Esbach), and was constantly present. The urea-concentration tests gave maximum values of over 3% in six cases and of less than 2.5% in one case only. The urinary deposit contained epithelial casts as evidence of acute renal desquamation in all but two instances. Granular casts were also frequently found, and red blood cells were seen in all except two. The blood pressure was raised to between 140 and 150 systolic in five patients; the diastolic blood pressure was never above 88 mm. Hg.

Such men are obviously unsuitable for recruitment. In most instances, if the lesion seemed very recent, a further review of the condition was suggested after an interval of three months. The opportunity occurred to examine two members of this group several months later.

In the first of these two cases the man passed at 6 p.m. a sample of urine which contained much albumin. The centrifuge deposit showed red blood cells and epithelial and granular casts. The blood-urea value was 50 mg. per 100 c.cm. A urea-concentration test next day gave 2.2, 3.0, 3.0, 3.0% urea. All samples of urine contained much albumin, and the deposit showed considerable numbers of red blood cells and epithelial casts. There had been frequent colds and influenza, but the man had not been off work recently. The pulse rate was 68 and the blood pressure 128/70. The heart sounds were good, but a systolic murmur was present at the mitral and pulmonic areas. The throat was congested and the left tonsil infected. Conjunctivitis was present and the face was slightly puffy. The condition was classed as mild subacute nephritis. The case was reviewed three months later, when a urea-concentration test gave 2.4, 2.5, 2.6, and 2.5% urea. All samples of urine contained albumin, and the deposit from several of them showed epithelial casts, blood casts, and red blood cells. The blood urea was now 30 mg. per 100 c.cm. and the blood pressure 128/78. In this instance the condition was progressing to subchronic nephritis.

In the second case, at 4.30 p.m., the man passed urine which contained a large amount of albumin. The deposit showed a few hyaline casts but no pus, blood cells, or crystals. The blood urea was 30 mg. per 100 c.cm. A urea-concentration test next day gave 2.45, 2.3, 2.6, 2.7% urea. All samples of urine contained much albumin, and the centrifuge deposit showed a number of casts, partly epithelial and partly granular, and a few red blood cells. This man had had tonsillitis frequently until four years previously, but had never had scarlet fever. He had been chilled and wet a few nights previously on fire-watching duty and developed a headache and lumbago afterwards. The pulse rate was 100 and blood pressure 150/86; there was a systolic murmur at the pulmonary area and a slight puffiness of the face. The condition was classed as mild subacute nephritis which might resolve. The patient was seen three months later in hospital. His appetite was good and the bowels were regular. He admitted occasional slight frequency of urination, but no blood had been passed. There was no visual trouble, numbness, or anaesthesia, and there had been no giddiness or headaches or vomiting, no cough or dyspnoea. Palpitation on exertion had been noticed, and a tendency to sweat easily. He had had measles as a child, but not scarlet fever or diphtheria. He had had several attacks of tonsillitis, the last three years earlier. He had never had rheumatic fever, but had had lumbago four months previously. His parents and four sisters were alive and

well. He had one child, one month old. Examination showed him to be a well-developed and well-nourished though edematous man. There was no anaemia. His throat was healthy and his tongue clean. Pulsation was visible in the suprasternal notch. The thyroid gland was not enlarged. The pulse rate was 92 and the blood pressure 140/80 to 150/68. The heart sounds were good, but there was a systolic murmur at the mitral area. The heart was not enlarged. Nothing abnormal was found on examination of the chest, abdomen, reflexes, or cranial nerves.

The urine had a specific gravity of 1008 to 1017, and contained from 0.8 to 0.9 gramme of albumin per litre continually. A urea-concentration test showed: fasting, 2.45% of urea; at one hour, 2.3%; at two hours, 2.6%; and at three hours, 2.7%. The blood urea amounted to 30 mg. and plasma proteins to 6.7 grammes per 100 c.cm. The urine deposit contained numbers of hyaline and some granular and epithelial casts, together with a number of red blood cells. Volhard's water-excretion test gave a specific gravity between 1005 and 1032, and 36 oz. was excreted in three hours. Radiographs failed to reveal any urinary calculus.

Examination of the blood showed 5,120,000 red cells, 7,100 leucocytes, and 90% haemoglobin. The basal metabolic rate was +5%, and the Wassermann reaction was negative.

It is evident from the occurrence of such cases that milder degrees of subacute nephritis may occur in men who otherwise appear healthy and do not seek medical advice or remain off work. The end-result of such attacks is not known, but in the two instances quoted the disease progressed to a subchronic stage.

Chronic or Subchronic Nephritis

This group consisted of 31 individuals, of whom 26 were between the ages of 20 and 35 years, 18 and 47 being the age limits. All were found to have continuous albuminuria, often of considerable degree. The blood urea varied between 20 and 52 mg. per 100 c.cm., with values over 40 mg. in 7 instances. The urea-concentration factor lay below 70 in 11 instances; 7 of these were below 50. The urea-concentration test showed maximum values under 3% in 17; in 13 the maximum values were below 2.1%. In all cases fairly numerous casts, usually hyaline and granular in type, were found repeatedly in the centrifuge deposits of the urine. Red blood cells were present in all except three instances. The blood pressure showed systolic readings of 140 mm. Hg or above in 15 patients, of whom 7 showed readings over 150, the highest being 192. Diastolic pressures were raised to between 90 and 100 mm. Hg in 7 cases. In 10 patients symptoms referable to the presence of chronic renal diseases were elicited on question only. Two men complained of headache, two of occasional frequency of micturition, two of both these symptoms, and two of backache and pain in the renal region. Positive signs referable to renal disease were few. In one instance slight oedema of the face and arms was present, and one patient had dyspnoea on effort; two were much under weight, and one had aortic incompetence. Two were anaemic, and one showed polycythaemia. There was no history of any illness of aetiological significance in eight of these men. Only three men gave a history of having had scarlet fever before the age of 10 years, and one had had scarlet fever two years earlier. In three there was a history of nephritis 2 years, 11 years, and 12 years earlier, and one patient, whose blood urea was 52 mg. per 100 c.cm. and whose blood pressure was 164/94, was known to have had albuminuria 11 years previously. Five men had had recurrent attacks of tonsillitis, and nasopharyngeal infections were actually present in three instances. Other previous illnesses included septic hands (2), erysipelas (1), compound fracture of tibia (1), rheumatic fever (1), and exophthalmic goitre (1). There was very little evidence of urinary infection, and cystitis was

present in only one case. All of these men (except two) were employed, and they comprised labourers (5), millworkers (2); fishermen (2), a blacksmith, a plasterer, a slater, as well as others following less strenuous occupations such as clerk, cinema operator, and collector. Two individuals in this group were examined twice at an interval of a year, and one was observed later in hospital. The records of three of these cases give some indication of prognosis in this group.

A millworker aged 35, married, with nine children, this man had never had scarlet fever, diphtheria, or typhoid fever, although he had been in hospital in 1923 for observation as a doubtful typhoid carrier. Five years earlier he had served in the Territorial Army and had done strenuous training. He had no headaches, polyuria, or oedema; was thirsty occasionally, but only when sweating at work in a hot atmosphere; had occasional indigestion; and was constipated. He did not admit any history of venereal disease. Examination showed a rather thin, pale, undernourished, edentulous man. The pulse rate was 70, regular, and the blood pressure 128/70. The apex beat was in the nipple line. A systolic murmur was present in the mitral area and the second pulmonic sound was accentuated. Examination of the lungs and abdomen revealed no abnormality. The reflexes were normal, the pupils reacted normally, and the throat was clean. The blood-urea value was 46 mg. per 100 c.cm. A urea-concentration test gave 1.8, 2.4, and 2.8% urea, and a urea-concentration factor of 1/40. All samples of urine passed contained from 0.1 to 0.2% of albumin, and the centrifuge deposit showed a number of granular and epithelial casts with numerous red blood cells. This man was seen again 16 months later. He had been well in the interval, but had been unemployed. He noticed that he had to get up to pass water, usually about 4 a.m. He had no headaches or dyspnoea, and took a cheerful view of himself and of his environment. The blood urea was now 40 mg. per 100 c.cm. A urea-concentration test gave figures of 0.8, 1.15, 1.1, and 1.6% urea and a urea-concentration factor of 1/20. All samples of urine contained much albumin (0.3%), and the centrifuge deposit showed numerous granular casts, some epithelial casts, and numerous red blood cells. The pulse rate was 70 and the blood pressure 130/70. The apex beat was outside the nipple line, and systolic murmurs were present over the mitral, pulmonic, and aortic areas, with a suggestion of a diastolic murmur down the left side of the sternum. This evidence shows a progressive case of chronic interstitial nephritis with gradual failure of renal function.

A slater aged 34, married, with one child, had never had any major illness or scarlet fever or sore throats, but had sustained a compound fracture of the right tibia at football thirteen years earlier. This was reduced and plated in hospital, and the patient played football again in later seasons. There had been no headaches, polyuria, or oedema, and his eyesight was good. He looked a healthy well-built man. The pulse rate was 54, the heart sounds were good and pure, and the blood pressure was 120/80. Examination of the chest and abdomen showed no abnormality. The liver, spleen, and kidneys were not palpable. The upper jaw contained three carious molars. The throat was clean. The reflexes were normal and the pupils reacted normally. The blood urea was 32 mg. per 100 c.cm. A urea-concentration test showed 2.3, 2.6, 2.8, and 2.9% urea, with a urea-concentration factor of 1/70. All samples of urine contained albumin, and the urinary deposits showed numerous granular casts, a few epithelial casts, some red blood cells and calcium oxalate crystals. Twelve months later the man felt well, had been working continually, and had no untoward symptoms. The pulse rate was 68 and the blood pressure 142/90. A general examination gave normal findings. A urea-concentration test showed 2.1, 2.4, 2.5, and 2.8% urea. The amount of albumin in the urine was increased and it was found in all samples. The centrifuge deposit contained numerous granular and hyaline casts, a few red blood cells, but no crystals or pus. This case shows chronic nephritis, which has remained almost stationary during one year.

An unemployed storeman aged 24, this patient had never had scarlet fever, sore throats, polyuria, or swelling of face or hands. His appetite was good and his bowels were regular. The pulse rate was 60 and the blood pressure 138/90. The heart sounds

were good and pure, the reflexes were normal, and the pupils reacted normally. The kidneys, liver, and spleen were not enlarged to palpation. The upper teeth were bad and the upper incisors had been extracted, but the throat was clean. A sample of urine passed at 4.30 p.m. on March 6, 1940, contained a large amount of albumin, and the centrifuge deposit showed a number of hyaline, granular, and epithelial casts, some pus cells, and a few red blood cells. The blood-urea value was 29 mg. per 100 c.cm. and the urea-concentration factor 1/34. A urea-concentration test gave 1.0, 1.2, 1.4, and 1.9% urea. All samples of urine contained much albumin, and the centrifuge deposit was similar to that described above. On observation in hospital two months later the blood pressure was found to be 145/95, but it fell to 108/68 after rest in bed for several days. The specific gravity of the urine reached a maximum of 1018 on restricted fluids and urea-concentration tests. Intravenous pyelography with uroselectan showed poor concentration and delayed excretion. The right renal pelvis and ureter were normal, but opacity was not sufficient for an opinion on the left kidney and ureter to be formed. Albuminuria persisted for ten days while he was in bed, and the urinary deposits continued to show granular casts. A diagnosis of chronic interstitial nephritis was made.

The recognition of this group of men with chronic nephritis of varying degree makes it evident that an early type of renal disease exists, often without any defined aetiology and usually without symptoms at this stage of the disease. The further history of such cases is not known, and no information is available on which a prognosis can be based. The disease may progress with rapidity until symptoms of renal failure or cardiovascular insufficiency become obvious to the patient and to the medical attendant, or progress may be delayed for a number of years. It seems reasonably certain that this group forms part of the mosaic in the earlier aetiology of chronic nephritis and constitutes the reservoir from which patients are admitted from time to time to the wards of the general hospitals with the fully developed picture of advanced renal failure, terminating in uraemia. It is doubtful whether at this stage any good purpose can be served by hospital treatment or treatment by any strict dietetic or other regime, and invalidism is to be avoided.

The value of such an investigation as the present one would be greatly enhanced by inclusion of the collected statistics from other areas in the country. This is particularly the case since the patients have been more fully investigated than in MacLean's series during the war of 1914-18 and since the opportunity exists to make follow-up observations on many of these cases at a later date. In local areas with regional hospital administration it should not be impossible to check such admissions in future years.

Urinary Infections; Various

Group E consisted of 12 men who were found to have albumin and whose urine on microscopical examination revealed in addition haematuria or pyuria. In two cases nephrectomy had been previously performed for tuberculosis of the right kidney and tumour of the left kidney. In two cases renal calculi had been passed. One man had had haematuria two years earlier, and the remainder had had urinary infections with much pus in the urinary deposit.

It is of considerable value to review the importance placed on interpretation of the various findings obtained in investigating this group of cases from the renal aspect.

Albuminuria.—If albuminuria is transient, and particularly if the resting sample of urine is free of albumin, the classification is probably albuminuria of the orthostatic type. The amount of albumin present in an isolated sample of urine is no guide to classification, since in men with orthostatic albuminuria such samples may contain much albumin. If albuminuria is persistent the patient belongs to the other groups. In most cases of nephritis albumin continues to be excreted in large amounts.

The Urinary Deposit.—If the centrifuge deposit shows no pus cells, red blood cells, casts, or crystals on several examinations the albuminuria, with few exceptions, is of the orthostatic type if transitory and of the benign type if persistent. An occasional cast of the hyaline or granular type may be neglected. When renal casts are present in considerable numbers—say, several in each low-power field of the microscope, or more—there is undoubtedly a destructive renal lesion present, particularly if accompanied by red blood cells. In recent lesions the casts are mostly of the epithelial type or are partly granular with adherent epithelial cells. In less recent lesions the casts are of the granular and hyaline types.

The Blood Urea.—A normal value of the blood urea does not exclude nephritis. It is only in the more severe degrees of acute nephritis or in the later stages of chronic nephritis that elevation of the blood-urea value occurs. In investigation of material of this type it is rare that other causes of increase of the blood urea are found. A raised blood-urea value is significant of nitrogen retention.

The Urea-concentration Factor.—The ratio of the blood-urea value to the urea content of the fasting sample of urine shows significant variation in the more advanced degrees of renal failure but may show little departure from normal in patients with undoubted destruction of renal parenchyma.

The Urea-concentration Test.—Concentration of urea in the urine after a test dose of urea and under controlled conditions is valuable in assessing the degree of renal insufficiency in renal disease, but may show normal figures in patients with subacute nephritis and with milder degrees of chronic nephritis.

Clinical manifestations of nephritis are more commonly present in acute and subacute nephritis than in the subchronic groups, in which evidence from clinical examination may be scanty or wholly negative.

Each case must be considered on the summation of all data available, but the occurrence of persistent albuminuria and of renal elements and blood in the urinary deposit provides the most valuable diagnostic criteria.

Summary

The classification of 110 cases of albuminuria in adult males is discussed.

Incidental albuminuria occurs in 0.55% of otherwise healthy adult males. Of these 28% can be classed as orthostatic albuminuria, 20% as albuminuria without evidence of nephritis, 13% as subacute nephritis, 28% as subchronic or chronic nephritis, and 11% as due to various infections of the urinary tract.

Subacute nephritis of mild degree is common as a sequel of respiratory infections. Some of these cases progress to chronic nephritis.

The aetiology of chronic nephritis remains obscure.

The occurrence of persistent albuminuria with an abnormal urinary deposit provides the simplest evidence of renal pathology.

I am indebted to Dr. David Rorie, chairman of the Aberdeen Medical Boards, and to Dr. T. D. Kennedy of the Department of Health for Scotland, for assistance in carrying out this work; also to Prof. David Campbell and Prof. R. S. Aitken for permission to publish notes of two cases admitted to their wards in the Aberdeen Royal Infirmary, and to the latter for much helpful criticism.

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HYPERTHYROIDISM: RELATION OF THE BASAL METABOLISM TO THE CLINICAL SIGNS

BY

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A great many data bearing on the basal metabolism in thyroid disease are available, and these have been collected and reviewed by Means and Burress (1922), Boothby and Sandiford (1924), and Du Bois (1936). In their classifications the diagnoses of exophthalmic goitre, toxic adenoma, clinical thyrotoxicosis, etc., are compared with the basal metabolic rate. In this investigation an attempt has been made to correlate the presence or absence of the clinical signs on which a diagnosis of hyperthyroidism is usually made with the basal metabolism found. A preliminary report on the earlier cases in this series has been made elsewhere (Anderson, 1937).

Methods

The series consisted of 230 patients, of varied ages and both sexes, who had been transferred to the metabolic wards from the medical or surgical wards for determination of the metabolic rate. The presence or absence of the following clinical signs was noted:

1. **Enlargement of the Thyroid.**—Any palpable enlargement, whether generalized or local.
2. **Exophthalmos.**
3. **Tremor** of the fingers of the outstretched hands.
4. **Tachycardia.**—A pulse rate above 90 while at rest in bed.
5. **Sweating.**—Determined by palpation of the skin and from the history.
6. **Loss of Weight.**—Determined from the history given by the patient.

The basal metabolic rate was determined by the open method, using the Douglas bag and Haldane gas analysis. The rate was calculated with the aid of the Du Bois tables for average basal metabolism per square metre as modified by Boothby and Sandiford (Peters and van Slyke, 1932). In order to get satisfactory readings the patient practised breathing through the valves and into an old bag for several days until thoroughly used to the apparatus. Then the actual determinations, usually two or three on successive days, were made. Several days' rest in the ward and familiarity with the apparatus were found to be essential for a proper determination.

Results

For simplicity in tabulating the results three main divisions were made—namely, enlargement of the thyroid with exophthalmos, enlargement of the thyroid without exophthalmos, and tachycardia without enlargement of the thyroid. These were further subdivided according to the number of subsidiary signs present. The basal metabolic results were also divided into three groups: -15% to $+15\%$, $+16\%$ to $+24\%$, and $+25\%$ and over, the divisions corresponding approximately to the normal range mild or borderline hyperthyroidism, and moderate to severe hyperthyroidism respectively. The results are shown in the table overleaf, which is self-explanatory.

In 3 cases, not classified in the table, exophthalmos but no enlargement of the thyroid was noted. In only one of

Approximately 40,000 Jews died in Nazi Poland in 1940. According to data published by Jewish communities in Poland. This is a vast increase in Jewish mortality and has no parallel in the history of Polish Jewry. A large proportion of the two million Jews in Nazi Poland are stated to be in poor health. An investigation by a Nazi medical commission to ascertain Jews' medical fitness for hard labour established that 40% of the entire Jewish population were unfit for physical work.

these was the metabolism in the group +25% or over, and at a subsequent operation this patient was found to have an enlarged right lobe, which was in great part sub-sternal.

Clinical Signs		B. M. R.			Total Cases
		±15%	+16% to +24%	+25% and over	
Enlargement of thyroid with exophthalmos	1. Tremor, tachycardia, sweating, and loss of weight ..	2	5	47	54
	2. Two or three of above signs ..	3	2	17	22
Enlargement of thyroid without exophthalmos	3. Tremor, tachycardia, sweating, and loss of weight ..	1	2	28	31
	4. Two or three of above signs ..	12	7	23	42
	5. One sign only ..	13	2	—	15
	6. No signs; simple goitre ..	19	—	—	19
Tachycardia without enlargement of thyroid	7. Tremor, sweating, and loss of weight ..	8	1	3	12
	8. Two or less of above signs ..	29	1	2	32
Totals ..		87	20	120	227

Discussion

This series of observations clearly shows a close connexion between the clinical signs and the basal metabolic rate. Cases in the first three subsections of the table might be said to be frankly hyperthyroid on clinical grounds, and the determination of the B.M.R. showed a raised metabolism in 101 out of 107 cases. In Subsection 4 some cases were clinically on the borderline and 30 out of 42 had a raised basal metabolic rate, while all (19) simple goitres were normal. The group of 44 patients showing tachycardia without enlargement of the thyroid were nearly all within the normal limits. One of the five whose B.M.R. was found to be +25% or over was a diabetic.

These results are in agreement with those of Means and Burgess (1922), who, from a study of 1,000 patients, of whom 300 were clinically thyrotoxic and 290 were borderline cases in which hyperthyroidism was suspected, came to the conclusion that those with an outspoken clinical picture of hyperthyroidism invariably show increased metabolism, those with goitres but no signs or symptoms of abnormal thyroid function for the most part show normal metabolism, and those with atypical or incomplete clinical evidence of abnormal thyroid function may show normal or abnormal metabolism. Means (1937) from a further experience of a very large number of cases is still of this opinion. Unfortunately these authors do not state on what signs the diagnosis of abnormal thyroid function was made.

I have not used any of the formulae for determining the B.M.R. from pulse rate and pulse pressure. It is generally recognized that these methods give accurate results in about half of the cases only (Rabinowitch, 1935; Frank, 1935). Du Bois says: "If after making the history and physical examination the physician decides that the patient needs a basal metabolism test, it is advisable for him to record in writing his estimation of the basal metabolism rate. Experienced clinicians can usually do this with surprising accuracy, but even they find occasional large discrepancies."

The present contribution shows that from a classification of six clinical signs it is possible to draw conclusions as to the level of basal metabolism with a fair degree of accuracy, although there are occasional discrepancies. The possibility of making a reasonably accurate guess does not detract from the value of a determination of the basal metabolism in diagnosis, and this estimation is essential in borderline cases.

Summary

In a series of 230 patients of varied ages and both sexes who clinically were cases of hyperthyroidism or were suspected of hyperthyroidism, the basal metabolic rate was determined and was compared with the occurrence of the clinical signs—enlargement of the thyroid, exophthalmos, tremor, tachycardia, sweating, and loss of weight.

When enlargement of the thyroid was accompanied by exophthalmos and any other of the clinical signs the metabolic rate was high in 71 out of 76 cases; when enlargement of the thyroid was not accompanied by exophthalmos but all other signs were present the metabolic rate was high in 30 out of 31 cases, but when only two or three signs were present—i.e., in borderline cases—the metabolic rate was normal in 12 out of 42 patients; in simple goitre the metabolic rate was normal in all 19 patients; and 37 out of 44 patients with tachycardia without enlargement of the thyroid had a normal basal metabolic rate.

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WAR DIFFICULTIES IN DIABETIC DIETS THE LINE-RATION SCHEME

BY

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Many diabetics who use the Line-Ration Scheme have recently found great difficulty in following it, owing mainly to the restriction of protein foods in the country. Often misapprehension of the details recommended in the scheme accounts for the patient's trouble; but in other cases even the Government's two extra meat rations in place of sugar do not supply all the prescribed protein, nor is there much supplementary unrationed protein. A few notes on this diet scheme will help to minimize difficulties and justifiably reassure patients. This has been done in detail in a War-time Supplement to my *Diabetic ABC* for patients, but doctors and their patients may be glad of the following facts and explanation.

Misapprehensions

When this scheme was first introduced in 1924 it contained a minimum of carbohydrate and a maximum of protein and fat, in the proportion of 1 C., 1.5 P., and 3 F., in accordance with the glucose:fat ratio of most diabetic diets then in use. Later the carbohydrate was increased and the fat cut down, so that the proportions for some years have been 1 C., 0.75 P., 1 F., and the scheme has been gradually modified in other ways. Originally it was stated dogmatically that equal numbers of black portions (C.) and red portions (P. and F.) must be taken to balance each other. This was soon modified in my own mind and practice, and for eight years my scheme, as published, has never insisted on this equal balance of blacks and reds, although many patients with old editions have religiously followed it—a procedure that is quite suitable for some types of patient. For some years now I have recommended that the balance of black and red portions need not be exact either in the day's total or at each meal (this I have always regretted a little, as it spoils the original naïve simplicity and dogmatism of the scheme). The explanation of the scheme states that 10 lines (10 blacks and 10 reds) should

be tried as a test diet: if it fails and insulin is necessary, then more carbohydrate—15 or more blacks (150+ grammes C.)—should be given in a definite arrangement to balance the insulin and the protein and fat (some 10 red portions) eaten at the various meals as desired and as most convenient. Now that protein supplies are scarce the insulin patient is fortunate in being able to increase his carbohydrate if he cannot obtain his pre-war amounts of protein and fat in quantities sufficient to safeguard weight and energy and prevent hunger. This may require a slight increase in insulin, but not in every case. If, therefore, he cannot get all his previous protein and fat, his health need not suffer if he uses more carbohydrate, and insulin when necessary. A prescription of 15 to 20 blacks and only 6 to 10 reds will usually keep him in vigorous health.

Unavoidable Difficulties

Diet cases without insulin are now often in an unavoidably difficult position, and I commonly prescribe a minimum, for an active life, of 10 lines—10 blacks (100 grammes C.+ 10 to 20 grammes unweighed green vegetables) and 10 reds (75 grammes P. and 90 grammes F.). Now the diabetic with two extra fat rations receives more than the fat content of 10 lines; but admittedly the animal protein obtainable often cannot reach 75 grammes of animal protein. The diabetic's rationed protein, including that provided by the two extra meat rations—equal to meat, bacon, and cheese to the value of 2s.—contains only 5 red portions a day. If he uses 1 pint of milk (3 reds) and can get an egg (1 red) or a helping of fish, poultry, or other unrationed protein food (2 to 3 reds) a day, 8 to 11 red portions of animal protein may be reached. If not, it should be remembered that this scheme allows very liberal supplies of animal protein, and if only some 6 red portions can be got occasionally (no doubt more on other days) the adult diabetic will not suffer from protein (nitrogen) shortage. His doctor should also remember that vegetable protein is not counted in the scheme, and from even limited supplies of cereals and legumes, and especially from green vegetables in the diabetic diet, this amounts to 10 to 20 grammes of protein a day. Diabetics, of course, depend for nutrition partly on the energy-calorific value of these proteins as well as their mere nitrogenous content; but any defect—in, say, 10 reds prescribed—in protein-calorific value is more than made up by the liberal two extra fat rations to which the diabetic is also entitled in place of sugar. But if the diabetic patient on diet alone cannot, with what carbohydrate he can tolerate without glycosuria, obtain enough protein and fat to maintain his weight and energy he is certainly in a difficulty. He has enough protein to satisfy his nitrogen metabolic requirement, but may not have enough to satisfy his energy even though his diet be supplemented by the extra fat, and is almost forced to use more carbohydrate than he can tolerate. Many are compelled to use insulin (usually one fairly small dose of protamine-insulin once a day is enough) to cope with the situation. Such diabetics may think this hard—the times are harder still—but they will soon get over their diet difficulties, and will find themselves, by the blessing of insulin properly used, in better health and possessing greater vigour.

Those diabetics who use my Simple (*Unweighed*) Diet Scheme are often in a similar difficult position. Their protein and fat foods have never been limited, except in obese cases, and I would now advise them to eat all of these foods that they can obtain. The amount will not, in present circumstances, be too much: their carbohydrate, although not weighed, is measured and restricted, and, if they cannot tolerate enough, insulin may be necessary, when never before

Carbohydrate foods, too, of the type that diabetics used liberally, are greatly missed. The grape-fruit, the orange, the baked or stewed apple, the tomato, which rounded off many gastronomic corners by supplying tasty bulk with little carbohydrate, are mostly gone. Diabetics on low carbohydrate diets must depend more on native vegetables and they are reminded that freshly grated cabbage, sprouts, celery, turnips, and carrots can make appetizing salads when lettuce and tomatoes are not available.

Conclusion

Let me conclude by emphasizing that if diet difficulties force a diabetic to need insulin, death or even ill-health is not threatened—as many think—but a new era of better health is sure to follow by its proper use and a suitable adjustment of diet. May I add, too, that diabetics, especially insulin cases, should carry on their person the information that they are diabetics, so that if they become ill or casualties in unknown surroundings their need for special treatment will be known. The Diabetic Association, 124 Baker Street, supplies suitable cards and diabetic identification disks on application.

AN ABDOMINAL CATASTROPHE WHICH DID NOT TAKE PLACE

BY

GEOFFREY E. PARKER, F.R.C.S.

I wish to report this case for two reasons: first, because it is an unusual one, even for a war injury; and, secondly, because I think it teaches a lesson. As many surgeons, like myself, are dealing with large numbers of bomb and shell splinter injuries for the first time, the conclusions to be drawn may prove of value.

Case Report

The patient, a member of a bomb disposal squad aged 24, was standing not more than six yards from a bomb when it exploded. On admission to hospital less than an hour later his condition was found to be excellent. In fact, of the eleven cases admitted from this "incident," his case appeared to be one of the least severe. He was bright and cheery, and not in great pain. The pulse was 84, regular, and of good volume. He had two penetrating injuries. One large piece of metal had passed across Scarpa's triangle on the left side, from its upper outer aspect and lodged just under the skin over the base of the triangle, roughly over the femoral nerve. A second large fragment had entered the left flank just below and behind the postero-superior iliac spine, and there was no wound of exit. A radiograph (see illustration) showed this fragment to be lying somewhere in the left iliac fossa, having penetrated the wing of the ilium. The lateral radiograph was not satisfactory, but another was not taken owing to the rush of work.

There was deep tenderness in the left iliac fossa, but no rigidity or muscle-guarding, and peristalsis was clearly heard in this and all other quadrants of the abdomen. I concluded, therefore, that there was probably no intraperitoneal injury. The case was classified in order of urgency with the other wounded, and in due course was brought along to the theatre. The patient's general condition was still excellent. Morphine only had been given.

Operation.—The fragment in Scarpa's triangle was quickly removed, and the entrance and exit wounds and the track were excised. The wound was then packed with sulphanilamide gauze on account of some tissue necrosis from burning, and also because the danger of sepsis in a wound anywhere near the perineum justifies this precaution. After excising the upper wound of entry, the gluteus maximus and medius were found to be disorganized, and the area was full of blood. A small ragged hole was felt in the wing of the ilium, and this was enlarged sufficiently to admit two fingers. The iliacus muscle

was felt to be in a state similar to that of the glue, and after a little searching the bomb fragment, 2 by 3/4 by 1/2 inch, was removed. A careful search was then made for a hole in the peritoneum covering the iliacus, but none was found. I remarked to my assistant that it was a fortunate thing that we had found the fragment, otherwise I should have had to open the abdomen through the midline, in spite of the absence of signs



Radiograph showing position of bomb splinter.

of intraperitoneal injury. All bleeding was stopped and the wound packed with sulphanilamide gauze, which was passed through the hole in the ilium, and packed there as well as in the gluteal region.

Progress.—All went well for ten days. The bowels were open on the third day, and regularly after that. The temperature then rose suddenly to 100.2°, and remained at this level for three days. In addition there was deep pain in the left gluteal region, and some tenderness but no rigidity in the left iliac fossa. The pack had been taken out under evipan on the fourth day, and the wound had discharged some blood-stained serum only. On the fourteenth day the upper wound suddenly discharged some foul-smelling pus and gas, and the temperature fell to normal. For the next five days the wound discharged faeces and gas. The bowels were open daily, and no blood or pus was noted in the stools. That there was direct communication with the bowel was established by the fact that on giving capsules of indigo-carmin by the mouth the blue dye appeared on the dressing within a few hours. After the temperature had been normal for some days I ordered a gentle rectal washout and a barium enema, using a thin solution and under low pressure. The barium came through on to the dressing over the gluteal wound, but unfortunately the x-ray plates were not satisfactory. I think I had been overcautious for fear of disturbing adhesions, and had had the barium solution made too thin.

A few days later the faecal discharge stopped completely, and the wound is now granulating normally and is nearly dry.

Discussion

I do not pretend to understand the anatomy of this accident, but a number of possible explanations present themselves. (1) The fragment may have entered the peritoneum, injured the bowel, and then left the general peritoneal cavity again, to come to rest in the iliacus, protective adhesions subsequently forming. (2) The fragment may have injured the descending colon at the extreme lower limit of its partly retroperitoneal course, just before it becomes the sigmoid loop. (3) The fragment may have injured the blood supply to the colon over a small area, with the development of an area of necrosis. Adhesions would then form about the perforation in a manner similar to that which sometimes occurs in cases of perforating diverticu-

litis, a fistula being produced along the track of entry of the missile. (4) The large haematoma in the iliacus may have become infected by bacterial migration from the adjacent colon, the abscess thus formed discharging both along the track of entry of the missile and to a lesser extent into the colon.

Whatever the explanation may be, the lesson to be learnt would seem to be that if there is the slightest suspicion of an intraperitoneal injury, then, however trifling the physical signs, the abdomen must be opened and explored thoroughly. It would appear to be only a matter of luck that this man did not develop a spreading peritonitis.

My thanks are due to Prof. T. B. Johnstone, group officer in the sector in which I am a mobile surgeon, for permission to publish this case.

Medical Memoranda

Four Brothers with Neurofibromatosis

There are now numerous cases in the records demonstrating the hereditary nature of von Recklinghausen's disease. Thus Gardner and Turner (1940) traced the affliction through six generations, whilst Rocaz and Fiot (1938) found a Bordeaux family in which seven out of nine children had the malady.

In Lincoln four brothers have been under observation suffering from neurofibromatosis of the skin and subcutaneous tissue. One of these died at the age of 29, having developed paraplegia following spinal cord involvement. The three living are all of small stature, and their ages range from 50 to 60 years. In two of the patients the tumours have a generalized distribution, but in the third case the neck and forehead are alone affected. The lesions consist of a medley of tumours, some pedunculated and others sessile. There are areas of brown pigmentation, and some of the tumours have a bluish tinge.

Of four other children one is feeble-minded. Mental instability is not uncommon in von Recklinghausen's disease, and, while the brothers appear rational, two at least have a degree of acquisitiveness which does not always meet with the approval of the legal authorities.

The parents are dead and are said not to have had the disease. The father contracted a second marriage, which produced four normal children. From this it is deduced that the disease was transmitted by the first wife as a Mendelian dominant trait.

I wish to thank Mr. James Lyons for his notes on one of the cases, and Dr. M. L. Bery, M.O.H. for Lincoln, for permitting publication.

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The National Institute of Health of the U.S. Public Health Service is organizing a new unit for research into some of the many problems of the ageing. It is to be called the "Unit on Gerontology." A statement on the aims of this unit (*U.S. publ. Hlth. Rep.*, 1940, 55, 2099) points out that the problems of ageing are not limited to the diseases of the aged. They are divided into three major fields of investigation: (1) the biology of senescence as a process; (2) the human clinical problems of ageing and of diseases characteristically associated with advancing years; and (3) the socio-economic problems of a shifting age distribution in the population. The Unit on Gerontology is to concern itself with the first two of these. Information on the subjects under investigation and on methods of approach is asked for. Correspondence should be addressed to Dr. Edward J. Stieglitz, Investigations in Gerontology, National Institute of Health, U.S. Public Health Service, Bethesda, Maryland, U.S.A.

Reviews

GENERAL EPIDEMIOLOGY

Plague on Us. By Geddes Smith. (Pp. 365. 16s. net, or 53.00.) New York: The Commonwealth Fund; London: Oxford University Press. 1941.

To write a sound and readable book on epidemiology may not be so hard as to translate the Odes of Horace, but of the many who have tried few have succeeded. Dr. Geddes Smith has written a book which is both sound and eminently readable; it is intended for the general reader, but the British physician will learn much from it. In these days of intimate association with the United States, it has often been remarked how superficial is the knowledge of American history and institutions possessed even by educated Englishmen. How few of them even know the name of the great chief justice Marshall! It is the same with epidemiological history; very few, even of teachers, utilize the wide experience of a vast country which has produced many excellent observers. The author's studies of six epidemics—four of typhoid, one of amoebic dysentery, and one of haemolytic streptococcal infection—are admirably written accounts of logical and complete investigations, while the story of the epidemic of yellow fever in Philadelphia in 1793 is a thrilling one. Naturally much familiar ground is covered, too, but the description is so well done that it can be read with pleasure.

In an epilogue Dr. Geddes Smith permits himself to speculate. As Wilfred Trotter so wisely said, although the speculative, theoretical, and rational element in medicine has often impeded progress, when this element is excluded a science is in danger of sterilization. We should use pure reason, but with humility. The author thinks of disease as a "disturbance in a going system"—a phrase reminding one of Sutton's phrase (the Sutton of Gull and Sutton, a fine writer now almost forgotten), "disease is absence of rhythm"—and suggests that even in the frank infections the endogenous factors have more significance than we usually attribute to them. "Resistance may be general as well as specific. Immunological functions may be more closely tied into other physiological patterns than we have supposed; some of the fantastically numerous chemical tools postulated by the physiologist and the immunologist may do double duty. We may come to think of infection not as a special kind but merely as a special case of disturbance in a chemical system. We may find the way to reinforce the body at vulnerable points against threats from any quarter, infectious or otherwise, and without waiting for the threat to declare itself. At the very least we cannot hope to learn what we need to know about communicable disease without knowing more about the body that has it—and the body that throws it off. When pestilence falls on the people there is a story to tell. The story of the people who do not fall sick has never been told. Perhaps it is the most important part of epidemiology." Galen said 2,000 years ago, when writing of an epidemic, "The chief factor in the production of disease is the preparation of the body which will suffer it." That inevitably remained a vague generality, but with our increasing knowledge of physiology and biochemistry it may well be a pregnant truth. The study of those who do not yield to strain—whether the invasion of bacteria or more subtle foes—is as important as the observation of "patients."

This book is a real contribution to popular and even professional education. Its author freely acknowledges obligations to others, but his readers will owe him much gratitude.

BIOLOGICAL INTRODUCTION TO PSYCHOLOGY

A Biological Introduction to Psychology. An Introduction to Psychology for Students and Practitioners of Medicine. By R. J. S. McDowall, M.D., D.Sc. (Pp. 210. 6s. net.) London: John Murray. 1941.

Recent well-intentioned attempts to lighten the medical curriculum had as their most obvious result the addition of psychology to it. It will be readily admitted nevertheless that it is more important for the student to know something of the working of his patient's mind rather than the materia medica he will never have to handle directly. Then the difficulty arose that there was no suitable textbook for these students. Academic psychology has very little contact with their requirements, and not only is psychotherapy rent by faction but its literature is generally divorced from the biological and physiological viewpoint in which the student is being trained. True, up to the time of his death W. H. R. Rivers was building up a sane psychotherapy from a biological basis, but he was mainly writing for postgraduates. We therefore welcome Prof. McDowall's *Biological Introduction to Psychology*, which is couched in such language as the student who has done his biology and is learning his physiology can comprehend. The publisher rightly claims that the author accepts what is sane and reasonable in the various schools of thought, yet knits the seemingly divergent views together to form a coherent whole. It is at the same time so free from technicalities that the average man can gain much in the understanding of his fellow creatures and incidentally, we hope, of himself.

There is a certain amount of repetition in these pages, possibly deliberate, for every teacher knows that the student fails to take in everything at first hearing. Occasionally an apparent *non sequitur* obtrudes itself, the author having filled in the gap in his mind rather than on the page. There is a curious mistake on page 142. Sydenham did not found the College of Physicians, which antedates his birth by more than a century; indeed, he never even became a Fellow, probably owing to professional jealousies. Strictly speaking, Adler was not a pupil of Freud (p. xiii), and the author's exposition of his doctrine of organ inferiority (p. 103) is not quite accurate. Some of the case notes in Appendix II would have been more useful if an interpretation of the symptoms had been added. But apart from these minor criticisms we have nothing but praise for a book which covers the ground in an attractive way in such a small compass. It seems exactly adapted to the needs of the student who is expected to learn something of normal psychology at his pre-clinical stage. If the professed psychologist is inclined to declare the book to be superficial, we hope he may be stimulated to try to write a better one. From our experience of the medical student we have no hesitation in saying he will not find it an easy task.

THE PRACTICE OF SURGERY

The Science and Practice of Surgery. By W. H. C. Romanis, M.A., M.B., M.Ch., F.R.C.S., and Philip H. Mitchiner, C.B.E., M.D., M.S., F.R.C.S. Vols. I and II. Seventh edition. (Pp. 1,860; illustrated. 15s. each volume.) London: J. and A. Churchill. 1941.

A seventh edition of *The Science and Practice of Surgery*, which appears four years after the preceding one, has been prepared entirely since the war began and brings this well-known textbook up to date. Dedicated to the late Sir George Makins, it is in two volumes, in each of which a preface to the seventh edition appears along with that which introduced the first edition. In the face of a difficulty mentioned by the authors, that enemy action has rendered some of their notes and illustrations inaccessible, they are to be congratulated on the fact that the figures throughout the

work are plentiful and good, while the reproduction as a whole is excellent.

An appendix to the first volume deals with war surgery and is a valuable addition, but there will not be general agreement with certain statements in this section—for example, "Never drain head wounds, not even the scalp," and that all loose and depressed bone fragments must be removed. An account of intracranial aneurysms given in this section on war surgery, also, would be better placed elsewhere in the book, as it is brief and incomplete, and no mention is made of that type of aneurysm which may result from the injuries of war as well as those of peace—for example, the traumatic, fistulous variety. We are pleased to note that, despite the well-known view of one of the authors regarding the treatment of carcinoma of the breast, the radical amputation is advocated as the only treatment which presents a reasonable possibility of a permanent cure.

This edition has been advisedly shorn of some of the general discussion on bacteriology which appeared in the early chapters of previous editions, and of descriptions of certain amputations now only of historical interest. It shows revision chiefly in the sections on blood transfusion, the surgery of cleft palate and of the sympathetic nervous system. The word "sympatheticectomy" (pp. 362, 378, etc., and index) is cumbersome (why not sympathectomy?), and mention might have been made of superior cervical ganglionectomy for supra-oesophageal spasm (*Brit. J. Surg.*, 1935), a procedure which has now been tested by practice and appears to be one of the comparatively few operations on the sympathetic system established on a sound anatomical basis.

As previously, Vol. I is entitled "General Surgery," and Vol. II "Regional Surgery." As a student's textbook the popularity of this work, which has already been commented upon in previous reviews, is now well established, and the present revision should ensure its maintenance.

Notes on Books

MISS KINGDON WARD has described her views on *Stammering* in a volume of some three hundred pages (Hamish Hamilton Medical Books, 15s.). She says of stammering that "it stands entirely alone as a perfectly definite pathological entity." On the same page she says, "Stammering is seen to stand on a kind of fringe of nervous disorder: it is neither purely psychic nor the result of a lesion." The reader must be prepared therefore for some rather loose thinking and contradictory statements, especially as the author appears to use the terms "pathological" and "clinical" without any difference of meaning. There is no pathological basis of stammering; it is a clinical condition, and the classification given must therefore be a purely clinical one. The forms are classified as the typical stammer, the psychasthenic stammer, the hysterical stammer, the pseudo-stammer, the excitation stammer, the hurry stammer, the superficial stammer, and the war stammer. The pseudo-stammer, for example, develops at any age following an illness. Such a classification raises the question of when is a stammer not a stammer; and only too often the author loses herself in a wilderness of words. She does good service by drawing attention to the frequent need for psychological investigation and treatment in addition to speech therapy; but the length of the book and endless reiteration are discouraging to the reader in search of the author's views, which are essentially sound.

MISS MARY V. LACE'S book, *Massage and Medical Gymnastics*, was first published in 1936 with a foreword by Dr. James Mennell, who emphasized that the author's single aim was to set forth certain essentials that every student must know in a form that will be most readily assimilated, and serve as a foundation on which the masseuse and medical gymnast of to-morrow may build. A second edition has now been called for, and for this the whole text has been revised and some new matter added. The publishers are J. and A. Churchill, and the price is 12s. 6d.

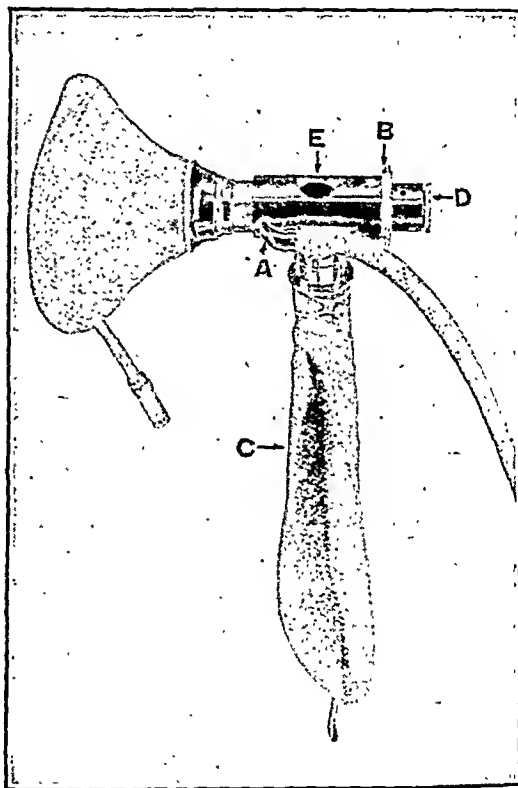
Preparations and Appliances

AN IMPROVED EDITION OF THE THREE-WAY STOPCOCK

Dr. W. ALEXANDER LOW (London, W.1) writes:

A simple, though very efficient, improvement to such an old and tried arrangement as the three-way stopcock has now been devised.

The gas or gases from the anaesthetic apparatus are led direct to the stopcock through the inlet A. By rotating the knurled head B in an anti-clockwise direction the patient breathes in and out of the bag C, while the amount of rebreathing is con-



trolled by the spring-loaded expiratory valve D. If the knurled head B is turned in a clockwise direction, gradually more and more air is admitted at E, until the head has been turned fully over. In this position the patient receives full air and the bag is completely closed off, preserving the mixture in it for later use if required.

The mechanical advantages are that no rubber valves are used, the stopcock is gas-tight, and the spring-loaded expiratory valve permits controlled rebreathing with resulting economy. The sleeve can be withdrawn without the aid of tools for lubrication, and for this purpose it is suggested that a smear of vaseline be used. The stopcock has standard mounts and fits directly to the ordinary aseptic face-piece and gas-bag.

In practice I have found this an extremely useful piece of anaesthetic equipment. It is light and easily manipulated. It gives complete control where this is most needed—close to the patient's mouth. It can be used for almost any type of anaesthesia from a straight gas to gas-oxygen-ether. In particular, I have found it of great assistance in controlling patients under gas and oxygen during confinements, in which a rapid change of depth of anaesthesia is so often required.

The stopcock was made for me by the Medical and Industrial Equipment, Ltd., of 12, New Cavendish Street, London, W.1.

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VENOUS THROMBOSIS AND PULMONARY EMBOLISM

We have recently reviewed Nygaard's¹ monograph on blood coagulation, the best modern survey of the technical and physiological questions at issue. Nygaard and his colleagues^{2,3} have now supplemented this by a statistical study of 1,665 cases of post-operative venous thrombosis and pulmonary embolism which have occurred at the Mayo Clinic over a thirteen-year period. Although this seems a very high figure the average incidence was only 1% and the highest incidence of fatal embolism after any particular type of operation only 0.77%. There are, therefore, great difficulties in evaluating any form of preventive treatment. The aim of the analysis was to determine the comparative incidence of post-operative venous thrombosis and embolism in various types of surgical operation, the predisposing factors, and, if possible, the type of patient who was prone to this accident. It was hoped also to determine the general relation between clinically diagnosable thrombophlebitis and pulmonary embolism from the standpoint of incidence and time of occurrence. The usual situation of post-operative venous thrombosis is in the veins of the lower extremities and the pelvis, and in these veins alone can a clot of sufficient size be formed to produce serious obstruction of the pulmonary circulation.

Thrombosis and embolism were found to occur commonly after operations on the female pelvic organs, in which there may be injury to, or ligation of branches of, the iliac veins. They are common also in operations of long duration or great magnitude in which there is considerable injury to tissue. Carcinoma and infection are significant factors, but the nature of the anaesthetic seems of no moment. The risk of thrombosis and embolism is greater in women than in men, but actual pulmonary embolism, fatal or non-fatal, is slightly more common in men. These complications are rare under the age of 20 and show a tendency to increase in the upper age groups. Obesity, blood diseases, cardiac disease, and disease of the peripheral veins are contributory factors, but in about a third of the cases there is no predisposing cause. Thrombosis and embolism may occur as early as the second or as late as the one hundred and fifteenth post-operative day, but the highest incidence is between the seventh and fourteenth post-operative days.

Perhaps the most important conclusion from this analysis is that there are often two or more distinct episodes of thrombosis or embolism, separated by an interval which is usually less than four days and rarely more than ten. This is particularly important in regard to pulmonary embolism. Multiple distinct episodes occurred in 23% of these cases and a high proportion of them proved fatal.

In fact, the highest incidence of fatal post-operative pulmonary embolism occurring in any group of patients which the authors were able to define for statistical study was in that series in which a clinical diagnosis of non-fatal pulmonary embolism had been made. If all fatal embolisms which were preceded by a clinically diagnosed non-fatal embolism could be prevented, the total number of the fatal embolisms would be reduced by more than a third. Culp⁴ makes the following additional points in a review of cases at the Johns Hopkins Hospital. Continuous intravenous infusions appeared to be a factor in producing thrombosis in the lower extremities. Untimely activity was often responsible for dislodging an embolus, and death might have been prevented if the thrombosis had been recognized. At necropsy it was found that in cases of femoral thrombosis careful measurements of the legs at 10-cm. intervals, beginning at the lower margin of the external malleolus and extending as high on the thigh as possible, revealed a definite difference in the size of the two legs even when no asymmetry was apparent on inspection. Since routine leg measurements of surgical patients before operation and before getting out of bed have been inaugurated, a number of cases of latent thrombosis have been recognized.

Among methods used to try to lower the incidence of fatal pulmonary embolism have been efforts to increase the blood flow, as by the use of thyroid extract, the application of heat to the extremities, placing the patient in a reversed Trendelenburg position, the frequent movement of the patient from side to side, and moving the lower limbs up and down. Smith and Allen⁵ have shown that, whereas the arm-to-carotid circulation time changed very little after operation, the foot-to-carotid circulation time increased by the tenth day to a value approximately 50% greater than the pre-operative average. Administration of thyroid usually prevented this slowing of the circulation in the veins, which ordinarily occurs after operation. Priestley, Essex, and Barker⁶ point out that the most rational method of preventing post-operative thrombosis is to reduce the clotting power of the blood by heparinization. It would obviously be impossible to treat all cases in this way, and they therefore concentrated on the important group of patients who had manifested evidence of a non-fatal pulmonary embolus. The heparin was given by continuous intravenous drip, and a minimum of ten days' treatment was found desirable. Heparin was given to fifty-five patients, and only two subsequently died of embolism; these deaths occurred early in the series, before the authors had realized the importance of continuing heparin for an adequate length of time. Out of all this careful work from the Mayo Clinic there are thus two very practical conclusions. The first is that it is the recurrent cases of thrombosis and embolism which are the most dangerous; and the second is that the danger can be very greatly mitigated by heparinization of all patients who manifest symptoms of an initial thrombosis or embolism.

The observations of Smith and Allen on the comparative speed of blood flow in the great veins of the arms and legs provide at all events a partial explanation for the infrequency of axillary thrombosis as compared with

¹ *Hemorrhagic Diseases: Photo-Electric Study of Blood Coagulability*, by K. K. Nygaard, Henry Kimpton, London, (1941.)

² *Proc. Mayo Clin.*, 1940, 15, 769.

³ *Ibid.*, 1941, 16, 1.

⁴ *Ibid.*, 17.

⁵ *Johns Hopk. Hosp. B.*, 1940, 67, 1.

⁶ *Proc. Mayo Clin.*, 1941, 16, 53.

⁷ *Ibid.*, 60.

femoral thrombosis, while the short distance of the circuit through which the blood has to flow in the upper limb is equally important. From the Mayo Clinic, again, Stover and Herrell⁶ report an extensive thrombosis of the right subclavian and axillary veins associated with thrombophlebitis, lymphoedema, and polycythaemia vera. Although thrombosis is a common complication of polycythaemia the axilla is a very uncommon location for it. The patient made a dramatic recovery after the removal of more than five litres of blood by repeated phlebotomy over a period of eight days. Not until the end of this vigorous venesection did the concentration of the blood return to normal. The only other treatment consisted of heat and elevation of the affected extremity. Three years ago R. T. Payne⁷ emphasized the significance of lymphangitis in the clinical picture of femoral thrombosis, and pointed out that pure thrombosis was often latent and revealed only by embolism or at necropsy. Veal⁸ makes a similar distinction between thrombophlebitis and thrombosis of the axillary vein. True thrombophlebitis of the axillary and subclavian veins is a very rare condition, and occurs most often in cardiac patients in whom there is a slowing of the blood flow. It is accompanied by both the local and the constitutional signs of inflammation. Primary thrombosis is by far the most common type of thrombosis of the axillary vein. It occurs most commonly in healthy individuals and on the right side. It often follows trauma, either direct or indirect (violent exertion being included under the latter heading), but it may arise during sleep, presumably as a result of compression of the axillary vein. Secondary thrombosis from malignant disease of the chest and axilla is undoubtedly important, but at the present time there is probably need to emphasize the greater frequency of the so-called primary or effort thrombosis. The immediate prognosis in the primary cases is good, and with complete rest, elevation of the extremity on soft pillows, and local treatment, the oedema subsides within a few days or weeks. Nevertheless, residual symptoms characterized by weakness, early fatigue, pain, and swelling on exertion, persist in a high proportion of cases, and there does not seem to be much that can be done about them except to protract the period of rehabilitation and to warn the patient about the possibility of their occurrence.

In concluding this brief review of recent work on venous thrombosis we may remind readers that the third most important site of thrombosis is in the cerebral veins, and, as pointed out recently in our columns by Martin and Sheehan,⁹ thrombosis of the cerebral veins is predominantly an accident of the puerperium.

SEBORRHOEA AND THE B VITAMINS

Apart from the fact that urticaria can be caused by various articles of food in those who are sensitive to them, very little is known about the effect of diet on the skin. Of late years there has been a tendency to attach less importance to internal measures in the treatment of the common dermatoses, such as eczema in all its forms, and to stress those external factors that may irritate and

inflame the sensitive skin. That this attitude may undergo another change of direction is suggested by a recent article by György,¹ in which he analyses the skin lesions in deficiencies of the vitamin B₂ complex and relates these to the problem of seborrhoea in man. He first describes the skin lesions observed in egg-white injury in rats. Rats fed on a diet rich in raw egg-white soon develop a dermatitis confined to the groin, the genitalia, the neck, and round the mouth—almost completely analogous to intertrigo in infants. Later, brown adherent scales and progressive alopecia appear round the inflamed areas. Occasionally the complete skin of the rat may be involved, and the condition resembles the typical exfoliative dermatitis of adults or Leiner's disease of infants. The eyelids are stuck together and covered with yellow scales. There are generalized alopecia and pruritus, and in black and piebald rats the fur loses its pigment. This condition, resulting from egg-white injury, is cured by the administration of biotin or vitamin H—the best sources of which are liver, kidney, yeast, and, to a less extent, cow's milk. György points out that egg-white injury depends on (1) the toxic effect of egg-white in the diet, and (2) the lack in it of the protective factor biotin. Denaturation of egg-white by prolonged heating or by proteolytic digestion makes it innocuous. It seems, therefore, that egg-white injury is due to a toxic action; it has been shown that it is not due to an allergic reaction. In this connexion it may be recalled that Moro has emphasized the toxic character of Leiner's disease, or erythroderma desquamativum, a disease almost entirely restricted to the first three months of life, especially in breast-fed infants. György points out that, next to egg-white, lactalbumin is the most indigestible protein common in food, and that the biotin content of human milk is low.

As distinct from the lesions of experimental egg-white injury, those due to deficiency of pyridoxine, or vitamin B₆, are symmetrical and affect chiefly the peripheral part of the body—in rats the nose, mouth, paws, ears, and tails. This distribution led earlier workers to identify the condition as pellagra, but it was found later that nicotinic acid did not cure so-called rat pellagra, that there was no coincident gastro-intestinal disturbance (as in human pellagra), and that photosensitivity played no part in the production of the skin lesions. The condition of pyridoxine deficiency was therefore called rat acrodynia—a term chosen, as György says, "without prejudice" to whether or not the underlying disease is identical with acrodynia in human beings. Rat acrodynia is characterized by red, inflamed lips and nose, red ears, and red, often swollen, paws. Later the skin of the paws desquamates, the skin of the ears becomes thickened, brown crusting occurs over the back, abscesses covered by scabs of varying thickness appear round the mouth and cheeks. In advanced stages the whole body becomes scaly, but there is only slight or no loss of hair. The scales often have the appearance of an inspissated exudation. Administration of pyridoxine may or may not cure the cutaneous lesions, which may, moreover, reappear after temporary improvement. When cure is not brought about by pyridoxine, improvement will follow when the filtrate fac-

¹ *Ibid.*, 1940, 15, 817.

² *Lancet*, 1938, 1, 1214.

³ *Amer. J. med. Sci.*, 1940, 200, 27.

⁴ *British Medical Journal*, 1941, 1, 349.

⁵ *Arch. Derm. Syph.*, Chicago, 1941, 43, 711

of the B₂ complex is also given. It has been shown, too, that relapse after treatment with pyridoxine can be cured by giving pantothenic acid¹ (see *British Medical Journal*, 1940, 2, 230 and 601). It would appear, therefore, that rat acrodynia is the result of deficiency in more than one factor, and György draws an analogy with the treatment of pellagra in which riboflavin as well as nicotinic acid has to be given to produce complete recovery in some cases. He also refers to the various lesions caused by deficiency of the different components of the filtrate factor, such as panmyelophthisis, haemorrhage into the adrenals, injury to the liver, and decolorization of the fur. The last named, again, responds to pantothenic acid, first detected in the filtrate from an aqueous liver extract. A further complication in this already tangled biochemical story is the curative action of unsaturated fatty acids in rat acrodynia, which it is difficult to produce experimentally, even with complete absence of pyridoxine from the diet, if this contains a high quantity of unsaturated fatty acids. György finally notes that in diseases due to riboflavin deficiency, small, dandruff-like scales appear on the skin, and the cornea becomes vascularized. This vascularization of the cornea with ulcer formation resembles the clinical picture of rosacea keratitis, and he stresses that rosacea is typically a seborrhoeic condition.

What stands out from this investigation is the gross resemblance between the lesions of seborrhoea in man and the scaly desquamation of the lesions experimentally produced in the rat from deficiency of pyridoxine, pantothenic acid, and riboflavin, and by egg-white injury. György is, however, careful to point out that this resemblance does not justify the assumption that there is any causative relation between human seborrhoea and deficiency in one or more of the vitamins in the B₂ complex. He does, however, point out that, although there are microscopical differences in the human and the animal lesions, they may be the result of difference in reaction between these two mammals.

Discussing the distribution of the various vitamins in foodstuffs, György states that the normal diet is poor in biotin content, almost the only effective sources being kidney, liver, and yeast; the last two of these are also the best source of riboflavin and pyridoxine. In the past dermatologists have blamed in turn excess of fat, excess of protein, and excess of carbohydrate in the diet as causes of seborrhoea, and György points out that experimental evidence supports the view that unilateral excess of any one of these three has a causative relation to seborrhoea. There is, for example, the interrelation already referred to between protein and biotin, and fats and pyridoxine. From time immemorial yeast has been recommended for various skin diseases, and in 1913 Czerny and Keller recommended liver for the treatment of exudative diathesis in infants. The fact that yeast and liver have on the whole been disappointing therapeutic agents is probably the result of insufficient dosage. According to his experimental data, György estimates that for riboflavin, pyridoxine, and biotin to be therapeutically effective, as much as a half to one pound of dried yeast, or of fresh liver, would have to be given daily—a course of treatment which very few people could bring themselves to undertake. Incidentally he observes that in Germany a liver preparation rich in biotin is widely

used in the treatment of various skin lesions and disorders of the fur in dogs. It would seem, then, that the relation of these various vitamins to seborrhoea in man will have to be worked out by the controlled therapeutic administration of prepared concentrates or synthetic substitutes.

Lastly, we may welcome one further reason for the supreme excellence of milk as an article of diet, for milk is, according to György, the only really common foodstuff which is rich in both pyridoxine and riboflavin, and also contains an appreciable amount of biotin.

EATING AND DIGGING

It sometimes appears almost as though the Ministry of Food spoke with two voices—voices not always easily to be reconciled. In the many excellent notices and advertisements by means of which the public is told not merely how to make the best of available foods but actually how to raise its general dietetic standard, there would appear to be a consciousness of the gap between scientific knowledge and nutritional practice and of the opportunities now presented for bridging that gap. At other times, on the contrary, we hear the persuasive voice of the Minister, and through him presumably the policy of the Government, informing us what he has given back and what he hopes to give back of the peacetime foods "in short supply." Seldom, if ever, is the public told in plain words from official mouths that many of the changes necessary in wartime are changes for the better, that they should not be regarded at all as emergency steps, to be reversed at the earliest suitable moment, but as an instalment, and a considerable one, of very drastic changes in the dietary habits of the nation as a whole. Above all, it is necessary, if the public is to be reconciled to the changes, to show conclusively that they represent a genuine raising of general nutritional standards. Official propaganda to such purpose would to-day have an easier task than ever before. Many men have for some time now been educating the reading public, or instructing the listening public by platform lectures and radio talks, in the fundamental facts established to-day by nutritional science. Mr. Wokes¹—whose previous published work has been concerned chiefly with the more academic side of biochemistry and pharmacy—is to be welcomed as a valuable recruit to this small army of propagandist effectives. His book is comprehensive, simple, and accurate; and to combine simplicity with accuracy in popular exposition of scientific findings is a task whose difficulty can be fully appreciated only by those that have attempted it. Some of what he has written has, unfortunately, no longer the same validity that it doubtless had when he was preparing his manuscript, as when, for example, he makes an increased consumption of milk and cheese one of the corner-stones of the improved dietary he advocates. Nevertheless, as an exposition of the principles on which any improved dietary must be based, whether in wartime or in peace, with much useful practical advice to the woman in the kitchen as to how she shall "feed the brute"—the man in the street and at the bench—his "Penguin Special" would be difficult to improve on. One of the few misunderstandings in the book is due to the author's apparent belief that margarine consists entirely of completely hydrogenated fish oils, and so is devoid of the "essential unsaturated fatty acids," and that this involves some risk to health. On the other hand, what he has to

¹ *Food: the Dieting Factor*. By Frank Wokes, Ph.D., B.Sc., F.I.C., Ph.C. A Penguin Special. Penguin Books. (6s.)

say about the relation between increased protein requirements and strenuous exercise (or manual labour) is accepted "classical" nutrition, though it does not seem yet to have reached all of those in the high places where national policy is determined.

The historian of the future may well single out as one of the significant social phenomena of these times the obviously insistent demand of a large and growing public for simple but trustworthy presentation of scientific knowledge, as evidenced in particular by the steady flow of "Penguin Specials" that are concerned with just that task. Whatever prestige is to be gained by the prominent presence on one's shelves of certain brilliant and epoch-making expositions, a "Penguin" is assuredly not bought for any less worthy motive, or with any less determined purpose, than that it should be read and its contents mastered. Many of those who read and run now dig so that they may eat, and for them Mr. Carter's guide² to the allotment holder—another "Penguin"—gives valuable information on our food plants, the pests that beset them, and the way to store and to cook them. There are chapters on general topics, such as allotments, clamps, frames, manure, weeds. That the private gardener can contribute enormously to the national output of essential foods—especially if he is guided in his selection by Mr. Wokes and in his methods by Mr. Carter—is incontrovertible. But something more is clearly vital if the improved health of the country as a whole requires a radical change in the proportion and quantity of protective foods to be consumed by 45 million people. Mr. Watts's persuasively written pamphlet³ is an eloquent and convincing plea for a return to "high farming," based upon a proper appreciation not only of the scientific basis for rotation of crops and the complementary nature of pasture and arable, but also on the much less frequently discussed social value of agriculture as a way of living. It enables one to see clearly the broad outline of a national regeneration based on the soil, and may legitimately be regarded as expression of a policy that logically consummates Mr. Carter's practical concern with the quality of the plants men eat and Mr. Wokes's practical concern with the quality of the men that do the eating.

THIRST AT SEA

In the *British Medical Journal* of November 15, 1924 (p. 928), Mr. W. Bernard Secretan, F.R.C.S., then in practice as a surgeon at Reading, wrote to recall two letters which had appeared on February 16, 1918 (p. 220) advocating rectal injections of sea-water for the alleviation of thirst due to a lack of drinking-water. One of these correspondents was Mr. Morley Roberts, to whom the idea had occurred in 1910 that death at sea from thirst when there was no fresh water could at any rate be postponed, and possibly altogether avoided, in this manner, and he recommended that a Higginson syringe should form part of a normal lifeboat's equipment. The other correspondent was the late Mr. George Wherry, F.R.C.S., of Cambridge, who independently suggested the slow injection of sea-water into the lower bowel by some simple apparatus. Mr. Bernard Secretan in his letter posed the question in this way: "Is hypertonic saline of a saturation akin to salt water tolerated by the bowel, and will water be absorbed from it in the colon, as in the case of ordinary normal saline; or will it produce, as in the case of purgative salts held in hypertonic solution in the intestine, a flow of fluid from the tissues into

the bowel?" Asking for an authoritative statement on these points he wrote: "If water can indeed be absorbed from hypertonic salt enemata, then surely steps should be taken to spread this knowledge to those who go down to the sea in ships. . . . Responsibility for a clear declaration as to the efficacy or the reverse of such hypertonic salt solutions should rest with the medical profession." Nothing came of this challenge, and it remained for Dr. C. G. Learoyd to embody the central idea in one of his graphic short stories published from time to time in the *St. Thomas's Hospital Gazette*. Briefly the story went thus, if we remember rightly: Before his ship went down the young doctor on board put a few things together for emergency use, including a Higginson syringe; with this implement he succeeded in relieving the thirst of his shipwrecked companions in the lifeboat by rectal injections of cold sea-water. Fiction may or may not be based on fact: the author is not on oath. A pharmacologist whom we asked if the idea is feasible said that it seemed to him that the body would be bound to lose water on the transaction, with intensification of thirst, because the highest recorded concentration of sodium chloride in the urine after taking large amounts of concentrated salt solution by mouth is about 1.6%, whereas sea-water contains 2.7% NaCl. This theoretical objection may be valid, but the question is urgent in these times and should be settled beyond any doubt. Either the rectal injection of sea-water relieves thirst and is good, or it will not work in practice and is bad.

COMPENSATORY ATROPHY

The numerous hormones discovered during the last few years have been widely advertised to the medical profession and equally widely advocated for the cure or relief of a variety of endocrine and other disorders. It is still doubtful, however, whether many of these claims can be justified. Indeed, the Council on Pharmacy and Chemistry of the American Medical Association has been so impressed with the discrepancy between the proven value and the advertised claims that it has decided not to accept testosterone, the male hormone,¹ chorionic gonadotrophin, the pregnancy urine hormone,² and, more recently, progesterone,³ for inclusion among its *New and Non-Official Remedies*. These substances, it considers, are still in the experimental stage and have not yet found a definite place in orthodox medical treatment. The theoretical basis of endocrine treatment has usually been the belief that if a disorder is due to insufficient production of a hormone, then substitution therapy with that hormone will secure relief. Some notable successes have supported this view, but the interrelations between glands are so extremely complex and readily disturbed that unforeseen adverse effects may also occur during treatment. Such substitution therapy, though it may relieve symptoms, is unlikely to encourage cure; rather will it do the reverse. There is ample evidence, which still accumulates, that in animals continued injection of a hormone leads to atrophy of the glands which normally produce that hormone. The endocrine glands appear, indeed, only too willing to let their proper functions be taken over by the relatively crude syringe of the physician. Thus thyroid treatment tends to atrophy of the thyroid gland, androgen therapy to atrophy of the testes, and adrenal cortical hormone treatment to atrophy of the adrenal. The extent and duration of such adverse effects in man are not yet fully known, but they certainly occur. It has been shown, for instance, that

¹ *Dr. Bernard Secretan*, *Food Growing, Storing and Cooking: from Seed to Table*. By F. W. P. Carter. A Penguin Special. Penguin Books. (6d.)

² *The Agricultural Policy for Britain and the Policy for British Agriculture*. By G. George J. Watts. Allen and Unwin, Ltd. (1s.)

¹ *J. Amer. med. Ass.*, 1939, **112**, 1949.

² *Ibid.*, 1940, **114**: 487.

³ *Ibid.*, 1941, **116**, 1523.

spermatogenesis in man is seriously inhibited by androgen therapy. Selye¹ has been investigating the general phenomenon, and has called it "compensatory atrophy" to distinguish it from the "compensatory hypertrophy" which takes place in the remainder after removal of part of a gland. He has found that in rats the atrophic effects of testosterone may still be present months after treatment has ceased. He believes, however, that the phenomenon of "compensatory atrophy" may be put to therapeutic use in disorders associated with hormonal hypersecretion. But attempts to induce such atrophy in a hyperactive gland by injection of further quantities of its already overabundant hormone are unlikely to succeed, as the immediate result will be an aggravation of symptoms. Selye hopes to overcome this fundamental difficulty by using substances chemically similar to but physiologically different from the hormone. This has become a theoretical possibility now that the chemical composition of many of the steroid hormones is known, and many substances differing slightly from them in structure can be prepared. In preliminary work on these lines Selye has shown that atrophy of the adrenal gland can be produced in rats not only by desoxycorticosterone but also by the chemically allied substances testosterone and progesterone. So, too, atrophy of the testes could be induced by androgen therapy and also by oestrogens and progesterone. The working out of methods of treatment based on this principle is likely to prove complex. It is, for example, unjustifiable to assume that pathologically overactive glands will necessarily be susceptible to such "compensatory atrophy" in the same way as normal ones. Diseases referable to overaction of the endocrine glands are, with the exception of thyrotoxicosis, relatively uncommon. Attempts to control thyrotoxicosis by administration of oestrogens, which tend to inhibit the thyroid, have not given encouraging results, nor have similar attempts to influence an overactive pituitary. Nevertheless the outcome of Selye's suggestions will be awaited with interest.

PHYSIOLOGICAL ACTION OF WELCH TOXINS

Bacterial toxins susceptible of acute pharmacological experiment are uncommon, not only because of the difficulty of obtaining a pure toxin suitable for investigation, but also because of their general prolonged latent period of action. Exceptions to this, however, are the staphylococcus toxin² and certain of the anaerobe toxins, notably those of *Vibrio septique* and *B. welchii*. The early work on the physiological action of bacterial toxins was summarized by Trevan³ in 1931, and although not extensive it revealed analogies and differences between certain snake-venom effects and the actions of *septique* and Welch toxin.⁴ Since that date the work on snake venoms has been greatly extended by the Melbourne studies, and more recently certain of the bacterial toxins—namely, the toxin of the Type D Welch organism—have been included within the scope of their investigations.⁵ The ammonium-sulphate-precipitated toxin contains, according to their results, two non-specific impurities: one a histamine-like substance removable by precipitation with alcohol in the cold, and the other a cardiac depressor substance. With regard to specific effects of the toxin, it may be mentioned that the unneutralized toxin contracts the isolated guinea-pig jejunum. The main clinical effect of the intravenous injection of fatal doses in lambs is to cause convulsions, due to

a direct action of the toxin on the central nervous system, probably on the basal ganglia. The ultimate cause of death is either respiratory failure or cardiac failure accompanied by pulmonary oedema. Owing to the presence of the cardiac-depressant impurity the circulatory effect of large doses of the toxin could not be analysed satisfactorily. In rabbits small doses of toxin produced ataxia and loss of muscle tone, again probably central in origin, while larger doses caused a specific circulatory embarrassment. The development of a tolerance to repeated doses was a feature which this toxin showed in common with other active bacterial toxins. The haemorrhages in the heart muscle in lambs and the haemorrhagic pulmonary oedema in lambs, rabbits, and cats after intravenous injection are indicative of the severe tissue damage resulting from the toxin. In their further analysis the Melbourne authors found that the liberation of histamine from the perfused cat lung was a specific effect of injection of the toxin, but that snake venom was more active in this direction. The toxin also liberated adenylyl compounds from the cat heart and the perfused rabbit liver and an inactivating enzyme similar to what occurs with cobra venom.⁶ It is probable that the local production of adenylyl compounds in the rabbit heart partly explains the bradycardia in that animal from the action of this toxin. It is unlikely that adenylyl compounds liberated from other organs and tissues reach the heart in effective concentrations, as they are so rapidly inactivated by the blood and tissue enzymes. This is the multiple type of response to tissue injury which has been found in varying degrees with a number of toxic agents as in anaphylaxis, certain snake venoms, and peptone. The physiological approach has yielded in the hands of the Melbourne workers results valuable not only to the bacteriologist but also to those interested in the general pathology of the reaction of tissues to injury. When the studies of the enzymic activities of the Welch toxins are completed they too should form an interesting corollary to the above results. The fact that products of metabolism of the Welch organism and also the snake salivary glands have similar effects raises once again the age-old question of the functions of such substances in relation to both the organism and its environment, but leaves it as far as ever from solution.

EDUCATIONAL NUMBER IN ABEYANCE

If this year were anything like normal the *British Medical Journal* dated September 6, 1941, would be the annual Educational Number, with full details about the teaching and licensing bodies of Great Britain and Ireland and the other medical institutions and public services, and information about openings for practice and research and post-graduate study. But the acute shortage of paper, the upheaval of professional life, and the dislocation of the work of medical schools make it impossible to prepare even an abridged Educational Number for the session 1941-2 which would give satisfactory guidance in these times of flux and short-term planning. Therefore the usual classified information will not appear in the text pages of the *Journal* of September 6. The advertising pages of that issue will, however, be open to announcements by universities, colleges, and other teaching and examining bodies, and by publishers and manufacturers, etc., who wish to bring their services and goods to the notice of intending students of medicine and newly qualified practitioners. Such announcements are of value to many besides regular readers, and those who look for them in a particular week of the early autumn must not be disappointed.

¹ *J. Amer. med. Ass.*, 1940, 115, 2246.

² *J. Path. Bact.*, 1930, 33, 589.

³ *System of Bacteriology in Relation to Medicine*, M.R.C., 1931, 6, 194.

⁴ *Brit. J. exp. Path.*, 1929, 10, 251.

⁵ *Austral. J. exp. Biol. med. Sci.*, 1940, 18, 225.

⁶ *Ibid.*, 253.

⁶ *Austral. J. exp. Biol. med. Sci.*, 1941, 19, 53

CHEST SURGERY IN WAR

This is the last of a short series of articles based on lectures given at the British Postgraduate Medical School, Hammersmith

DRAINAGE OF THE PLEURA

BY

R. C. BROCK, M.S., F.R.C.S.

Although pleural drainage does not afford a subject so dramatic as certain other features of war surgery of the chest, such as the removal of foreign bodies, it is perhaps more important than any other. It profoundly influences both mortality and morbidity, and is probably the greatest single factor in determining the length of invalidism, which in a mismanaged or unfortunate case may be lifelong. Like the treatment of pleural infection in civil work it can be conveniently considered under three headings: (1) when to drain the chest; (2) the provision of adequate drainage; (3) when to stop drainage.

When to Drain the Chest

Apart from the presence of frank suppuration the question arises as to drainage in less precise circumstances. It is well to remember two guiding principles which are of value in deciding whether or not to drain the peritoneum and which may well be applied to the pleura: (a) Is a condition present which the pleura cannot deal with by itself? (b) Is it anticipated that a condition will develop which the pleura will not be able to deal with by itself? We have a shrewd idea of what the peritoneum can deal with by itself, and I am coming to the conclusion that the pleura can deal almost as effectively with a certain amount of contamination, provided (a) the lung is healthy and no fistula is present; (b) no infected foreign body is present; (c) there is no infected chest-wall wound.

A penetrating chest wound (other than a small one without haemothorax or pneumothorax of any size) should be excised and either sutured, if only a few hours old, or packed open. The question arises as to whether the pleura should be drained in these cases. If the wound is large and with much laceration and contusion, or if there is a retained foreign body or damage to the lung, then the pleura should be drained by means of an air-tight intercostal catheter connected to an underwater seal and left in place for forty-eight or seventy-two hours. In fact, the surest general rule to follow is to drain every time. An intercostal catheter in use for two to three days can do no harm, and although perhaps unnecessary in some cases, will be responsible for averting disaster in many others. I have seen undrained cases of this type heal satisfactorily even when a haemothorax was present and had not been evacuated; the deeper layers have healed over and the haemothorax has been successfully treated by aspiration, thus proving that the pleura has been able to master some contamination at any rate. On the other hand, I have seen an even larger number of cases in which infection has supervened, drainage has been needed, and a long period of disability has resulted. There is no doubt that it is most unsafe not to drain if the pleura has not been sucked clear of blood and serous exudate before the chest-wall wound is closed; any such residuum is a dangerous culture medium to leave in the pleura.

Although routine drainage for two to three days is recommended, it is permissible for a surgeon familiar with the chest not to drain in selected cases, provided he is able to watch the patient closely himself for at least seven to ten days.

DANGERS OF SUTURING TOO SOON

When the first war casualties began to arrive from France we found that many of the chest wounds had been excised (often very incompletely), sewn up tight without drainage even when the lung had been incised to remove a large foreign body, and then transported within a few days. Much of our work consisted in taking out stitches, packing open the wound, which was the centre of a severe, spreading, sometimes gangrenous, cellulitis, and inserting an intercostal catheter into the infected pleura. Severe or fatal anaerobic infection may occur, and at the very least the patient has to face weeks and sometimes months of slow convalescence from a total pleural suppuration, with the lung perhaps completely collapsed and often containing one or more foreign bodies. The catastrophe could have been easily avoided in almost every case if the chest-wall wound had not been sewn up tight, but had been left open, and if a temporary intercostal drain had been used.

There is no doubt that these disasters have occurred owing to misunderstanding of the teaching about the treatment of an open sucking wound. It is generally taught, and generally accepted, that these wounds must be closed at all costs. That is quite correct; they must be closed, but not necessarily sutured. It is not safe to excise and sew up tight a big wound of the chest wall with lacerated and contused muscles; in the thigh or arm such a wound would not be sutured but would be packed open initially until the risk of spreading infection had passed. It is not possible to ignore a basic surgical principle such as this. The muscles and fascial planes overlying the thorax, far from being immune, are very susceptible to infection, which may rapidly give rise to a severe phlegmon. Unless, therefore, the wound is relatively simple, is completely excised soon after being received, and can be watched personally for at least a week, it must not be sewn up. A flat pad should be laid over it and secured by properly applied firm strapping. Such a wound is closed mechanically, but surgically it is still open. The pleura should be drained, as stated above, for two to three days. If it is then found that the lung is adherent and the deeper layers of the wound are shut off from the pleura the drainage tube may be removed, although careful watch will have to be kept for reaccumulation of effusion, which will need drainage again if aspiration reveals that it has become infected. The parietal wound can, and in fact should, be closed by delayed suture after a few days if the risk of spreading infection seems to have passed.

The management of a haemothorax may present many difficult problems, but one of the greatest dangers to be on the alert for is the onset of infection. This may not occur until as late as ten to twenty days after receipt of the wound, and may lead to death from anaerobic infection in a patient who had appeared to be almost convalescent. Presumably infection occurs from sloughing of devitalized lung tissue in the track of the missile. Close watch must be kept for the onset of infection; the temperature may be no true guide, but a rise in the pulse rate is significant. The fluid in the chest must be sampled at least every other day, and should be examined at once for evidence of infection. It is not enough to send a specimen to the laboratory. The haemothorax itself is an excellent culture medium, and much information can be obtained by its direct study; when infected the blood may

smell, haemolysis occurs, the colour changes to a purplish hue, and if a direct smear is examined micro-organisms will be seen. Culture in the laboratory will only confirm these findings. It is most important that samples of fluid aspirated from the chest should be kept by the patient's bed and properly labelled so that they may be available for inspection at any time. It is a common but nevertheless stupid habit to throw valuable evidence of this sort away and not to preserve it for future reference.

Once infection of the haemothorax has occurred drainage is needed. The type of drainage is considered in the next section.

Provision of Adequate Drainage

In a certain small number of cases pleural infection can be satisfactorily overcome by repeated aspiration of the exudate, but though this minor procedure is occasionally successful it is wrong to put it forward as a safe or standard method of treatment, except to tide over a few days, or two to three weeks at the longest. The same applies to intercostal drainage, which is invaluable as a temporary measure—in fact, is often life-saving—but will allow rapid and safe healing of pleural suppuration in only a few cases. It is a great mistake to imagine that all will go well and that rib resection can be avoided just because the patient looks and feels better and the temperature has subsided. The fundamental principle of civilian surgery still holds good, that in almost every case of empyema the adequate drainage provided by rib resection is essential to allow perfect healing in the shortest time and with the minimum of disability. To continue with a small intercostal drain for more than a few days is to expose the patient to the grave risk of a chronic empyema. The step of rib resection is a small one, should take only a few minutes, can be performed under local or a short gas anaesthesia, and should be no burden even to a very ill patient.

At the same time it is important not to drain the pleura too early. In war wounds, as in the synpneumonic pleural infections of civil life, there is usually diffuse infection of the whole pleura with no localization. If drainage is performed too early a total empyema results, the lung often remaining collapsed down on the hilum: in others the lower lobe expands more rapidly than the upper lobe, the drainage point is soon shut off, and a large residual or imperfectly drained anterior pocket is left, usually extending to the apex. These cases have been only too common and have proved to be very difficult to treat: they tend to become chronic, take months to heal, and leave the patient with an impaired respiratory function on the affected side. In many it has been almost unavoidable when aspiration has been difficult and unsatisfactory owing to the debris of infected clot, and the patient has been so desperately ill that early intercostal drainage has been needed as a life-saving measure. But unless this is the case, tube drainage should be postponed and aspiration persisted in until the pleural infection has become localized to give a true abscess. The aspiration must be performed regularly and efficiently and not infrequently and perfunctorily; by keeping the pleura as dry as possible not only is toxæmia diminished but the ultimate empyema will be a small one and therefore quicker to heal when it can be adequately drained by rib resection.

For the usual posterior basal empyema the best drainage is given by resecting about 3 cm. of the ninth rib just outside its angle. If a lower rib is taken not only is there risk of wounding the diaphragm but in the natural process of healing the ascent of the diaphragm will shut off the drainage hole and may cause a chronic empyema. Simi-

larly drainage too far forward is to be avoided; a tube inserted in the mid-axilla or anterior axilla cannot drain the posterior pleural recess efficiently, and a chronic empyema is almost certain to follow. Unless the patient has a pleuro-bronchial fistula there is no reason to fear turning him on his good side to resect a rib in the proper place at the back; to try to work with him lying on his back is inefficient and footling. If a broncho-pleural fistula is present the operation can be performed with the patient sitting up and under local anaesthesia; it is probable, however, that if the fistula is of any size a preliminary intercostal catheter will have been inserted earlier.

It is best to connect the drainage tube to a simple empyema bottle; this enables the pus to drain away cleanly, saving much labour, disturbance, and discomfort from constant changing of pus-soaked dressings, and it encourages expansion of the lung by maintenance of a mild negative pressure.

When to Stop Drainage

The termination of pleural drainage is a most important phase, and may be difficult to assess exactly. When drainage has been used as a safeguard in the presence of a certain amount of pleural contamination it can be stopped in two to three days: but when it has been needed because of an established infection the problem is quite different. There is no doubt at all that mismanagement of the drainage tube or its too early removal is responsible for much unnecessary suffering and a great deal of permanent crippling. Unfortunately the correct management of this phase has been understood during only the last decade or so, and the knowledge is still far too scantily appreciated. This is at once seen if standard surgical textbooks are consulted; it will be found that no correct rule is given as to when the drainage tube should be removed, but only some quite incorrect rule-of-thumb advice such as "after three weeks" or "when the discharge stops" or "when the discharge becomes thin." There is only one safe time to remove the tube, and that is when it is no longer possible to demonstrate a cavity in the pleura. This is a rule that cannot be too widely appreciated or stressed too much. Failure to observe it is responsible for more chronic empyemas than any other single cause.

In the healing of a simple acute abscess, provided drainage is maintained adequately, the walls collapse together and adhere by granulation until the cavity is completely obliterated: the discharge then ceases, the skin grows over, and healing is permanent. The proper healing of an acute empyema is no different: provided adequate drainage is maintained the walls come together (that is, the lung expands: collapse of the parietes is of course avoided by proper exercises) and adhere by granulation—that is, there is progressive symphysis of the visceral and parietal pleurae until the whole pleural space is closed. Then and then only should the drainage tube be removed. The final track from pleura to skin will close simply and certainly, and permanent cure follows. Should the tube be taken out when a pleural pocket still remains, progressive and satisfactory healing may follow, but it is much more likely that a chronic empyema will occur. Even if the skin heals over temporarily a latent pus pocket remains to be a constant source of toxæmia, and sooner or later (perhaps weeks or months, perhaps many years after) will flare up and lead to "recurrence."

The best way to decide the problem of tube removal is to investigate the size and extent of the cavity by a pleurogram—that is, radiography after instillation of a radio-opaque fluid or oil such as neohydriol or lipiodol. This should be done when it is felt that the cavity has

diminished to a reasonably small size; from a study of the size, shape, and disposition of the cavity any necessary adjustment in the size and disposition of the drainage tube can be made. Thus it is usually necessary to shorten the tube in the later stages of healing, but it may be shown that not shortening but lengthening is needed if a high-up or anteriorly placed loculus is not to be shut off and become chronic.

Measures Promoting Lung Expansion

It is impossible to speak of pleural drainage without referring to the measures to be used to promote lung expansion and, incidentally, to prevent flattening or deformity of the chest or scoliosis. In stubborn or difficult cases lung expansion may be aided by constant negative suction (e.g., 2 to 8 cm. Hg negative pressure) applied by means of a Roberts bottle or, when the patient is mobile, by Brock's portable suction apparatus. This suction can never make up for inadequate drainage; it must never be used to suck pus out through a small hole when it should really run out through a large hole, nor should it be allowed to replace proper breathing exercises, to which it is merely complementary. These should be taught by a trained masseuse, and the patient should be impressed with the need for daily hard work in their observance; it is not enough for him to spend a gentle ten to twenty minutes with his instructor each morning, but he should try to devote to them a total of several hours a day by himself. The best type of exercises are those of the inspiratory type described by McMahon, which aim at restoration of proper and symmetrical costal breathing and controlled diaphragmatic movements. They are supplemented by appropriate remedial exercises to maintain proper posture. The use of the homely "blow-bottle" is not to be recommended, although it has a place in certain selected cases.

The treatment of an empyema should, moreover, be ambulatory as soon as the patient's general condition allows him to get up. Proper expansion of the lung and obliteration of the infected pleural dead space is thereby hastened, always provided adequate and correctly placed drainage is maintained.

As a contrast, how often do we see those unfortunates who have been ill for months, perhaps years, still in bed most of the time, with a horribly flattened, deformed, and seriously impaired chest and a continuously running small sinus that either has a minute tube or no tube at all, or, worse still, has a strip of ribbon gauze tucked in it. Let us try to save our wounded fighting men and civilians from this fate—so tragic because it is avoidable, but one which has befallen many in the past.

Under proper and thoughtful guidance the healing of an infected pleural space can be achieved in a short time and with no permanent disability at all; inattention to the simple principles of drainage laid down here may result in the production of a chronic empyema which will entail perhaps a lifetime of suffering and disablement to the patient, and great economic loss not only to himself and his family but also to the nation, which may be called upon to grant him a permanent pension. In addition the services of a useful citizen or soldier may be unnecessarily lost. Not the least of the tragedy is that in most cases it could have been completely and easily avoided by taking proper care at one phase of management of the healing stage: in most this phase is that of regulation of the drainage tube, and occurs through failure to appreciate the seriousness of its casual premature removal.

Remember that the treatment of pleural suppuration does not consist in doing an operation on the patient. The operation for providing adequate drainage is only an

incident in treatment, albeit an important one. Treatment is concerned with securing and maintaining full lung expansion and thereby complete healing of the infected pleura. So often the surgeon's interest (and indeed the interest of all the patient's attendants) becomes progressively less as the days pass into weeks after operation. The reverse should be the case: interest and attention should increase as the stage of healing advances, and in the final stages of obliteration the most scrupulous care is needed to manipulate the tube and arrange its removal at the correct time. Only when this is fully appreciated will the number of crippling and chronic empyemas caused by this war be diminished.

CLEARANCE OF URBAN AIR-RAID CASUALTIES AT THE PERIMETER

BY

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One of the major lessons taught by experience of severe enemy air attack is the danger resulting from a central location of general hospitals in vulnerable towns. Fortunately indeed are the towns possessing general hospitals at the periphery. But in the majority of cases the hospitals are on central sites, and thus it is that heavy damage to their personnel and fabric is now an unhappy commonplace. These things have obvious bearings upon casualty clearing schemes in the localities. The hospitals in a town are ordinarily the natural centres for the initial admission and classification of the more severe air-raid casualties pending outward transfer to affiliated base hospitals. The sequence of events then is: (1) collection of street casualties—inward flow of laden ambulances to central hospitals; (2) "sorting" and initial treatment of casualties at central hospitals—outward flow of other laden ambulances to base hospitals. The minor cases are, of course, treated at the first-aid posts.

When the Inner Ring is Heavily Bombed

This works well enough in raids with circumscribed incidents. But when the entire inner ring of a town is subjected to heavy and continuous bombardment there are obvious and serious difficulties owing to: (a) actual or potential damage to the central hospitals themselves; and (b) the danger entailed in bringing loaded ambulances through the zone of maximum bombing. These conditions are more liable to arise in the county borough of ordinary size, for in the larger cities the inner ring is of such extent that it cannot be completely "plastered" in quite the same way.

In the average county borough of known or supposed vulnerability, therefore, whose hospitals are located centrally, it is well to have in readiness a scheme for the clearance of casualties at the perimeter. This means that, on a given signal to the ambulance depots, all ambulances will be instructed to turn outwards following the collection of street casualties and deliver them to the nearest prescribed clearing station at the perimeter. These stations may be provided by upgrading selected first-aid posts. In upgrading posts it is probable that staffing and equipment are of more importance than elaborate structural works, for "sorting," resuscitation, and recording are the primary functions of the clearing station. Patients usually travel better before operation than after, and the mass of

operative work will be done in the outside base hospitals following transfer from the clearing stations.

Experience in Coventry last year indicated the need on occasion for such clearing stations; in fact, some such arrangements had to be improvised at the time to meet the demands of the big raids in November, 1940. Following that, a more concrete scheme of casualty clearance at the perimeter was devised, and this proved its value during the heavy raids on the city in April, 1941. This will be appreciated the more when it is mentioned that the city's large central voluntary hospital was completely put out of action owing to severe damage sustained in April, and that the municipal general hospital, although still largely intact, occupies such a vulnerable site that considerable restrictions have of necessity been imposed on its use. It should be mentioned that the voluntary hospital authorities have already established a substantial nucleus of new in-patient accommodation in a building just outside the city boundary, and this will shortly be included among the clearing stations.

Outline of a Local Scheme

For purposes of publication, a description of the local scheme can only be brief and in general terms. There are five stations (which are also first-aid posts) situated respectively in the northern, eastern, southern, south-western, and western sectors of the town. All are school buildings, and each is approached readily from the city centre by a main road.

Two schemes of casualty clearance are recognized. Scheme 1 is operated in small raids, when the remaining central casualty clearing hospital—the municipal general hospital—is available for initial admissions. Scheme 2 is brought into use in more extensive attacks, and clearance is then to the perimeter. The decision as between Schemes 1 and 2 or regarding a switch from 1 to 2 on any particular occasion rests in the ordinary way with the responsible officer of the casualty services in city central control. The operation of Scheme 2 is initiated by calls to the city clearing stations, posts, and depots, and to the County of Warwick control. Thereupon it is understood that (a) the city ambulances will convey casualties from incidents to the clearing stations at the perimeter, and (b) county control will send county ambulances to the stations for the purpose of transporting casualties, after classification and preliminary treatment, to base hospitals in the reception areas. The clearing stations are linked up with the outside hospitals on a geographical basis in order that, so far as possible, cases from, say, a clearing station in the south proceed to a hospital that is also in the south, and so on. Fortunately there is a first ring of base hospitals which conveniently permits of this, and all these hospitals are within a dozen miles of the city. It is, of course, appreciated that the flow of casualties may have to be modified at any time according to circumstances. The more distant hospitals in the group are brought into use as necessary either for direct admission or for the reception of outward transfers.

In conditions of severe raiding telephone communications not unusually give out and messenger services may well suffer difficulties and delay. In these circumstances it is understood that the city clearing stations, posts, and depots will temporarily assume the initiative in the matter of clearing incidents in their respective zones according to Scheme 2. Similarly, county control will take appropriate independent action when communications with city control are inoperative.

Summary

In vulnerable towns the inner circle and the hospitals in it are always in special danger from enemy air attack. It is thus necessary in conditions of heavy central raiding in such towns to reverse the flow of ambulance traffic and direct it outwards to clearing stations at the perimeter. Schemes which can be brought into immediate operation should be available to this end in selected towns. This note describes such a scheme which, despite some residual faults that are still receiving attention, has worked with some success under rigorous test.

CASUALTY SURGERY IN AIR RAIDS

A second symposium was arranged by the Bristol Division of the British Medical Association on July 10, when, at a largely attended meeting under the chairmanship of Dr J. A. NIXON, casualty surgery in air raids was discussed.

Work of the Resuscitation Officer

Col. L. H. WHITBY said that 10% of all air-raid casualties required transfusion, the average amount being two to three pints, so that if a hundred casualties were received at hospital a stock of between twenty and thirty pints of transfusion fluid should be available for use by the resuscitation officer. "Shock" was a useful term for the lowering of vitality which resulted from injury, and its most striking manifestation was circulatory embarrassment or collapse represented by reduction in blood pressure. Serial blood-pressure readings were the most reliable index to the cases needing transfusion; the pulse was not nearly so reliable as had been supposed. An experienced reception officer could tell at a glance which cases should go to the resuscitation ward. Air-raid casualties fell into two broad groups: the neurogenic or psychogenic, and those showing very definite reduction in blood volume. The former were likely to respond to conservative measures—rest, warmth, morphine, fluids, and, most important of all, reassurance—but those with circulatory embarrassment owing to reduction in blood volume must be treated in addition by quantitative replacement approximately of the amount of fluid lost, and this must be made with a protein fluid.

In arranging facilities for serial blood-pressure observations it was not necessary to have a battery of sphygmomanometers; there should be a large supply of cuffs, and the instrument could be plugged in to points near the patients. It was essential also to know the nature and extent of the injuries if there was not to be failure to transfuse in a case which needed transfusion. Nothing should prevent the resuscitation officer slitting a victim's clothes from head to foot—a useful implement was a pair of carpet-maker's scissors—and making a thorough examination. Again, there were people who might suffer a great reduction in blood volume without an equivalent fall in blood pressure. Gross injuries would lead one to expect that the blood pressure would be almost unrecordable, but common sense would suggest that transfusion in such a case should not be withheld because the reading was not as low as might have been anticipated. Oxygen was of great value in cases exhibiting gross cyanosis, and there was much to be said for the only surgery which should be performed in a resuscitation ward—namely, the treatment of a penetrating wound of the chest to relieve the cyanosis and put the patient in a better condition to withstand operation. Once a patient had been resuscitated adequately he should be operated on without delay, otherwise the improvement in blood pressure and general condition tended to disappear.

Resuscitation did not end in the resuscitation ward. In cases with gross injury more transfusion might be required in the theatre. Movement from trolley to table and loss of blood at operation might undo some of the work previously done. In all such cases it was well for the last act in the resuscitation ward to be the setting up of a bottle of blood or plasma to accompany the patient to the theatre. The amount of blood lost was sometimes as much as 3½ litres. But one of the experiences of the present war was that patients might lose even such an amount and still survive for a few hours, and the essential difference between the casualties seen in the last war and the present one was that in the latter the time between infliction of the injury and treatment was very much shorter. Blood pressure was the only reliable indication that replacement of volume by transfusion had been sufficient. If a rise of from 10 to 20 mm. Hg per pint of fluid was not obtained, loss from an internal source should be suspected. As for the rate at which the fluid was administered, most people were in reasonable health before wounding, and a slow rate was not so necessary as when transfusing an anaemic person in civil practice. The rate sometimes induced a rigor—not all rigors were due to incompatible transfusions—but if the rate was slowed the rigor would disappear.

Some thought a blood transfusion service unnecessary because in the last war severe cases improved with saline; but if a casualty survived his haemorrhage his mechanical equipment for the restoration of his blood pressure would have come into action, he would dehydrate himself, and would be in a poor way on that account only, so that a pint or two of saline was life-saving. In the case of young people the first reaction to loss of blood was an intense vasoconstriction in an attempt to conserve blood which might keep the pressure at a reasonable level despite the fact that much blood had been lost. Clinically they appeared intensely pale on account of this vasoconstriction. Such patients were likely to collapse. If it was obvious that a person had suffered reduction in blood volume, transfusion should not be delayed.

Organization and Personnel

Prof. J. A. RYLE spoke of the organization and duties of personnel in a city hospital capable of taking more than one hundred casualties. The staff would include a surgeon in charge, a physician, a receiving officer, an anaesthetist, residents, and a radiologist, the appropriate number of sisters and nurses, also stretcher-bearers, clerical assistants, and so on. Perhaps, of the cases received in one night, about one-half would go to operation and about one-quarter through the resuscitation ward. The receiving officer must have considerable experience and be able to decide almost at a glance whether the patient had to be resuscitated or was ready for operation at once. Casualties did not arrive in a continuous stream; they were brought in four at a time by the ambulances, with short intervals between. A superficial examination was made, but the patient was not turned over or moved, and the decision was either "resuscitation" or "general casualty ward." A resuscitation ward was essential; such patients could not be dealt with adequately if scattered in several wards, and the ward should be in as safe and quiet a place as possible. The personnel should include a physician with two residents, one, at least, expert at transfusion, a sister, and nurses. The beds should be warmed and cradles put in position as soon as the raid started. The senior surgeon should not himself operate; his job was to decide when the resuscitated patients could be moved for operation. The decision as to the optimum time for operation was best made by the physician and the surgeon who went round and assessed the degree of recovery. He had the same function in the general casualty ward, but, of course, the resuscitation ward came first. It was useful to have a large supply of triangular bandages which could be put on any part of the body without much manipulation. All x-ray work should be done with a portable apparatus; it saved movement of the patients. After operation it was a good rule to return patients to the resuscitation ward for observation if there was reason for anxiety. It was only by close watching almost from minute to minute that decisions could be made. There was no need in the resuscitation ward to separate the sexes, and this enabled the resuscitation team to be concentrated in one place with their apparatus.

Dr. P. PHILLIPS (Bristol) said that at his hospital a dispenser was responsible for taking records of patients admitted. Differently coloured cards were attached to the casualties, all details were put upon them, and they followed the patients wherever they went. It had been found advisable to have two sisters in charge of morphine and of anti-tetanus injections. One apparently minor point, and yet not unimportant, concerned the removal of clothing. In view of the coupon system mutilation of the cloth should be avoided if possible, and a pair of tailor's scissors was useful for opening up the seams. He concluded with a tribute to the amazing fortitude and patience of the victims.

Operative Procedure

Mr. G. M. FITZGIBBON first endorsed what Col. Whitby had said about blood transfusion. Thanks to Col. Whitby and his assistants, the lives of many casualties had undoubtedly been saved. As an instance of the "miracles" that could be wrought, he mentioned the case of a man aged 60 who had a leg shattered and an injury to his arm; the blood pressure was unrecordable, and he seemed clearly about to die. He was given four pints of

plasma and his pressure rose to 100 mm. Hg. An amputation was then done above the knee and the arm injury attended to; within two days he was sitting up reading the paper, and he made an excellent recovery.

From the point of view of operative procedure, a large proportion of these cases differed in no way from those encountered in ordinary civil traumatic surgery, such as road and industrial accidents. The difference in some cases was the penetrating wounds caused by flying splinters and secondary missiles. The case he found difficult was the multiple "peppered" wound. It was astonishing what might underlie a small puncture wound of the abdominal wall. A great deal of time was wasted in exploring small wounds, but occasionally something was found that made it worth while. Another difficulty was abrasions with the almost incredible filth that was ground into them. If left to heal there were scars. He used a nail brush under a general anaesthetic to remove the greater part of the dirt. Again, there was the penetrating wound which went three-quarters of the way through a limb; if a débridement was to be done it was worth while making a counter-incision on the other side and trying to form a conical wound which could be thoroughly cleansed.

Mr. Fitzgibbon had been impressed by the effects of spraying raw surfaces with sulphanilamide powder; it did not interfere with granulation. He had had two cases of gas gangrene. One was a penetrating wound of the calf. The general condition was poor, and it was not thought that the patient could stand an amputation; therefore several incisions were made and the wounds packed with sulphapyridine; serum also was given. On the ninth day a haemorrhage occurred and the leg had to be sacrificed, but the patient's condition was better, and he eventually recovered. The second case was that of a woman with a minor wound of the tibial region. An extensive incision was made and packed with sulphapyridine; she was given serum, and made a perfect recovery without losing the leg. He also described operations on two chest wounds, and asked whether haemothoraces should be emptied. On the subject of burns, Mr. Fitzgibbon suggested that too many were tanned, making it very difficult to realize the extent to which necrosis would result. A second-degree burn might look suitable for tanning, but it might be found subsequently that the tan had raised the granulation tissues and not healed the epithelium. He thought that only cases in which the burn was obviously superficial should be sprayed.

Mr. E. ROCK CARLING said that the fundamental principles of surgery were quite unaffected by externals like war, though the organization of work in hospitals must be different. It happened not infrequently that a number of patients reached together the optimum time for operation, and it was important that there should be available during heavy raiding enough surgeons to supply the available tables. This was comparatively easy in a one-night "blitz," but difficult in continuous raiding. Surgeons must give up the idea of having beds of their own or of being able to select their wards. It was also important that during a heavy raid some surgeon or physician, or both, should be in supreme control. In the case of patients whose blood pressure would fall in due course he thought it was the opinion of the majority of surgeons that they should be operated on before the moment arrived when the pressure fell, and that transfusion must take place in the theatre and afterwards. If surgeons did not see their cases before operation, most careful notes should accompany the patient to the theatre.

With regard to "peppered" wounds, experience in the Navy suggested that the vast majority of these took care of themselves, although there was nothing more dangerous than an innocent-looking penetrating wound. A first-aid doctor remarked that on a particular raid night he had treated a certain number of small, innocent wounds of the scalp. "Yes," replied the surgeon who had received the cases, "you sent eleven in one night; four of them had foreign bodies in the brain, and the other seven were depressed fractures." As to débridement, they should have said long ago, "Lay your wounds widely open until you get to every possible recess." Scrubbing had been mentioned in connexion with abrasions. This was sometimes accompanied by severe shock and fall in blood pressure. Some surgeons had used liquid paraffin as a cleansing agent. On the subject of burns, convincing evidence had been put forward by

plastic surgeons that in third-degree burns where the skin was wholly destroyed coagulation should not be undertaken. Healing sometimes took place under coagulation, but it was healing with the loss of the amount of skin destroyed. Because of non-epithelization, and because tanning was a bad preparation for subsequent grafting, the plastic surgeon desired every third-degree burn to be treated by any means other than coagulation. If there could be certainty that a burn was third-degree the problem would be simple, but every burn which was third-degree was also in part first and second.

Mr. K. H. PRIDIE, speaking of first-aid work, said that insufficient use was made of a firm bandage over wool. He had only once seen a tourniquet which had definitely saved a life, but he had many times seen a tourniquet which caused extensive venous constriction. The dressings issued were too small for large wounds; for Army casualties a bigger dressing was issued, with a large bandage which could be firmly tied. Those in attendance at the incident should put crushed limbs anatomically straight, and a firm bandage over wool would stop any haemorrhage. He added that doctors should go to the scene of an incident and supervise the work there. They should put a label on the patient stating, for example, that it was a compound fracture, so that on reception there would be no need to take off the firm bandage and cause fresh bleeding. There would be much better first aid if it could be arranged for patients to be treated by a doctor at the incident.

COMMUNAL FEEDING IN SCHOOLS THE MIDDAY MEAL AS AN EDUCATIONAL SUBJECT

[FROM A CORRESPONDENT]

In the years before the present war progressive establishment of central schools meant that a considerable number of children had to depend on the school for their midday meal. In many areas teachers took advantage of this provision by making the school meal part of the curriculum, building round it lessons in hygiene, food values, and even history and geography, as well as the more obvious instruction in cleanliness and good manners. This advance was limited in scope until wartime economy gave a new impetus to schemes of communal feeding. With the help of voluntary bodies and continual encouragement from the Board of Education the system of school canteens has made rapid progress and, in the reception areas especially, communal feeding in schools has become a feature of everyday life.

The requirements of a school meal are simple enough: it must be good, cheap, well cooked, and well served. By "good" one means that it must consist of wholesome food in the right proportions to promote healthy growth, with the addition of sufficient vitamins and mineral salts to meet the sum of the child's daily needs.

Provision should be Obligatory

Recent investigations conducted by experts and subjected to careful scientific analysis point strongly to the conclusion that the communal midday meal in schools should now be made universal. It is true that education, propaganda, and voluntary effort have already done a great deal towards the provision of school meals; it may be true, as is sometimes argued, that in certain areas there is no local demand for communal feeding; but these arguments carry little weight in wartime, when food problems are too complicated for the ordinary housewife, and when our future as a nation depends so much on the sound nutrition of our children. It is permissible to hold that there should be an obligation upon the local education authority to make this provision, and children should be excused from attendance only if their parents can show that they can and do provide an efficient substitute at home.

This recommendation is supported by a number of considerations, of which the following are perhaps the most important:

(1) The communal midday meal can be made an integral part of the daily education of every child. This should have been done in peacetime; in war the argument is strongly reinforced.

(2) Good nutrition is so great an asset to the nation at any time that no chance should be missed of laying firm foundations in childhood.

(3) In wartime the need for sound nutrition is compelling, but the means of maintaining a high standard requires expert guidance. The best of our modern knowledge of food values can be applied through the communal meal, and in no other way.

These three points may now be considered in more detail.

1. Educational Value of the Communal Meal

Rightly considered, the school meal is an indispensable part of the curriculum at all ages. It is one of the best means of making a child fit to become a useful citizen. Habits acquired at meal-times remain with a child through life. Knowledge of food values; simple daily experience in cooking and serving; and patient instruction in the protection of food and the avoidance of waste: these will become part of the ordinary background of the adult if he has been well taught in childhood. Under present conditions school medical officers and those who undertake child welfare work have constantly to give advice to parents about feeding their children; in general practice one of the most important therapeutic measures is advice on diet. The work of the whole medical profession to-day is hampered by the appalling ignorance of working-class parents about the most elementary principles of feeding. The guidance offered is often valueless, not from lack of good will, but on account of the fact that young fathers and mothers have never been taught when they were children.

The "food lesson" is a most important educational subject for both boys and girls, and it is never too soon to begin. The remarkable success of nursery schools in teaching good habits at table is an example and an encouragement, but the work must be treated seriously and be carefully organized, or much of its value will be thrown away. At present, where midday meals are served in schools, the whole affair is often a glorious rush with the one object of getting into the playground as quickly as possible. There is little attempt to inculcate good manners at table, and the service generally (perhaps through lack of adequate means) tends to become slovenly and to give a poor opportunity for the practice of good table habits. The financial difference between a table well laid, with clean plates, shining cutlery, and flowers, and the disorderly muddle which one frequently sees, is negligible; the real difference is the essence of good education. Food and its handling before, during, and after a meal should be given a prominence, which is now completely lacking, in all schools, of whatever grade or character.

First, there is the choice of a menu: the children should be consulted—and taught. This is a lesson in relative food values and the importance of a balanced meal. The subject-matter can be linked with other educational material such as geography; the seasonal choice of food, especially fresh fruits and vegetables; and the economical selection of diet according to what the market provides. The elements of food purchasing is a practical lesson in arithmetic as well as in feeding.

In the second place, the preparation of food is a course of instruction in method, care, and cleanliness. It teaches children how to make use of the most valuable parts of certain foods, such as potatoes, thus avoiding waste in

wartime. Slovenly preparation of food in dirt and disorder begets disease and malnutrition. Good simple methods of preparation and cooking belong to the fundamental subjects of education for both boys and girls.

In the third place, the service of meals is at present almost wholly neglected as an educational subject. Yet what can be more important than these simple daily lessons in cleanliness, tidiness, correct eating, courtesy, and good manners? Slovenliness and guzzling would be checked; lack of consideration for others deliberately pointed out; noise, as distinct from reasonable conversation, prevented; and, in brief, elementary social qualities introduced by daily practice of a kind that would have a decisive influence on the whole outlook of the child.

Lastly, and not the least important, is the clearing up and cleaning up after a meal. One's mind turns to some recent examples actually witnessed, where pieces of bread on the floor and the generally dishevelled state of the tables were a disgrace. It is to be hoped that the revelations produced by the evacuation scheme will bring home to people of good will the immediate need to teach good habits to children. In wartime especially there is no more urgent lesson than the careful avoidance of waste. Every effort must be made to show children how much of the food left over from the preparation of one meal can be brought into use next day in an attractive form, and what should be preserved for humbler purposes. The protection of food, especially milk, from dust and flies must be demonstrated again and again until it becomes a routine.

2. Food and Nutrition

Malnutrition in childhood is difficult to assess; but it is known beyond doubt that large numbers of children suffer from varying degrees of defective nourishment. In most cases this is due not to gross lack of food but to faulty feeding. The commonest errors (which often lead to serious troubles) are insufficient vitamin intake and deficiency in mineral salts. The communal meal must therefore be scientifically prepared in such a way that the *whole* of the child's daily requirements of accessory food substances are supplied. One cannot rely on the vitamin content of meals taken at home in a working-class household. Milk is the best food for children, and there is no difficulty in finding a place for it in the midday meal. When this is done the provision of milk as a morning drink can be superseded.

3. Wartime Needs

Under war conditions all the arguments which can be brought forward to support a normal programme of communal feeding are strongly reinforced. There are two kinds of rationing—by food and by cost; and between the two the housewife will find it more and more difficult to provide for her children the right foods in the right quantities. The families whose incomes are near the poverty line cannot do it at all. Further, an increasing number of married women with children are finding places in factories, and are employed in work of national importance. The least the State can do for them is to see that their children are properly nourished. Our knowledge of how to organize communal feeding has passed far beyond the experimental stage, and the time has come for action. It is unnecessary to set out here the balance of foods which a communal meal must provide, or its content of vitamins and mineral salts; these have been worked out fully in Sir John Orr's recently published book, and they have been presented in a simple form by the British Medical Association. Many valuable books and pamphlets on wartime cookery have also been produced. The elements are well known and quite simple, and—what is more important—

the Ministry of Food is making sure of adequate supplies of essential foodstuffs.

The education authorities who are already carrying out the programme outlined in this note are increasing in number. Many good influences are at work and the gospel of nutrition is being widely spread through the skill and initiative of domestic science teachers and by officers of the Ministry of Food. Nevertheless there are backward areas, which serve to emphasize the need for universal provision. The fact that existing work in this direction has been so beneficial adds weight to the argument for transforming permission and encouragement into a definite obligation. It is our duty to see that wartime food is wisely chosen, carefully prepared, intelligently cooked and served, and put to the best possible use.

THE RED CROSS OVER BRITAIN

A year of intensive effort and adaptation is placed on record in the annual report of the British Red Cross Society. The Red Cross in this war has stood for the succour not only of fighting men but of civilians. It has expanded from a small peacetime to a large war organization, and the support of the public, including help from the United States, has been commensurate with its service. Its detachments number 2,828, with close upon 130,000 members and probationers. In 1940 the Society had 4,400 men and women serving full-time with the Forces, 5,365 women in the E.M.S. hospitals as members of voluntary aid detachments or the civil nursing reserve, 239 men and women on hospital trains, 7,240 men and women serving full-time and 28,500 part-time with A.R.P. posts, rescue parties, and mobile units, 3,000 men and women in auxiliary hospitals and convalescent homes, and just upon 2,000 with ambulances. The work done by women in providing hospital supplies and comforts almost defeats the statistician. The trained nurses department, which was set up immediately on the outbreak of war, has devoted itself to building up the trained nurses reserve; most of those mobilized are serving in convalescent or auxiliary hospitals, but a number have been seconded to the Ministry of Health for emergency duty. Two activities of the Society which are in full trim in peacetime as well as in war should not be forgotten. One is the Blood Transfusion Service. Last year the London service provided 1,395 donors, the lowest number for ten years. The diminution is due to the evacuation of patients from London hospitals. On an average each member during 1940 gave eleven transfusions. Eleven members have now given 50 transfusions, four 60, two 70, and two 80. Eighteen members of the committee of the Voluntary Blood Donors Association have a total of over 750 to their united record. This is represented as furnishing clear proof of the harmlessness of blood transfusion carried out over a period of years. The other activity is the Clinic for Rheumatic Diseases, Peto Place, where, in spite of evacuation, black-out, and air raids, 1,224 patients have attended and 35,367 treatments have been given. The results of treatment are rather less satisfactory than in previous years, owing to the larger proportion of advanced cases, the earlier ones being dispersed for various reasons; but environmental strain and shelter life are also likely to prevent optimum results. It is emphasized that after the war there is likely to be a notable rise in the incidence of rheumatic diseases, and therefore it is important to maintain the activities of the clinic at as high a level as possible.

G. Reyersbach, T. F. Lenert, and A. G. Kuttner (*J. clin. Invest.*, 1941, 20, 280) record their observations on an outbreak of influenza due to the virus recently described by Francis under the name of "influenza B" in a relatively isolated group of rheumatic children. The clinical symptoms were mild and remained remarkably uniform throughout the epidemic. There were no complications. Rheumatic recurrences were not precipitated by the outbreak of influenza. The characteristic laboratory finding was a relative leucopenia.

AWARDS FOR GALLANTRY AT SEA

The award of the M.B.E. (Civil Division) to Dr. L. F. TOGNERI is announced in a *Supplement* to the *London Gazette* dated July 9. The announcement reads as follows: "The ship was badly damaged by a U-boat, a torpedo struck her abaft the engine-room. The second engineer was trapped under a grating, with water rising fast. Chief Engineer William Skinner (awarded the O.B.E.) and Electrician Donald Mowat (awarded the B.E.M.), by the skilful use of crowbars, released the officer. The vessel took on a dangerous list to port and the master ordered all boats to be lowered, manned, and pulled clear. He himself remained on board with the chief engineer and the ship's surgeon, Dr. Togneri. These two officers helped the master to save the ship. As the weather was moderate and the vessel seemed to be holding her own, a number of officers and men returned on board and tried to get her in tow. Able Seaman David White (awarded the B.E.M.), who was the oldest member of the working party, showed special zeal."

AWARD FOR GALLANTRY IN CIVIL DEFENCE

The award of the George Medal to Dr. KENNETH EDWIN TAPPER, O.B.E., head of A.R.P. Casualty Services, Bromley, Kent, is announced in a *Supplement* to the *London Gazette* dated July 7.

The announcement reads as follows: "Dr. Tapper has on many occasions during enemy air attacks crawled under wreckage to search for and give treatment to injured casualties pinned down by debris. When people were buried beneath the wreckage of a German aeroplane and two houses Dr. Tapper gave medical aid to the victims while large unexploded bombs were removed. Dr. Tapper has shown great gallantry in his efforts to relieve suffering among air-raid victims."

Reports of Societies

TRICHINIASIS: MODE OF SPREAD AND MANIFESTATIONS

At a meeting of the Shaftesbury Military Hospital Medical Society on July 8, with Major-General F. CASEMENT, D.S.O., in the chair, Dr. PAUL BEESON, physician to the American Red Cross-Harvard Field Hospital Unit, read a paper on the mode of spread and manifestations of trichiniasis.

Trichiniasis, he said, was one of the few diseases the prevalence of which in Britain had markedly increased since the outbreak of the war. Before 1939 not more than fifty cases had been reported; since January, 1941, approximately 300 clinical cases had been notified, and it might be assumed that there were many more which were not recognized. Human beings acquired trichiniasis from eating pork. The illnesses in Britain recently were due to pork sausage prepared from local pork. It was probable that trichiniasis occasionally occurred in swine in this country as a result of their eating infested rats. The clinical manifestations were very variable, depending on chance deposition of parasites in different organs. Standard descriptions of the disease failed to emphasize this point. Gastro-intestinal symptoms occurred in less than half the clinical cases. Orbital oedema and muscle pains were usual manifestations. Subungual haemorrhages, present in some severe cases, constituted a striking and almost pathognomonic sign. Parasites in other parts of the body might produce signs suggestive of encephalitis, meningitis, pleurisy, pneumonia, or myocardial failure. The diseases which particularly required differentiation from trichiniasis were influenza, typhoid fever, bronchitis, gastro-enteritis, acute nephritis, encephalitis, and meningitis. The first requisite in the diagnosis of trichiniasis was an awareness of its possible occurrence and of the many forms which it might assume. A differential leucocyte count was the best aid to early diagnosis; eosinophilia was almost constantly present during

the first three months of infestation. The parasite might be demonstrable in the circulating blood during the first three weeks or in muscle tissue after that time. The skin reaction to *Trichina* antigen was constant and quite specific, but it did not prove that an infestation had occurred recently, since it might be elicited years after. There was no specific therapy for trichiniasis at present.

Correspondence

Treatment of Burns

SIR.—I trust that all those concerned with the treatment of burns will have an opportunity to study your leading article in the *Journal* of July 12 (p. 53). Uncertainty prevails as to the choice of method of treatment, and fundamental principles are sometimes forgotten. This uncertainty has no doubt stimulated your timely reference to "confused counsel," "dissecting voices," and "sectarian division." Impartial workers feel, as a rule, that there is no place as yet for dogmatism, but that the experiences of the past should not be discarded with too much haste.

Pending Utopia, your article reminds us that "mortality rates must be the first criterion of success." The article quotes figures in support of those who still believe in coagulation with tannic acid as one of the best, if not the best, life-saving procedure. In a series of 1,913 cases of burns treated with tannic acid the mortality was 11.3%, while in a series of 1,369 treated by other methods the mortality was 24.5%. In a series of 809 cases treated by Glover and Sydow with tannic acid the mortality rate was 8.4%. They recommend the removal of the tan between the fifth and the eighth day. Treatment is continued with continuous Dakin's dressings.

I have had good fortune, in life saving, with the well-known combination of tannic acid and silver nitrate, and I can commend this application to others especially those who are working single-handed or under other adverse conditions. It was, I think, the serious complications that arose when tannic acid was applied to the fingers and face which led many to abandon the method *in toto*. Warnings, however, were sounded in the past against such applications, but they went either unnoticed or unheeded. In the *Medical Annual*, 1931 (p. 86), it is stated: "The resulting coagulum forms a very tight tourniquet and the finger-tips may slough off." Again in the same publication (1932, p. 84) attention is called to the fact that "the finger-tips should not be sprayed with tannic acid, as gangrene sometimes results, and tannic acid should be avoided also near the anal or oral margins."

"He wrongly accuses Neptune, who makes a shipwreck a second time."—I am, etc.,

Aberdeen, July 12.

W. I. DE C. WHEELER.

Envelope Treatment for Burns

SIR.—Several articles have appeared in the *British Medical Journal* on this method of treating burns, using a solution of electrolytic sodium hypochlorite with sodium chloride as irrigant. In the issue of July 12 (p. 46), after describing the method, Mr. J. W. Hannay ends by saying: "The great value of envelope irrigation is that one can be quite certain that in no case treated by it, with or without theatre cleansing, will anything more than mild infection occur. Can this be claimed for any other method?" Yes, certainly; this can be claimed for the method of hypertonic treatment with sodium sulphate "soaks" (that is, lint kept soaked with a saturated solution of Glauber's salt). Moreover, in a paper describing the practical applications of this method, which you published exactly a year ago (July 13, 1940, p. 53), I suggested that the true value of Dakin's solution in controlling sepsis (as of a number of other agents such as urea, insulin, partially evaporated pus, saliva, and sweat) lay in its hypertonicity over cycloplasm. I went more fully into the theory of the subject in a paper, describing over 1,000 cases, published in the *Lancet* (February 3, 1940, p. 216); but the point I wish

to make is that since experimentally Glauber's salt is proved to be much superior both osmotically and in diffusion to any other substance used for this purpose, and since I have shown that no "antiseptic" is necessary (vide *Lancet* paper above), should not this salt be the agent of choice for envelope irrigation? I will even suggest that the effect of sulphonamide drugs applied locally in a wound or burn is entirely hypertonic, except in regard to such of the substance as may be absorbed into the circulation.

The envelope idea itself seems quite good, but I consistently achieve similar results with a sheet of lint laid over a burn, kept soaked (under a sheet of oiled silk) with saturated sodium sulphate solution, and *not changed or otherwise interfered with* until it begins to stink (that is, after several days). This method can be applied to burns of all degrees not only by nurses in hospital but by totally unskilled relatives in the patient's home. The results are excellent; no sepsis occurs, the treatment is painless, tissue repair and epithelial growth are rapid, and the resultant scars are flexible and tough. I now treat all burns and scalds in this way from the beginning without tanning them.—I am, etc.,

York, July 17.

J. C. LYTH, M.B., B.S.

SIR,—In connexion with the articles describing the envelope treatment of burns (July 5, pp. 1 and 7) and your leading article in the *Journal* of July 12 (p. 53), the practice seems to have been adopted of describing dilutions of a basic 1% electrolytic sodium hypochlorite solution in terms of the solution and not of the active ingredient. Thus strengths of solutions of electrolytic sodium hypochlorite are described as "from 1% to 50%," whereas in fact what is meant is "from 0.01% to 0.5%" in terms of actual hypochlorite.

Might I suggest that it would be much clearer and less likely to lead to misunderstanding if the strengths of such solutions were indicated as actual sodium hypochlorite as shown above?—I am, etc.,

Harrow, July 16.

E. A. LUM, Ph.C.

Tuberculosis in Recruits

SIR,—The increasing attention which is being paid in this country to the mass radiography of recruits and industrial workers is raising certain new problems. Radiological detection of early tuberculosis has achieved a high degree of accuracy, but it must be followed by careful clinical assessment of activity if really valuable results are to be achieved. Confirmation of diagnosis by the finding of tubercle bacilli should be a primary aim in every case, and to this end gastric lavage, examination of faeces, and cultural methods will be needed in addition to the routine methods of sputum examination. Examination of the sputum by the fluorescent microscope is reported from America and elsewhere to give a higher percentage of positive results than do any of the standard methods of examination, but, so far as I am aware, this technique is not yet largely practised anywhere in this country. Dr. Gregory Kayne drew attention (July 12, p. 65) to the apparent discrepancies of results among sputum tests, and Dr. James Maxwell, in the same page, emphasizes that the finding of a positive sputum is not, in itself, evidence of activity.

Assessment of activity must depend to some extent upon prolonged observation, and for this purpose neither hospitals, sanatoria, nor dispensaries are entirely satisfactory. If these examinations are to continue to reveal between 1/2 and 1% of positive radiological findings, then special facilities should be provided for the observation and assessment of cases so detected. The adverse psychological effect upon a patient of the diagnosis of pulmonary tuberculosis is well known, as also is the social stigma attaching to the disease. Both these evils could, to some extent, be minimized if in suitable cases the patient could, from the very beginning, be assured that his disease is inactive and relatively harmless, both to himself and to other people.—I am, etc.,

London, W.1, July 17.

ALEC WINGFIELD.

SIR,—Dr. Gregory Kayne (July 12, p. 65) thinks that in our paper the fact was insufficiently stressed that recruits with undetected tuberculosis have been accepted into the Services. It is, of course, impossible, for obvious reasons, to publish the actual

number of men examined by Medical Boards, and therefore anything approaching a correct incidence of the disease cannot be calculated. It may be that between 1 and 2% of recruits are usually referred to tuberculosis officers, but to adopt a basic figure that may well vary 50% either way for the purposes of calculating an incidence rate would be quite unjustified.

Whilst we agree with Dr. Kayne that many men suffering from active tuberculosis have undoubtedly been accepted into the Services, we did not set out to prove this, but merely to indicate the results of the examinations of recruits actually referred to the tuberculosis officers in Wales, and from our findings we felt justified in recommending that "the indications for the reference of cases by Medical Boards to the tuberculosis officers should be comprehensive, and even then that cases of active or latent tuberculosis might be missed," and that "the finding of a substantial number of tuberculous recruits in Wales strongly supports the view held by most tuberculosis workers that all recruits should be subjected to a radiological examination." As Dr. Kayne suggests, a considerable proportion of sputum specimens from our out-patients are examined only by the direct method because fuller examinations, if necessary, are left until after the patients have been admitted to institutions.

Dr. Kayne points out that 73% of our diagnosed recruits were T.B.-negative as compared with 49% of our male new cases (other than recruits) aged 18 to 35, referred in 1940. The much higher percentage of T.B.-negative cases among recruits is due, in our opinion, to the fact that most of these men, unlike the ordinary male new case, had not suffered from such a degree of ill-health as to consult their own doctor, and that it is therefore reasonable to expect they would be earlier cases.

It is quite possible that the incidence of tuberculosis among the group of "discussed and approved pleurisy" is higher than among those men who had not previously been seen by a tuberculosis officer, but it is significant, nevertheless, that out of a total of 499 men who stated they had had a previous pleurisy, 116 (23%) subsequently developed pulmonary tuberculosis.

We are grateful to Dr. Kayne for his appreciative remarks and helpful comments.—We are, etc.,

Cardiff, July 15.

S. H. GRAHAM, M.B., D.P.H.
MOSTYN DAVIES, F.S.S.

First-aid Treatment of Injured Eyes

SIR,—Injuries to the eyes in an air raid are of very frequent occurrence; multiple foreign bodies in the conjunctival sac or embedded in the cornea from dust and debris, injuries from burns of the face and eyes, also from intense smoke, are the commonest. If a gas attack should occur there will also be mustard gas lesions of the eyes. These injuries are accompanied by very great pain and spasm and photophobia.

At a meeting of the Bristol Division of the B.M.A., reported in your issue of June 28 (p. 978), in a discussion on first-aid experiences in an air raid, one speaker said that of 250 casualties over half were eye injuries or burns. Another speaker referred to the large number of eye injuries and the urgent need for some anaesthetic for damaged eyes. Considering those statements and the extremely painful nature of eye injuries, it seems that some eye anaesthetic solution should be provided at first-aid posts. Such treatment would be as valuable as the injection of morphine for other injuries, for the following reasons: (1) to allay the very great pain in the eye; (2) to permit of efficient irrigation; (3) to allay fear and anxiety of the patient; (4) to prevent spasm and rubbing of the lids.

The *War Office Manual of Chemical Warfare*, 1939, states (of mustard gas cases) that cocaine should not be used to allay pain because it only exerts transient anaesthesia and tends to loosen corneal epithelium. It is true that cocaine used three or four times at short intervals or three times a day would lead to injury of the cornea, but would it do any real harm if instilled only once? It would be valuable to have the opinion of leading ophthalmologists as to whether one application of cocaine drops would do any harm. One application would permit efficient irrigation and allay fear and pain until the patient got to hospital.

In the *Journal* of June 28 (p. 966) Dr. Dorothy R. Campbell of Coventry gave her experience of 100 eye casualties. She states that metycain and merthiolate ointment gave great relief.

without any ill effects on the cornea. I write to urge that a weak solution of cocaine (1%) or metycain and merthiolate ointment be supplied to first-aid posts for the efficient treatment and irrigation of damaged eyes. Not only would great pain be relieved but some eyes might be saved by more efficient treatment.—I am, etc.,

Deaf Hospital, July 13.

G. T. BIRDWOOD.

Flat-foot in Recruits

SIR.—We were interested to read the article by Captain R. T. Burkitt (June 28, p. 967) in reference to his treatment for flat feet in recruits. We have been in medical charge of training regiments for a considerable period, and we find that this is one of the most prevalent disabilities to be met with among recruits.

The men who have come under our charge have come directly from civil life, from a large variety of occupations, and have immediately to be put on an intensive course of drill and route marches for three months before being posted to their service anti-aircraft units. After dealing with recruits for some months we found such a large number of men complaining of flat feet that it interfered with the training programmes of the regiments. During this period in every case (all cases were of the first or second degree) we adopted the recognized method of raising the inner side of the boot with no success at all, and many complaints that the men found it difficult to do their marching with their boots altered in this manner.

We were thus compelled to try other methods, and we devised a support, to be worn inside the boot, consisting of a leather base with a bridge of sheet rubber supporting the arch beneath the leather and attached to it by adhesive plaster. This does not have the action of a metal support shaped to the normal arch of the foot, tending to push the arch upwards and so allowing the calf muscles to atrophy from disuse; but by being raised on the inner side, and having a certain amount of resilience, it appears to us that this pad tends to exercise and massage the arch of the foot during walking.

The men are instructed to walk on their toes as much as possible, and in severe cases they are given special physical training. Cases have been treated with exercises alone, but, as Captain Burkitt remarks, it is difficult to get the co-operation of the patient.

The routine in each case has been to fit a pair of pads made to the size of the foot and return the man to full duty. He reports after one week, and by this time most patients say that they have no pain in the feet, but that there is some slight aching in the calves. This is due to the strengthening of the muscles which support the arch of the foot. They report again at the end of four weeks and again at four-weekly intervals. Each successive examination shows improvement in the condition of the arch, and the men state that they can carry out full duty without pain. In uncomplicated cases of first- and second-degree flat feet we have so far had no cases of failure, over eighty cases being treated in this way, and as soon as the arch has returned to within normal limits the patient is advised to leave off wearing the pads for increasing periods until eventually he is able to discard them completely without causing a return of the pain. This usually takes from six to ten weeks from the date of fitting the pads.

In cases complicated by dropping of the transverse arch, hallux valgus, or other deformity, the reconstitution of the normal longitudinal arch takes much longer, but throughout this period we have had no case which has not been relieved by the wearing of pads. Cases which have been treated in this manner have never had to be boarded out of the Army, though a few cases complicated by other deformities have had to have their medical category lowered. By employing a good chiropodist who understands how to make these supports we have put back into training a large number of men who might otherwise have been useless for active work.

We are indebted to Lance-Bombardier Batson for his co-operation in the making of these pads, and to Lieut.-Colonel J. W. Lane, R.A.M.C., for permission to publish this letter.—We are, etc.,

S. B. SACHS, Capt., R.A.M.C.
L. GIBSON, Lieut., R.A.M.C.

July 8.

Economic Insulin Dosage

SIR.—In a letter in the *Journal* of April 5 (p. 535) Dr. R. D. Lawrence advocates the use of the more concentrated solutions of insulin on grounds of national and personal economy. The argument of national economy stands, in that bottles are saved by the use of the more concentrated solutions. The argument of personal economy, however, only extends to patients with diabetes who take large doses of insulin, as I realized the other day when a patient to whom I had recommended more concentrated insulin complained that it had cost her more in the course of a month. The reason is that the ordinary Record syringe, which most diabetics use, retains about 0.1 c.cm. of insulin after injection, and this quantity is wasted. The number of units wasted will, of course, be greatest with the strongest concentrations of insulin.

The most economic strength of insulin for various daily doses, calculated on the assumption of a daily wastage of 0.1 c.cm. and using 5-c.cm. vials, is given in the accompanying table. The difference in cost is not great in most cases, but a diabetic taking 12 units of P.Z. insulin a day will save 1s. a month by using 40 units/c.cm. rather than 80 units/c.cm. insulin. To many hospital patients this is a significant difference in cost.

Daily Dosage of Insulin	Most Economical Strength of Ordinary Insulin	Most Economical Strength of P.Z. Insulin
0-5 units	20 units/c.cm.	40 units/c.cm.
5-30 units	40 units/c.cm.	40 units/c.cm.
30-35 units	80 units/c.cm.	40 units/c.cm.
Over 35 units	80 units/c.cm.	80 units/c.cm.

—I am, etc.,

Raddiffe Infirmary, Oxford, July 13.

C. M. FLETCHER.

Diabetic Coma in Young Diabetics

SIR.—I am grateful to Dr. Wilfrid Oakley (July 5, p. 30) for his comments on my paper on diabetic coma. In Case 6, a severe case of coma in which Gerhardt's test on the urine was negative in the early stages, I could not with certainty detect acetone in the breath. His suggestion of testing the serum qualitatively by Rotthera's test is a useful one. I quoted the case to emphasize the well-known but not sufficiently recognized fact that Gerhardt's test is occasionally negative in severe coma. I agree that the level of the systolic blood pressure is of great importance in assessing prognosis and treatment.

With regard to insulin dosage, it is very difficult to lay down rules and perhaps it was unwise to try. In my experience insulin dosage in coma, particularly in the early stages, tends to be too low rather than too high, and, perhaps by good luck, I have not yet seen a case which passed from diabetic coma into hypoglycaemic coma. The points that Dr. Oakley stresses, that if insulin is given two-hourly its action is a cumulative one, and that this tends to falsify blood-sugar readings, are very important, and these facts must always be allowed for in estimating dosage, particularly as the phase of recovery and possible hypoglycaemia is approached. Blood-sugar readings are, however, only a rough guide to progress, and must always be considered in relation to other factors, such as the clinical condition of the patient, the severity of any infection which is present, and the previous dosage and response to insulin in the past. Perhaps such clinical considerations have saved me from the pitfalls I deserved, and I appreciate Dr. Oakley's helpful criticism and warning about the risks of overdosage.—I am, etc.,

Cambridge, July 12.

LESLIE COLL.

Aggregation of Toddlers

SIR.—Your article (July 19, p. 91) regarding aggregation of toddlers needs consideration, lest it be misunderstood. "Commonplaces of medical knowledge" seem to belong to the beginning of the century, to confuse dangers of infection in the parasitic stage of infancy under 2 years with the toddler stage (pre-school) from 2 to 5 years, and to compare nurseries and crèches with infant schools. It is, however, the homes themselves which are the chief distributors of early infections.

"The expert direction of the medical officer of health" is mainly needed to comply with Acts of Parliament, and there are

many lacunae in his oversight, the care of the pre-school child being one of them. Ere the present popular awareness of this neglect, these conditions needing remedy may be well represented by a normal of ten years ago. The Registrar-General's reports for 1930-3 show an average of 1,780,000 children aged 2 to 5 years; of these 8,302 died annually. About three-quarters of these deaths were preventable. One group of zymotics—measles, whooping-cough, scarlatina, diphtheria—accounted for 2,572 deaths; the last, diphtheria, caused 835, every one of which should have been prevented. The diphtheria deaths among pre-school children are about equal to those at school ages. Here homes can certainly be traced as the source of about nine-tenths of the cases. Yet ten years later "expert direction" for immunization seems mostly concerned with school children (locking the stable door, etc.), neglecting the year-old infant, which intensive "infant care work" should look after. The immunization of this infant as regards public health is worth that of ten or a dozen school children. Diphtheria will certainly disappear when most children in the parasitic stage in the care of their mothers are immunized—but not till then, whatever is done with school children. The present prevalence of diphtheria represents the greatest failure of the first quarter-century of the Ministry of Health.

The next group—mainly due to poverty, malnutrition, and debility—had 2,660 deaths annually. Between 2 and 5 years 937 died from tuberculosis; and various respiratory infections, "pneumonias," accounted for 1,728 deaths. All this group probably would have been noticed early enough for treatment if nursery schools were universal; but to wait till ill-health needs the call of doctor or nurse, or drives the child to a clinic, is often to wait till the result is inevitable.

A third group consisted of 787 violent deaths. At that time motor vehicles sent a toddler to its death daily, and now this is more than doubled. Children at these ages will run and play wherever they can, and roads and streets are the most available spaces.

High mortality is not the only product. In 1,074 crippled children in London schools, 895 cases had originated before school age. Of those with tuberculosis half began between 2 and 5 years. "Damaged goods" are commonplace in school entrants. The primary school child, too, age for age, is several inches shorter and pounds lighter than the secondary school pupil.

Crèches and day nurseries should not be tolerated in any civilized communities except, like rationed food and clothes, under the inevitable compulsion of war. So far evacuation has given no certain or expected answer to these problems of infection, save a general increase in tuberculosis. Benefits to be evoked in reduction of the death and damage shown by the Registrar-General's figures would outweigh any effects of aggregation, but actually the few existing nursery schools have been more free from infections and debility than any comparable collections of children.

If money is to be spent on family allowances, its proper distribution would be directly in kind to the children themselves. From 2 to 5 years of age a nursery school should be the right of every child, a school to every 300 or 350 families. To provide plenty of space and freedom, where children can be fed, exercised, sleep, grow, and educate themselves into the membership of a child community, is a biological necessity. Here they can educate themselves more suitably than by any other means. They are not yet ready for teaching the conventional requirements of social intercommunication and accumulated knowledge, as interpreted by teachers and training colleges, and all such should be kept out. With a nurses' organization and a visiting doctor to detect the earliest signs of ill or disease, this nursery school is a substitute for the necessary natural education of family and fields, which urbanization otherwise precludes and few parents nowadays can be expected to provide, beyond the exceptionally rich.—I am, etc.,

Edinburgh, July 19

JAMES KERR.

SIR.—The urgent warning in your excellent annotation will, I hope, help to stem the tide of a major disaster. This matter has been the subject of our earnest attention and pressure on the authorities since the Munich crisis. The scheme has been recognized as an excellent one, but the underlying reason and necessity for it not being appreciated, no action has been taken and no

facility been given us to acquire the necessary accommodation. Indeed we have been challenged by various authorities that there is not the accommodation for the rational treatment of the mother and child. A survey in one county already crowded with evacuees seems to show that it is not so much absence of the type of accommodation required as lack of determination and courage on the part of the authorities to commandeer that accommodation with the same ruthlessness that is demanded by the fighting Services in securing what they need.

The health services in war demand the same autocratic generalship as any other force directed to the waging of the war.—I am, etc.,

INNES H. PEARSE, M.D.

The Pioneer Health Centre, Peckham, July 19.

Hyperventilation Tetany in Tropical Climates

SIR.—I have read with interest Dr. Alec Wingfield's case report (June 21, p. 929). I find it difficult to accept his contention that the attack produced by hyperventilation and those which had occurred spontaneously in the Persian Gulf were one and the same thing. During a commission spent in those waters I had taken the opportunity to make some observations on the excretion of urinary chlorides. While these observations remain incomplete as a result of the advent of war and hence inconclusive, there was sufficient evidence to suggest that subclinical chloride deficiency was a common finding in the majority of any ship's company exposed for months on end to these trying conditions of tropical life. The inevitable and expected cases of "fireman's cramp" occurred and responded to the exhibition of chlorides. These cases are common, but probably represent a relatively small incidence among those suffering from the sub-clinical form.

I assume that in the case reported by Dr. Wingfield the hyperventilation tetany was induced under temperate conditions after the patient's return to this country. His chlorides may well have returned to normal—as is shown by the figures given. This, all the more, tends to discount any connexion between the aetiology of this attack and the previous spontaneous ones in the Persian Gulf. The latter have the basis of strong presumptive evidence for the assumption that they were due purely to chloride deficiency, while the former is invariably associated with an alkalaemia. The fact that Dr. Wingfield was able to induce tetany by hyperventilation does not identify this phenomenon with the one occurring under tropical conditions.—I am, etc.,

W. J. FORBES GUILD, M.D.,

June 27.

Surgeon Lieutenant-Commander, R.N.

Suture of Cut Flexor Tendons

SIR.—We wish to refute the numerous assertions made in your columns that suture of a flexor tendon which has been cut within its sheath is invariably unsuccessful. Within the last year we have dealt with ten cases of cut flexor tendons of the fingers, all of which occurred within the flexor sheath. Five of these cases can be classed as successful—that is, they have over 75% function. Five cases were immediate suture and five were delayed. Of the five treated by immediate repair, three were successful and one had 50% function. The remaining case developed infection and a stiff finger. Of the five cases treated by delayed suture, two were successful, one had 30% function, and the remaining two were failures. Our routine treatment has been as follows: (1) Avoidance of any cleansing processes (after the Böhler technique). A blood-pressure cuff is used for a tourniquet. (2) Painting the digit with iodine or flavine and dry up to the wound edges. (3) Complete excision of wound. (4) The original wound is enlarged in the longitudinal axis of the finger, the proximal incision being made to one side of the mid-ventral line, the distal incision being made on the opposite side of the finger, so that one then has a Z-shaped incision. (5) The tendon is exposed and a stay stitch is inserted to maintain the tendon in apposition. (6) If the wound is dirty or the tendon ends frayed, the ends of the tendon are freshened. (7) The Sterling Burnell suture of fine silk is then used and the stay stitch is removed. No attempt is made to repair the sheath, and the skin is sewn up with interrupted stitches. (8) No splint is used, and the following day slight active movements are

started. (9) If the wound is grossly contaminated it is excised and the tendon left for delayed suture.

A series of tendon sutures which has produced 50% good results is, we feel, sufficient to confute the advocacy of those of your correspondents who practise immediate amputation. The efficacy of the treatment can be determined within seven days, and if necessary amputation can then be carried out. The use of the fingers is of such vital importance that to amputate without first attempting to repair the tendon is, we feel, an unjustifiable procedure.—We are, etc.,

L. W. PLEWES, M.A., M.D., F.R.C.S.

K. C. MACKELVIE, M.R.C.S., L.R.C.P.

L. J. LOPEZ-GARCIA, M.R.C.S., L.R.C.P.

Luton and Dunstable Hospital, July 14.

Sulphonamides and Sulphur

SIR.—With reference to your issue of October 12, 1940 (p. 488), I notice an article by Mr. E. J. Radley Smith showing evidence that the danger of combining sulphonamide treatment with sulphur ingestion by any means is probably greatly exaggerated. I have also been in agreement with this view since I was working at a maternity hospital in Nigeria. There many of the cases were patients in *extremis* from obstructed labour and septic interference by native doctors. The dead foetus had to be extracted piecemeal, and sulphanilamide was immediately instituted. It was only after several weeks that I realized that these patients were also being given large doses of mag. sulph. as part of their after-treatment to diminish lactation. It was a custom of the nursing staff to give the salts automatically after a stillbirth or neonatal death without medical prescription. I had not noticed any cyanosis or symptoms attributable to such a condition, which is, of course, obscured in the African. There was a high mortality among these patients, and I have no figures to present; but I remember thinking it wiser not to interfere with the teaching of the midwives, who, being African, are muddled by alterations in routine. It would be interesting to know if controlled experiments on animals have been made which substantiate the idea that sulphonamides and sulphur are dangerous together.

The reference in your *Journal* is very old, but the numbers have followed me many miles and then have had to wait for a convenient opportunity for me to read them. The subject cannot be out of date, at any rate.—I am, etc.,

Kenya, May 6.

A. D. HODGES.

Crush Injuries

SIR.—With reference to Sir Leonard Hill's letter (March 29, p. 491), in which he attributes the renal failure in so-called "crush" injuries (accompanied by shock) to anoxia, I beg to draw attention to the extracts given below from Halliburton and McDowall's *Physiology* (1937), which make clear the vital importance of an adequate oxygen supply for healthy kidney function. Shock, it may here be recalled, has been defined by McDowall (*Journal*, 1933, 1, 690) as "the state resulting from a fall in arterial blood pressure, which if severe may result in death from oxygen want."

"The phenomena of the collapse of the circulation in shock may thus be summarized (after Muir, *Textbook of Pathology*, 1936):

During shock the capillaries of the skin and abdomen are tightly constricted, while those of the skeletal muscles are dilated and the blood stagnates in them. Blood pressure in consequence falls. The blood vessels of the body in general, and particularly the peripheral arteries and veins, are constricted in an effort to maintain blood pressure (McDowall, loc. cit.).

Abnormal permeability of the walls of the dilated capillaries then develops from want of oxygen (Bayliss, Spec. Rep. Ser. Med. Res. Com., 1919, London, No. 25), and an increased amount of blood plasma passes out of the circulation into the tissues, with the result that the blood becomes concentrated and the blood volume is diminished. The amount of blood reaching the right side of the heart thus becomes seriously reduced, and generalized oxygen want or asphyxiation of the body cells results."

Regarding the increased permeability of the capillaries in shock Bayliss writes:

"If this increased permeability has not reached too high a value or not been present for too long a time, recovery is possible.

... It is evident, then, that the state is capable of return to normal if not too serious. The renewed supply of oxygen restores the necessary impermeability to colloids." Regarding collapse of the circulation as observed in experimental animals, Bayliss states that if they are treated shortly after onset recovery takes place, but "if left for two hours or more... recovery is impossible" (owing to permanent damage of the capillary endothelial cells).

Regarding renal function Halliburton and McDowall write:

"One fluid, the arterial blood, enters the kidney; two fluids, the venous blood and the urine, leave it. Both of these fluids are different in composition from arterial blood. . . . We know that it is not possible to convert any fluid into two others, each of different composition from itself, without an expenditure of energy which must come from somewhere outside the fluids themselves. In the kidney, as in other secreting glands, this energy comes from the cells of the organ and the pressure of the arterial blood. The secretion of urine is therefore the result of work done by the kidney. The quantity of work done may be measured within certain limits, and the energy transformed by the kidney may be estimated in several ways). . . . Estimations have been made of the amount of oxygen used by the kidney in secreting urines of known concentration. This oxygen may be taken as a measure of the amount of energy used by the organ. . . . The practical importance of these considerations . . . lies in the fact that the expenditure of energy involves combustion, and combustion demands oxygen. For this reason an efficient supply of oxygen is essential to . . . healthy kidney (function)."

With reference to the secretory power of the glandular epithelium of the kidney tubules, Halliburton and McDowall state:

"In frogs the glomeruli can be cut out of action by ligaturing the renal arteries. The kidney is then supplied by the renal portal vein, a vessel which goes to the tubules only. If urea is then injected under the skin, secretion of urine occurs, which, though scanty in amount, is peculiarly rich in urea. Urea, therefore, in the frog is secreted by the epithelium of the tubules. In order to obtain this result the kidney must receive sufficient oxygen for the maintenance of the functional activity of its cells. As the arterial supply is cut off by ligature of the renal arteries, this must be accomplished . . . by keeping the frog in an atmosphere of pure oxygen."

—I am, etc.,

Capetown, May 7.

J. WALKER TOMB.

Pelvic Abscesses

SIR.—Mr. Harold Dodd's article on pelvic abscesses (May 3, p. 667) gave an excellent description of the diagnosis of this condition. The rectal symptoms and the changes in the tongue were stated with particular lucidity, and should be a valuable guide towards diagnosis of pelvic abscess.

Mr. Dodd does not, however, mention a symptom which is commonly present—namely, bladder irritation. My experience is limited, but in nearly all cases I have seen, frequency of micturition is a symptom which occurs as early in male patients as rectal irritation, and, in conjunction with the latter, in cases of appendix abscess is one of the most valuable signs by which a diagnosis of pelvic abscess can be made. The suspicion of "pus somewhere," together with the temperature chart and the signs of rectal and bladder irritation, makes the diagnosis of pelvic abscess almost certain even without a digital examination of the rectum.—I am, etc.,

W. J. LAIRD.
Medical Officer, Colonial Medical Service.

Kailashan, Sierra Leone, June 9.

Post-herpetic Paralysis

SIR.—With reference to recent correspondence on post-herpetic paralysis, presumably due to the virus of herpes zoster and chicken-pox causing a diffuse infection of the spinal cord, I am describing the following case in a man aged 61 who was admitted to the Royal Hospital, Wolverhampton, recently with wasting of hand and shoulder muscles and gross trophic changes in the skin of the hand. Seven months before admission he had an outbreak of shingles, passing down the outer side of the left arm and forearm and into the palm of the hand. Following this he complained of severe pain in the arm, which gradually became weaker and wasted, and developed trophic changes in the skin.

On examination he held the arm in a condition of adduction at the shoulder, with the elbow flexed as in hemiplegia, but with a wrist-drop. The arm was very painful to touch; the left hand showed marked trophic changes; the skin was very thin, shiny, and of a mauve tint, and over the terminal phalanges it was

adherent to the bone. There was marked wasting of the small muscles of the hand and of the deltoid, pectoralis major, and scapular muscles; all these muscles showed a fine fibrillary tremor. Associated with the wasting was a marked loss of power of all movement, and the tendon jerks were absent. Sensation was normal, and in other respects there was no abnormality in the central nervous system. Blood pressure: 150/70. Lumbar puncture: clear fluid under normal pressure, protein 0.04%, otherwise normal. Wassermann: negative. X-ray examination showed osteo-arthritis of the cervical spine "consistent with his age."

He has been put on a course of vitamin B₁ injections, and the arm has been treated as in poliomyelitis with splinting, massage, and active movements. It is hoped that, like the case reported by Dr. R. G. Abercrombie (May 24, p. 778), he will get a good recovery. After just over one month's treatment he is now recovering rapidly. He can now flex his fingers into the palm, and also raise the arm above his head; there is now no wrist-drop. The reflexes are also present, though still rather sluggish.

This case presents the unusual features of (1) marked trophic changes of the skin, (2) wasting of both shoulder and hand muscles, and (3) fibrillary twitches. The accounts of recent cases in the *Journal*, however, with similarity in case history, age, and associated osteo-arthritis, leave little room for doubt that in this man the herpes was the cause of the trouble.

Once a new clinical entity is described further cases are usually soon found. It will be interesting to hear of them and of prognosis with treatment in a series, and perhaps there may be some new light shed upon the obscure aetiology of the motor neurone diseases?—I am, etc.,

Wolverhampton, July 10. K. W. G. HEATHFIELD, M.B., B.S.

Three Unusual Rheumatic Cases

SIR,—On January 20 of this year a poor-class red-haired boy of 7 years came under my care in the country suffering from rheumatic fever. The illness was severe, both knees, one wrist, and the sternoclavicular joint being affected at different times. Cardiac symptoms were alarming, but the whole condition was so well controlled with aspirin that the boy made an excellent recovery up to a point in six weeks. While the knee-joints became freely movable and painless, it was obvious that the fluid swelling had extended down the front of each tibia over its upper third. As symptoms that the fluid might be purulent became manifest sulphonamide treatment was instituted with good results. Large quantities of pus at different times were discharged from both legs without upset or pain. The health of the boy remained comparatively good, appetite enormous, spirits excellent.

On June 7, circumstances for the first time permitting, he was radiographed and seen by a surgeon with regard to the minute sinus on the front of each tibia. X-ray examination showed nothing that could not be felt with the fingers—a considerable amount of periostitis. There was fluctuation around one sinus, and the boy had some fever and a slight cough. One week later, on admission to the children's ward for operation, he became unpopular by whooping on his first night. Hurried home thirteen miles with a temperature of 102°, the boy passed uneventfully through his attack of whooping-cough, and is now running about in a remote country district with a shilling-sized crust on the front of each tibia. This is perhaps a case of streptococcal osteomyelitis.

On June 3 of this year I attended a woman of 50 with erythema nodosum (her second attack in three years). In addition to this much more severe attack, the spots extending above the knees, there was herpes on the neck on one side, attributed by the patient to putting round the neck a cold compress for a sore throat.

On June 30 I attended a young married woman who complained of stiffness of the ankles and large spots on the front of the legs. She had typical erythema nodosum. On July 2 herpes appeared on both sides of her neck, extending from the posterior triangle to the mastoid process. I presume erythema nodosum is still recognized as having a rheumatic origin.

In this stagnant backwater of England 1941's increased prevalence of rheumatic conditions is attributed to the persistent east wind.—I am, etc.,

Hatfield, Northamptonshire, July 14. RICHARD BILL, M.B., Ch.B.

Medical Man-power

SIR,—Owing to the spurious shortage of medical man-power, consequent on bad distribution of existing personnel and uneven division of work between civilian and Service requirements, as shown by recent correspondence in the medical press, I would like to make the following suggestions.

(1) That all medical men of military age should be called up in rotation in age groups for a specified period of military training. When this has been completed, those who are really needed can be absorbed into the Services and the remainder allowed to return to civilian work, where they can continue until definitely required. In this connexion the wastage resulting from the calling up of key men in hospital positions and delegating them to relatively inferior positions with little work in the Services is apparent.

(2) The apportionment of medical work as between civilian and Service requirements needs to be immediately surveyed. At the present time a high percentage of Service patients are treated in civilian hospitals, and there is a feeling that this could be extended outside hospital practice, so that, for example, general practitioners who have received a period of military training and have returned to civilian life could undertake Service duties in addition to their civilian commitments, and in this way release a number of full-time Service personnel in this country.

—I am, etc.,

Edgware, July 12.

A. A. CUNNINGHAM.

Physiotherapy

SIR,—I have read with much interest Dr. L. D. Bailey's letter (June 28, p. 986) summing up the various points which have been brought forward in recent correspondence. I, too, have the honour of serving hospitals in the Emergency Medical Service, and among these hospitals there are some designated Orthopaedic Centres, but a variety of other cases, medical and surgical, are treated in the wards and physiotherapy departments of these centres.

I agree with Dr. Bailey that the adviser in physiotherapeutics must have a wider outlook than that conveyed by "orthopaedic physician." Whether the case is orthopaedic or plain medical or surgical, the physiotherapeutic adviser has to treat the patient as a whole and must have a comprehensive knowledge of disease, as well as of physiology and physiotherapy.

There is much diversity of opinion among some physicians and surgeons as to benefits derived from physiotherapy, and there is a crying need for clinical research in collaboration with physicists and physiologists, so that physiotherapy may be established on a scientific and clinical basis and confidence encouraged in the doubting members of the profession; otherwise this important branch of medicine is bound to remain linked with ideas of magic and quackery.—I am, etc.,

London, W.

N. I. LANCKENAU, M.D.

Fire-bomb Injuries

SIR,—Since writing the letter on protecting eye-shields, which you published on July 19, I have seen a patient who had received a deep wound in the elbow, severing the ulnar nerve, with consequent changes in the ring and little fingers and constant and severe pain in the other fingers. He was dealing with a fire-bomb, using the lid of a dust-bin as a protection. He told me that a friend of his tried to put out one of these bombs by putting the lid of a dust-bin over it and standing on it. The resulting explosion injured his foot.—I am, etc.,

Birmingham, July 20.

T. HARRISON BUTLER, F.R.C.S.

The Department of Health for Scotland has issued E.M.S. Memorandum No. 7 on the first-aid treatment of burns. The memorandum was prepared by a committee under the chairmanship of Sir John Fraser. There are four pages of text and a cover, on the inside of which, facing page 4, is a drawing of the human figure with indications of suitable treatment for different parts of the body. The memorandum (price 2d.) can be obtained at H.M. Stationery Office or through any book-seller.

Obituary

F. B. CHAVASSE, M.C., D.M.

Lecturer in Ophthalmology, University of Liverpool

We regret to announce the death on July 5, as the result of a motor accident, of Francis Bernard Chavasse, the well-known Liverpool ophthalmic surgeon, who came of a family which has distinguished itself in the Church, in medicine, and on the field of battle. His grandfather was Thomas Chavasse, F.R.C.S., and his father, the Right Rev. Francis Chavasse (afterwards Bishop of Liverpool), was Principal of Wycliffe Hall, Oxford, at the time of his birth on December 2, 1889. His brother, Captain N. G. Chavasse, won the Victoria Cross and bar in the last war, and the Gold Medal of the British Medical Association was awarded to him posthumously. Another brother, the Right Rev. C. M. Chavasse, is now Bishop of Rochester.

Bernard Chavasse went to school at Liverpool College, then spent five years at Balliol College, and entered the University of Liverpool as a final-year medical student. He took the English Conjoint qualifications in 1915, graduated in medicine at Oxford in 1919, and obtained the D.M. and M.R.C.P. in 1920, and the D.O.M.S. soon afterwards. He had a brilliant career at Oxford, winning the Theodore Williams scholarship in anatomy and in physiology and an honorary Brackenbury exhibition at Balliol, and graduating with first-class honours in physiology in 1912. At Liverpool he won the Derby exhibition in clinical medicine and the University exhibition in clinical surgery in 1915. During the last war he served with a temporary commission in the R.A.M.C., first as regimental M.O. of the 1st City Battalion, King's Liverpool Regiment, for nearly four years, then as officer-in-command of the 97th Field Ambulance, and lastly as medical officer at G.H.Q. He was awarded the Military Cross for gallantry in action. His paper on a method for the immediate treatment of fracture of the femur on the battlefield at the site of the casualty published in the *British Medical Journal* of October 5, 1918, was reprinted at the wish of many readers in our issue of January 6, 1940.

Chavasse's main interest was in diseases of the eye. He had been clinical assistant at the Oxford Eye Hospital, in the ophthalmic department of the London Hospital, and at Moorfields. He was appointed lecturer in ophthalmology at the University of Liverpool in 1923, and became full surgeon to the eye department of the Liverpool Eye and Ear Infirmary after working for some years as assistant surgeon and honorary pathologist.

Dr. Charles J. Macalister writes:

Death is a great awakener of memories in the living, and the passing of Bernard Chavasse has aroused many recollections concerning him and his collaterals. The very house in which he lived and worked and wrote his book has associations with the history of ophthalmology as a specialty, for in it dwelt and practised Edgar Browne (the son of "Phiz"), who, like other early specialists, began his career as a general practitioner. I venture to recall one or two impressions concerning Chavasse, who was known to me from the period of his school days. As a youth, certain characteristics presaged those of later years in that he was serious minded and possessed of a thoughtfulness of purpose which led to his giving methodical and concentrated attention to whatsoever work or play he might have in hand. When writing his book or engaged on any professional subject which might be interesting him at a given time, it was quite difficult to get him away from it until it was completed: in fact, whatsoever he undertook to do he did it with his might. The same trait dominated his play, which, after his school days, mainly consisted in sailing. Many incidents illustrative of his methodical ways of doing things might be quoted: they were in evidence domestically and professionally, but, if particular examples are to be cited, we must turn to two sad episodes which fell to his lot during the 1914-18 war. The first of these was when he made an attempt—alas! unsuccessful—to discover his missing

younger brother Aidan in July, 1917, which involved a search associated with danger over the domains of No Man's Land. The second incident was his investigation of the circumstances in which his brother Noel died of wounds on August 4, 1917. His father, of beloved memory, sent me a copy of Bernard's letter dated August 8, 1917, which gave a lucid account of the whole occurrence. It ended up with the words, "With all the sorrow of it one does feel very proud of him. He was behaving very gallantly when, already wounded, he received his fatal wound, and he never lost his courage during his last hours. This is not the snuffing out of a beloved nonentity but the death of a man of valour who was also a man of God." In his memorial address at the Church of St. Peter-le-Bailey, Oxford, on July 10, the Dean of Liverpool (Dr. F. W. Dwelley) related an incident throwing light on the religious aspects of Bernard Chavasse's life, and there is ample evidence that he was, like other members of his family, a valiant man who will be remembered for his gentleness and generosity by people representing every section of the community, including those to whom he ministered in the hospital with unbounded skill and kindness.

DOUGLAS STANLEY, M.D.Ed., F.R.C.P.Lond.

Emeritus Professor of Pharmacology and Therapeutics in the University of Birmingham

It is with great regret that we have to record the passing of Dr. Douglas Stanley at the Manor, Feckenham, Worcestershire, on July 5.

He graduated at Edinburgh in 1889 and took the M.D. with first-class honours and the gold medal five years later. After holding resident appointments at the Royal Infirmary he went to Birmingham as resident pathologist at the General Hospital in 1893, and the rest of his life was spent in that city. After an association with the General Hospital of about three years he "crossed the floor of the House" and joined the staff of the Queen's Hospital. Later he was elected to the Children's Hospital. In 1909 he became professor of pharmacology and therapeutics at the University of Birmingham. After Dr. Stanley had reached the age of retirement from Queen's Hospital he was offered the post of visiting physician to the Hallam Hospital, West Bromwich, a post which he held until the time of his death. He joined the British Medical Association in 1890, was honorary secretary of the Section of Pathology at the Sheffield Annual Meeting of 1908, and vice-president of the Section of Diseases of Children at the Birmingham Meeting of 1911.

It is but little exaggeration to say that Stanley devoted his life to teaching the students of the Birmingham Medical School; and just as his own profound medical knowledge was based on observations in the post-mortem room, so, too, was his teaching. A clinical clerk who failed to follow a fatal case from the ward to the post-mortem room would only be guilty of this sin of omission once during his six months' clerkship. Stanley was a great teacher: his own knowledge was built on clinical observation and morbid anatomy, and he had the rare gift of being able to impart his knowledge to others. He was often sarcastic, and his sarcasm could be biting, but "D. S." as he was affectionately called, had a great following among the students of the school. Stanley's interests were not confined to the bedside or the laboratory: he devoted much time to hospital administration, and for many years served on the management committees of both the Queen's and the Children's Hospitals.

To say that Stanley was pugnacious would possibly be to give a wrong impression of the man, but he was a fighter, a keen fighter, but always a clean fighter. He had strong opinions and never hesitated to express them; there was no sitting on the fence, and whether at a hospital board meeting, a discussion before a medical society, or in the columns of the Press, he said what he thought, and even

which he was a passenger was sunk. Dr. Marks was on a raft for two days and at the end of that time died from exposure. Thus ends the short story of one whom all his friends had hoped would ere long occupy a prominent position in the profession which he had chosen and to which he was so admirably suited.

The tragic and untimely death of HARRY DRYERRE (writes a colleague) has been a heavy blow to his numerous friends and colleagues in the Royal Air Force. He achieved that uncommon combination of academic knowledge and practical clinical acumen which undoubtedly would have in later years ensured a brilliant career in medicine. Not only did his unbounded energy and vitality enable him to keep abreast of the ever-increasing flood of medical literature, but he also had the critical faculty to sift the grain from the chaff. Apart from his professional ability, his delightful personality made him a true friend both to his fellow workers in the medical branch of the R.A.F. and to his numerous patients in other branches of the Service.

Dr. ARTHUR ROBINSON, who died on July 3 at his home at Ilkley, aged 72, had practised for many years in Halifax, and was honorary secretary of the Halifax Division of the British Medical Association in 1922-4. A student of the Leeds Medical School, he took the licence of the Apothecaries' Society of London in 1899, and served in the Boer War as a civilian surgeon attached to the South African Field Force; after being invalided home he began general practice in Halifax. Dr. Robinson was a keen supporter of the Yorkshire County Cricket Club, and a few years ago accompanied the Yorkshire team when it toured Jamaica.

"R. B." writes: The death of Major JAMES ROUSE, R.A.M.C., while on active service in Crete will be deeply mourned by a very wide circle of friends. As an anaesthetist at Worthing he was on the staff of the Hove General, the Royal Sussex County Hospital, and the Worthing Hospital. He was an extremely competent and calm anaesthetist who always kept his technique abreast of modern developments. He was an untiring worker and would come many miles in order not to miss his hospital list. Apart from his professional duties, he was a keen student of horse-racing, and he often made time to attend the big races of the season. He was a bridge player of quite exceptional merit, while one of my last recollections of him is watching him make a delightful break of 45 at snooker.

We regret to announce that Dr. JAMES HUSSEY of Farnham died on July 4 after an operation. He had been chairman of the Guildford Division of the British Medical Association in 1937-8 and still more recently president of the Surrey Branch. James Hussey was an outstanding student of his time at St. Bartholomew's Hospital, which he entered in 1891 with a preliminary science exhibition; this was followed by a junior scholarship and a senior scholarship, and three years later he won the Brackenbury scholarship in medicine and the Lawrence scholarship; he was also president of the Abernethian Society. In 1896 he qualified M.R.C.S., L.R.C.P. and took the M.B. degree of London University, and proceeded M.D. in 1898, after serving as house-physician at St. Bartholomew's and bacteriological assistant in the laboratories of the English Royal Colleges. Dr. Hussey had practised for many years at Farnham, and at the time of his death was the senior member of a partnership of four and consulting medical officer to the local hospital. He will be greatly missed by his colleagues of the Surrey Branch and by the many patients in Farnham and its neighbourhood whom he attended with so much skill and human sympathy.

The following well-known foreign medical men have died: Dr. BERNHARD WIKI, formerly professor of therapeutics at Geneva, aged 73; Dr. ALEXANDER WESTPHAL, formerly professor of psychiatry and director of the psychiatric clinic at Bonn, aged 78; Dr. HECTOR CRISTIANI, formerly professor of hygiene and bacteriology at Geneva, aged 78; Dr. HANS SCHAEER, senior surgeon to the University surgical clinic at Zurich, aged 40; and Dr. ERNST FANKHAUSER, a Berne psychiatrist, aged 72.

An appreciation of the late Dr. Sidney Davies (of whom an obituary notice was published in our issue of June 14) has appeared in the *Kentish Independent* of July 4. The writer of this, Mr. C. H. Grinling, Redroofs, Peaslake, near Guildford, Surrey, has some reprints and would send copies to any readers interested in Dr. Davies's life and work.

The Services

EFFICIENCY DECORATION, TERRITORIAL ARMY

The King has conferred the Efficiency Decoration of the Territorial Army on Lieut.-Colonel G. G. Talbot, Majors (Temporary Lieut.-Colonels T. C. McKenzie and G. M. Lewis, and Major A. Angus, R.A.M.C.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

In an Admiralty casualty list, published on July 18, the name of Surgeon Lieut. VINCENT JOSEPH REDMOND SHERIDAN, D.S.C., R.N., is included as "Missing, Presumed Killed," in H.M.S. *Kelly* off Crete. He was born in May, 1914, the second son of Dr. and Mrs. John Sheridan of Barnsley, was educated at Stonyhurst College and at the University of Edinburgh, where he graduated M.B., Ch.B. in 1936. He entered the Royal Navy as surgeon lieutenant in the following year and, after a course at Chatham, served on the China Station, first in the *Mantis* and then in the *Sandpiper*, returning to England in March, 1940. A *Supplement* to the *London Gazette* dated January 1, 1940, announced that the King had awarded Surgeon Lieut. Sheridan the D.S.C. "for services in the Sino-Japanese conflict."

Wounded or Injured

Probationary Temporary Surgeon Lieut. Paul Tudor Merlin, R.N.V.R.

Probationary Temporary Surgeon Lieut. Michael Noel O'Riordan, R.N.V.R.

ROYAL ARMY MEDICAL CORPS

Captain ROBERT THOMSON EASTON died in May of wounds received on active service in the Middle East. He was educated at the University of Aberdeen, where he graduated M.B., Ch.B. in 1927. He had held the posts of house-surgeon and house-physician at Oldham Royal Infirmary and assistant resident medical officer at St. Mary's Hospital for Women and Children, Plaistow. Before the war he was in practice at East Ham. He leaves a widow. He had been a member of the British Medical Association since 1928.

Missing, Believed Prisoner of War

Lieut. Richard Maurice Solomon.

Prisoners of War

Acting Colonel Harold Cane Godding, M.C.
Temporary Lieut.-Colonel Ailwyn Herbert Clarke, M.C.
Temporary Major John Leslie Martin.
Lieutenant Oliver Ive.

Universities and Colleges

UNIVERSITY OF LONDON

COMBINED HOSPITALS UNIVERSITY ENTRANCE SCHOLARSHIPS

As a result of the examination held for the University Entrance Scholarships, offered by St. Bartholomew's Hospital Medical College, Guy's Hospital Medical School, and St. Thomas's Hospital Medical School, the following awards have been made:

St. Bartholomew's Hospital Medical College.—P. R. Westall, Queen's College, Cambridge, scholarship; P. P. H. Schmidt, St. Catherine's Society, Oxford, exhibition.

Guy's Hospital Medical School.—R. E. Irvine, King's College, Cambridge, scholarship; J. M. Thomas, Gonville and Caius College, Cambridge, and D. P. Wheatley, Emmanuel College, Cambridge, (equal), exhibition.

St. Thomas's Hospital Medical School.—G. T. Aked-Davies, St. John's College, Oxford, scholarship; N. K. Connolly, King's College, Cambridge, exhibition.

UNIVERSITY OF SHEFFIELD

At a meeting on July 11 the University Council received the resignation of Mr. T. B. Mouat of the post of Honorary Lecturer in Surgery, and accorded its thanks to Mr. Mouat for his services to the university.

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The following candidates have been approved at the examinations indicated:

M.D.—A. Dolphin, E. G. Fox, Sheila Kenny, M. Toohey, J. D. Whiteside.

FINAL MEDICAL EXAMINATION.—*Medicine, M.B.*: †G. S. Prince, †Maude F. P. Bigger, †G. B. Gibson, †Gladys M. Byers. †Elizabeth

D. L. Simpson, †T. A. H. Black, †S. T. McCollum, †Helen S. Watson, †Melline P. Crowe, †C. R. Griffin, †J. Naughton, J. P. Walsh, N. J. Anderson, H. Lesselbaum, A. J. B. McFarland, J. P. Heame, P. C. Smyly, C. W. Lloyd, M. J. M. Solomons, T. J. N. Bates, N. H. Stewart, J. E. Adamsoo, G. F. Shaw, A. G. Lee, A. C. MacA. Hobson. *Surgery*: †S. T. McCollum, †C. R. Griffin, †Helen S. Watson, †G. S. Prince, †G. B. Gibson, †Elizabeth D. L. Simpson, †Dorothy H. Webster, J. N. Greene, B. W. Wylie, E. D. Kerr, J. B. Dunlop, Maude F. B. Bigger, J. R. Hassard, T. L. Kelly, D. J. Naughton, M. Steinberg, Ethna M. MacCarthy, Catherine E. Craig, M. J. M. Solomons, †E. Weiner, H. Lesselbaum, Kathleen M. J. Morphy, P. C. Smyly, W. G. D. Caldwell, H. H. Robinson, T. H. Downes, A. McC. Russell, Margaret F. Y. Dixon, D. R. McCauley, C. E. Williams, A. C. MacA. Hobson, S. D. Killen. *Midwifery, B.A.O.*: †A. J. B. McFarland, †Florella Starritt, C. F. Ford, M. B. Flanagan, E. S. Odbert, J. A. Pearce, Muriel Eakins, D. H. Draper, F. N. C. Levy, J. C. Watson, M. G. Jackson-Smith, J. L. Handelman.

DIPLOMA IN GYNAECOLOGY AND OBSTETRICS.—*R. Ismail, †L. E. Morris, M. A. L. Munn.

DIPLOMA IN PUBLIC HEALTH.—Part II: *W. Hayes, †F. W. Crook. *With first-class honours. †With second-class honours.

QUEEN'S UNIVERSITY, BELFAST

The following candidates have been approved at the examinations indicated:

M.D.—W. H. Davey, J. Elliott, R. B. Magill, *Margaret M. F. Robinson.

M.Ch.—*J. H. Armstrong.
M.B., B.Ch., B.A.O.—†R. J. Kernohan, †Lillian G. Bullick, *W. A. B. Campbell, †G. W. Csonka, †Q. H. Gibson, *M. S. Gilligan, *C. G. Irwin, †A. S. Majum, †J. Schragar, †R. G. Vine, †J. Watson, R. W. Bailie, S. J. Barr, J. W. Beattie, J. H. Bennett, J. K. Black, J. W. McC. Blair, J. L. Blair, R. G. Boyd, Annie E. Burns, R. C. Chapman, H. Collins, B. J. Coolon, P. E. Cosgrove, D. E. Coyle, S. E. Cupples, R. R. Dickson, H. W. McC. Dunn, Sarah M. C. Fraser, C. W. Gillespie, Anna E. Gilmour, D. K. Gilmour, W. E. Graham, C. W. Gurd, R. S. Hanoman-Singh, F. J. Harrison, A. W. Hetherington, W. M. Holley, Doris D. Hurley, W. Johnston, W. N. Jones, J. J. Kennan, J. A. Kelly, W. A. Knox, W. H. Laird, R. D. Linden, R. C. R. Looe, Eileen M. Logan, Joan B. T. Logan, Margaret N. Lowry, R. S. McElland, J. McConnell, A. H. McCrea, Rhona L. McCully, W. D. H. McFarland, Susan D. D. McMurray, P. P. Mallie, Anna C. Martin, W. D. Martin, I. L. Maxwell, W. Meharg, J. H. Millen, Evelyn Moffett, I. D. M. Nelson, G. M. Pringle, R. Rabbitt, M. N. Rankie, E. Rea, G. W. Roberts, W. L. Robinson, J. S. Rodgers, F. Shepherd, J. J. Smith, V. N. Taylor, W. D. Warmington, D. W. Wauchob, T. G. E. White, Eleanor I. Wilson.

*With commendation. †With first-class honours.

‡With second-class honours.

Medical Notes in Parliament

Winter Milk Supply: Lord Dawson's Warning

In the House of Lords on July 15, Viscount DAWSON of PENN called attention to the prospective shortage of milk and eggs, and the dangers to the health of the people liable to result therefrom. He said that while, during the summer months, the amount and variety of food available were adequate, the prospect for the coming winter was less secure and in certain respects might easily cause concern. It was disquieting that the production of milk, which was the priority food, should be progressively declining. Dealing with the difficulties which the dairy farmer had to face, Lord Dawson said that the unskilled worker was less careful in his cleanliness, less careful of his hands and churns, and the cows' udders were less well cared for; as a result, udder disease was more prone to break out. The remedy was so far as possible to call back the skilled agricultural workers and to set up an intensive course of three months for intelligent girls who, under modern education, would soon learn how to care for the cow and milk production.

The absence of skilled handling had also resulted in serious wastage of milk owing to the milk having gone sour. The collecting stations should quickly get down to efficient pasteurization and the local health authorities should be more close in their inspection of the collecting stations. The dairy herds must have all the food they required if the output was to be maintained this winter. Monotony in food should be avoided, and milk and eggs would enable that to be done, especially in the winter months. We must have more eggs, which were valuable not only for food but for their culinary quality.

The DUKE OF NORFOLK said that the Ministry of Agriculture, without a great deal of help from the medical profession, had encouraged for some years past the dairying branch of agricul-

ture. Dairy herds were increasing to-day, and the Ministry was doing all it could to induce farmers to employ women in the cowhouse and cowshed. At present there was enough milk in the country to meet the demand, but in the winter there might be some slight shortage. He hoped that, over and above the amount of milk necessary for the health of the nation, there would be no undue increase in demand. Everything was being done to maintain the production of milk.

LORD WOOLTON said that fewer people were suffering from malnutrition now, at the end of the second year of war, than in the days of peace. That was apparently due to Government policy in securing not only adequacy of supplies of food but of distribution according to people's needs. Many people were now more adequately fed than before the war began. We could look to the future with much confidence. As a result of the generous provision which the United States was making and with the help of New Zealand, he hoped to be able to remedy the defect of lack of variety to an increased degree. He had no doubt that we should secure all the milk we required, in one form or another, not only for the national milk scheme but for children, adolescents, and invalids during the coming winter.

LORD DAWSON said it might be worth considering whether, by propaganda or otherwise, something could be done to stop the slaughter at any rate of heifers. He agreed with Lord Woolton that the nation was well in health, but pointed out that it was the business of statesmen to watch for indications of changes in the tide. He did not want disease to come suddenly on us in a winter when, in all human probability, the nation would be rather more tired, more weary, suffering a little more from monotony, and more easily discontented, than in the first winter of the war. An independent inquiry should be set up to see whether or not there was a threat of diminishing milk production, and to decide how we should meet any such reduction.

Health Insurance Bill

Higher Income Limit and Benefit Rates

In the House of Commons on July 15, Mr. JOHNSTON moved the second reading of the National Health Insurance Contributory Pensions and Workmen's Compensation Bill. He said that the Bill was an interim measure to deal with immediate necessities, and it would not prejudice any conclusion which Parliament might reach after the war in regard to the future of social insurance. The Bill proposed an increase of 3s. in the weekly rates of sickness and disablement benefits. This was the first increase in these benefits for over twenty years, and the first time that women had been given the same increase as men. The limit of insurability for non-manual workers was raised from £250 to £420. Non-manual workers earning between £350 and £420 were also brought within the scope of the Workmen's Compensation Act. These changes would operate from next January 1.

In the debate which followed Dr. SUMMERSKILL said that the Bill was a miserable hotch-potch and did not give women equal treatment with men. The out-patient departments of hospitals, she said, were full of women who had had no proper provision made for their health. Dr. MORGAN complained that a vested interest had been allowed to creep into national health insurance. The investigation of alleged over-prescribing by panel doctors was also bad, and sometimes medical men were tried by their own rivals. Men who were the backbone of the medical services, and were trying to do their best for their patients while working under great handicaps, should be given more consideration.

Mr. ERNEST BROWN explained that no addition had been made to the maternity benefit because the Government, in deciding what they could do with the money available, came to the conclusion that they ought to put it to disablement benefit. They were confirmed in that by the nature of the disability and by the fact that there had been a tremendous development of the maternity and child welfare service quite apart from health insurance. The last increase in maternity benefit took place in 1920, but expenditure on maternity and child welfare had increased from £1,000,000 to £3,500,000 a year. About 70% of children under 1 year were taken to welfare clinics, and 50% of women attended ante-natal clinics. Speaking of the Bill generally, Mr. Brown said that there was much more than a cash side to it. There was a medical side.

One of the things that the committee which Mr. Greenwood had set up to review the whole question would have to apply its mind to would be how doctors, the public, and the State could get the best, from the point of view of preventive medicine, out of the various provisions already existing or from those which might be made in the future.

The Bill was read a second time and the financial resolution on which it is founded agreed to in committee.

Pension Appeal Tribunals

In the House of Commons on July 18, Sir IAN FRASER raised the question of the establishment now of appeal tribunals. He knew of cases of men who had come out of the Services disabled or sick, or who had died, but they or their widows had been granted no pension. He believed the Minister of Pensions and his medical staff judged these cases as fairly as they could, and that the Minister himself did his best to sort out the evidence, but it was hardly credible that the Department could be wholly without bias. It was essential that working-class people should have what appeared to them to be an absolutely fair chance of stating their case, and they could not have this so long as they had to go to the Ministry. Some kind of independent appeal tribunals were needed, like those which were set up in 1919 and which had functioned until the beginning of the present war. They were nothing to do with the Ministry of Pensions, but were impartial tribunals under the Lord Chancellor, and consisted of an ex-Service man, a lawyer of more than seven years' standing, and a doctor. From 1919 to the beginning of the war 53,000 pension cases were allowed and 113,000 turned down, so that practically 1 in 3 of the appeals was successful. There would be a few hundred or few thousand appeals to be heard at the present time, and on the evidence one-third would be deserving of a pension. He could not believe there were not sufficient lawyers to do the work, and while he knew doctors were very difficult to get, the Minister must find them for this work. Six, or at most a dozen, tribunals would meet the demand. It would be much more difficult to start dealing, say, in a year's time with ten times the present number of cases. People would feel they were having a fairer deal if their cases were heard now.

Mr. R. J. TAYLOR, Sir SMEDLEY CROOKE, Mr. A. BEVAN, and Mr. MANDER supported the motion; also Sir ROGER KEYES, who said that naval pensioners who were called up in wartime had suddenly to lead hard and strenuous lives. A great many died as a result, but when the cases came up before the medical tribunals it was said they died a natural death, not attributable to service. Arrangements were needed for an appeal in such cases. Mr. BEVAN thought that the Minister of Pensions did not call on the advice of independent medical men as a natural course. He only did so if the applicant or his relatives made efforts to this end. The Ministry's own medical advisers, who did nothing else but this sort of work, were apt to be guided by case decisions and to pile up generalizations.

Sir WALTER WOMERSLEY, Minister of Pensions, in reply, stated that he had already succeeded in getting cases like those mentioned by Sir Roger Keyes dealt with on a special basis. To Sir Ian Fraser he pointed out that the Government in June, 1940, had agreed that some right of appeal to an independent body would be essential after the war. He himself was wholly in favour of appeal tribunals. For the last war they were not set up until 1919 for the same reason as applied to-day—namely, that medical men with sufficient experience were not available. His inquiries had shown that at least twenty-six doctors and 200 lay staff would be required for the tribunals, with a further twenty-five doctors and 200 lay staff to prepare cases, and the appellants would also employ doctors. The shortage of doctors was being considered at the present time, and if it was possible to find all necessary personnel they could go ahead with setting up tribunals. The Minister had an independent medical referee nominated by the two Royal Colleges. Over 90% of the cases which would go to an appeal tribunal would do so on medical grounds, and they were sending many of these to an independent medical referee. Some people, however, did not feel satisfied unless they were examined. He would suggest to the bodies appointing referees that in such cases the claimant should be seen by the doctors themselves, but he could not order that this should be done.

Alien Doctors: Registration Procedure

On July 8 Mr. GROVES asked the Minister of Health why the Central Medical War Committee refused to grant interviews to foreign and overseas doctors affected by the Medical Registration Order, 1941; whether he was aware that in the case of aliens three forms and in the case of non-aliens two forms were required to be submitted; and whether he would recommend curtailment of this procedure. Mr. BROWN replied that the committee's staff could not interview these doctors, who numbered over 1,300, without seriously impeding their work of facilitating the employment and registration of the doctors. In any case no useful purpose would be served by interviews, because the committee had full written particulars of the doctors, which enabled them to submit names to the employing authorities, by whom the selections for interview were made. The answer to the second part of the question was "Yes," and to the third part "No."

Senile and Chronic Sick

On July 8 Sir ERNEST GRAHAM-LITTLE asked the Minister of Health whether he would distinguish between the categories of senile and chronic, or bedridden, sick; whether he was aware that at a hospital, of which he had been informed, there were, in October last, 500 patients, 95% of whom were bedridden; that the medical staff was only two in number; that, while there was a considerable number of assistant nurses, there were only ten with full training; that, notwithstanding intensive bombing near by, no effort was made to remove patients; and that early in October the hospital suffered a hit from a high explosive, as a result of which eighty-five patients and three nurses lost their lives. Mr. BROWN said he assumed that the first part of the question referred to his reply to a previous question on June 17 (*Journal*, June 21, p. 950). He could not give precise figures, but it might be taken that of the 4,000 described as removed from public assistance hospitals the great majority were bedridden, while of the 4,000 described as removed from shelters the great majority were not.

Veneral Diseases in Jamaica

Replying to Dr. Morgan on July 9, Mr. GEORGE HALL said there were three clinics for the treatment of venereal diseases in Jamaica, situated at Kingston, Montego Bay, and Port Antonio. Four full-time and two part-time medical officers were attached to the Kingston clinic and one part-time medical officer to each of the other two. It was impossible to estimate the proportion of those infected who sought treatment at the clinics. It was known, however, that an exceedingly small proportion of cases sought competent medical treatment in the early stage. The numbers of new cases admitted to the clinics in 1940 were:

		Male	Female
Kingston:			
Gonorrhoea	.. .. .	2,691	4,051
Syphilis	.. .. .	1,624	2,190
Montego Bay:			
Gonorrhoea	.. .. .	1,056	1,104
Syphilis	.. .. .	504	448
Port Antonio:			
Gonorrhoea	.. .. .	800	506
Syphilis	.. .. .	758	489

A temporary clinic at Kingston public hospital was equipped but is not in operation owing to lack of staff. Clinics were also planned for Spanish Town, St. Anne's Bay, Falmouth, Savanna-La-Mar, Black River, and Mandeville.

In the venereal diseases clinic at Kingston there were different departments for males and females, but, owing to lack of space and staff, not separate departments for children. There were no special facilities in the hospitals for treating children suffering from these diseases. The great majority of infected children were treated at the clinic as out-patients. Lord Moyne did not regard the position as satisfactory and was taking up the whole matter with the Governor of Jamaica. Provision of adequate treatment of children suffering from these diseases in the West Indian Islands was under investigation.

No. 26

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 28.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash—denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	192	18	54	2	3	213	10	48	2	6
Deaths ..	2	—	3	—	—	1	—	2	—	—
Diphtheria ..	909	37	162	26	24	760	25	230	36	19
Deaths ..	18	—	4	—	2	9	—	4	3	2
Dysentery ..	78	10	30	—	—	34	1	29	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute ..	5	—	3	—	—	6	—	1	2	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Enteric (typhoid and paratyphoid) fever ..	111	—	29	1	—	155	7	3	9	6
Deaths ..	4	—	—	—	—	1	—	—	—	—
Erysipelas ..	—	—	41	4	2	—	16	48	2	2
Deaths ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years ..	26	2	4	9	3	34	8	6	6	4
Deaths ..	—	—	—	—	—	—	—	—	—	—
Measles ..	8,820	284	74	—	1	8,338	28	1,484	—	36
Deaths ..	9	—	—	—	—	7	—	9	—	—
Ophthalmia neonatorum ..	82	4	16	—	—	81	4	27	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza* ..	654	31	3	3	1	478	18	4	1	1
Deaths (from influenza) ..	5	22	1	—	6	7	—	—	—	—
Pneumonia, primary ..	—	—	222	12	—	—	12	134	7	—
Deaths ..	—	—	—	6	—	—	—	—	4	3
Polio-encephalitis, acute ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute ..	3	—	4	—	—	25	—	2	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever ..	2	2	16	1	1	6	6	7	4	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia ..	119	4	24	—	1	131	8	19	—	2
Deaths ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever ..	840	34	120	30	20	1,058	26	128	24	26
Deaths ..	1	—	—	—	—	2	—	1	—	1
Small-pox ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Typhus fever ..	—	—	—	—	—	—	—	—	3	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough ..	5,437	215	184	—	4	755	14	28	—	18
Deaths ..	22	2	8	1	—	5	—	2	1	4
Deaths (0-1 year) ..	305	18	60	28	13	292	46	39	25	23
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still-births) ..	4,172	505	576	181	156	4,007	637	540	155	131
*Annual death rate per 1,000 persons living ..	—	—	12.5	12.0	—	—	—	10.9	10.3	11.5
Live births ..	4,577	315	883	434	176	6,163	950	884	355	222
*Annual rate per 1,000 persons living ..	—	—	18.0	28.8	—	—	—	17.9	23.9	19.4
Stillbirths ..	194	15	34	—	—	274	36	35	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	37	—	—	—	—	38	—	—

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, the birth and death rates have to be omitted for Northern Ireland.

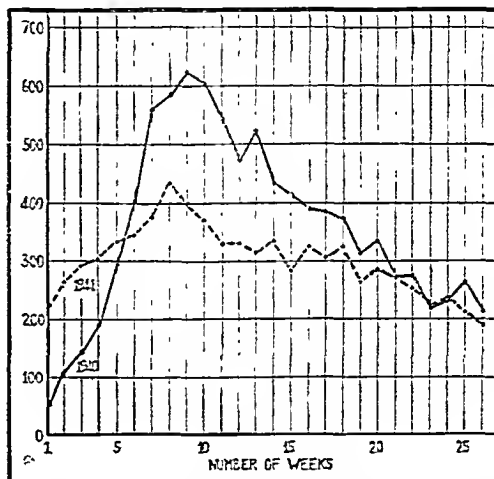
EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Diphtheria and whooping-cough are the sole principal notifiable diseases to increase in England and Wales during the week. The latter is prevalent in the large towns, the figures for the current week (previous week in parentheses) being as follows: London 215 (160), Birmingham 106 (72), Liverpool 83 (89), Manchester 146 (148). In Scotland diphtheria has fallen, and also whooping-cough, but the former is still prevalent in proportion to the total population. In a recent circular the Department of Health lays stress upon the high susceptibility and mortality among children of 1 to 4 years, and local authorities are urged to intensify their immunization campaigns during the summer months while schools are closed, especially among children of pre-school age, in order to safeguard them from attack during the winter period, when the disease is more rife and more lethal.

Cerebrospinal Fever

Despite the high incidence of cerebrospinal fever in the first few weeks of the year, it was early suggested with some measure of confidence that an epidemic on the scale of that experienced in 1940 was improbable. This expectation has been fulfilled, as the accompanying chart reveals: the total numbers notified



during the first twenty-six weeks were 7,847 in 1941, compared with 9,229 in 1940. Although incidence was low at the beginning of the latter year, the rate of increase was higher than in 1941, attaining a high velocity at the end of January and contrasting strongly with the more leisurely rise this year. In the present year the acme was reached a week earlier, but the decline, like the rise, has been leisurely, although characterized, as in 1940, by occasional exacerbations due to local outbreaks. The infection has been milder on the whole this year, and low case-fatality figures are expected when the records are collected. Although several small series with case mortalities as low as 5% are not uncommon, the general rate for the whole country has so far remained in the region of 15%. More intensive chemotherapy will doubtless help to reduce this figure substantially.

The Minister of Health has made the following acting appointments: Mr. J. C. Wrigley, C.B., to be Deputy Secretary of the Ministry of Health in the place of Mr. A. N. Rucker, C.B., C.B.E., who has been seconded for special duties. Mr. E. G. Bearn, C.B.E., to be an under-secretary in general charge of the preparatory and operational activities of the Ministry arising out of the war, other than those associated with the Emergency Medical Service. Mr. T. Lindsay to be a principal assistant secretary. Mr. P. N. R. Butcher to be an assistant secretary. Mr. Howell E. James to be chief general inspector in the place of Mr. C. F. Roundell, C.B.E., retired.

Medical News

Lord Horder has been appointed personal adviser to the Minister of Food, Lord Woolton, on medical aspects of food problems.

The annual general meeting of the Medical Society for the Study of Venereal Diseases will be held at 11, Chandos Street, W., on Saturday, July 26, at 2.15 p.m. At 3 p.m. there will be a discussion on "The Present Trend of Incidence of Venereal Diseases in England and Wales and the Methods of Control," to be opened by Colonel L. W. Harrison, followed by Dr. Margaret Rorke, Lieut.-Colonel T. E. Osmond, Dr. Letitia Fairfield, Surgeon Commander D. Duncan, Surgeon Lieut. Genevieve Newcastle, and Wing-Commander J. M. Kilpatrick.

The National Council for Mental Hygiene has arranged a public meeting to be held at Manson House, Portland Place, W.1, on Thursday, July 31, at 5 p.m., when Mr. Kenneth Walker, F.R.C.S., will deliver an address on "The Need for a Positive Philosophy of Life," with Dr. H. Crichton-Miller in the chair.

With its issue of July 5 the *Pharmaceutical Journal* founded by Jacob Bell enters on the second century of its existence.

The Gunning Victoria Jubilee Prize, for the period 1936 to 1940, was presented at a meeting of the Royal Society of Edinburgh on July 7 to Sir James C. Irvine, D.Sc., F.R.S., Principal and Vice-Chancellor of the University of St. Andrews, for his distinguished contributions to organic chemistry. In making the presentation Prof. E. T. Whittaker, the President, said that the value of the contributions by Sir James Irvine had been recognized by the Royal Society of London, which had honoured him with the Davy Medal, and by the Chemical Society, which awarded him the Longstaff Medal in 1933.

The names of Dr. William Fraser Annand, consulting physician, and Dr. Harry Winter, resident surgical officer, Coventry and Warwickshire Hospital, and Dr. Noel Rowland Hutchinson Holmes, medical officer, Coventry A.R.P. Casualty Service, have been brought to notice for brave conduct in civil defence.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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QUERIES AND ANSWERS

Income Tax

Fall in Practice Income

"DELTA" was called up in September, 1939, for the E.M.S., and has been assessed for the year to April 5, 1940, on (a) the basis of his practice profits for 1938-9 plus (b) his salary under the E.M.S. for the period September 2, 1939, to April 5, 1940. Is this correct?

* * Yes, but if "Delta's" aggregate earned income for 1939-40 is not more than four-fifths of his earned income as assessed for that year he is entitled to have the practice profits calculated on the basis of the actual year (Finance Act (No. 2) 1939, Section 11). Whether relief is obtainable in that way will of course depend on the amounts concerned.

LETTERS, NOTES, ETC.

Abdominal Symptoms after Opium

MR. P. L. BLAKELY (Shanklin) writes: May I, as a pharmacist, ask if it is quite fair for Dr. Jas. Scott (June 21, p. 952) to suggest that all the blame for certain abdominal symptoms, which he describes, lies upon the shoulders of opium? Pulv. Dover, alias pulv. ipecac. co., is a partnership. One does not need to refer much to Prof. A. J. Clark's *Applied Pharmacology* to know that the crimes seem much more like those of ipecacuanha. We can probably nequit the potass. sulph. There is 10% of ipecacuanha in pulv. ipecac. co. as there is of opium. Ipecacuanha contains the irritant alkaloids of emetine and cephaeline. The 1/4-grain dose of morphine mentioned at the end of Dr. Scott's letter is equal to the morphine content of 2½ grains of opium or 25 grains of Dover's powder. Perhaps it would be presumptuous of me to point out that the actions of opium are not necessarily the same as those of 1/10 part of its weight of morphine owing to the presence in opium of several other alkaloids.

St. Columba's Hospital for Advanced Cases

MR. NORMAN A. SPROTT, F.R.C.S., writes: Many of your readers may be glad to know of the services provided by this hospital. In peacetime most of the patients came from a few large general hospitals, eager to fill our beds as soon as they were available, and there was no reason to make the institution known to a wider public; but wartime conditions have lessened the demand on our beds from the usual sources, with the result that our waiting lists have sometimes been reduced to vanishing-point, and there have even been empty beds, particularly in the men's wards. I cannot help feeling that these beds could be filled many times over if more members of the profession were aware of their existence. St. Columba's Hospital (Swiss Cottage, London, N.W.3) was founded to serve the needs of incurable patients, many of them dying of malignant disease, during the last few months of their illness. It provides care rather than cure for those beyond the reach of operative or radiological treatment. Infectious and mental cases are not admitted. Patients are expected to contribute, according to their means, from two to five guineas a week, for which they receive medical and nursing attendance, drugs, and dressings. There are no extras. The hospital provides for a class of patients that cannot easily be nursed at home or yet afford to remain for long in a private nursing home, and for whom there is otherwise usually no alternative but a council hospital. St. Columba's stands in a large garden in South Hampstead, readily accessible from the West End of London, with an excellent bus and underground service. Considering the desperate nature of the cases admitted it is a remarkably happy place. Many medical practitioners and others visiting the hospital have been impressed by its peaceful, friendly atmosphere. There are no private rooms at St. Columba's, and it seems to me that these patients, once they appreciate the fact that cure is out of the question, are generally happier in a ward with others similarly afflicted than they would be in a private room at a nursing home or living at home with their relations. The hospital is interdenominational, and the spiritual needs of the patients are well cared for.

Recruitment for Nursing

Efforts to bridge the gap between the time girls leave school to when they are old enough to enter hospitals are referred to in a report issued by the Nursing Recruitment Centre. Although the Centre, financed by the King Edward's Hospital Fund for London, has only been in existence just over a year, some 450 applications have been received from girls of 15 or 16 who would not normally be ready for hospital training for at least two years. The report states: "If the nursing register goes on growing at this rate of 5 or 6 a day, it will total over 1,000 names by the end of the year, and more than double that number by the end of next year." The Centre sends these candidates leaflets on nursing, lists of pre-nursing courses, and individual advice about the best means of bridging the gap. It aims at keeping in touch with them until they are old enough to apply for hospital training.

Disclaimer

MR. A. H. McINDOE writes: I wish to make it clear that I was in no way responsible for the undesirable comments recently made in the Press in regard to myself and the Maxillo-facial Unit at East Grinstead. I have no knowledge of the writer, have given no interviews, and wish to dissociate myself completely from publicity of this type.

Corrigendum

We regret that the price of the seventh edition of *Methods of Treatment*, by Prof. Logan Clendening and Dr. E. H. Hinshliger, was incorrectly given last week (p. 89) as 25s. net; this should have been 50s. net.

THE TOXICITY OF SULPHONAMIDE DRUGS TO CELLS IN VITRO*

BY

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(WITH SPECIAL PLATE)

The administration of sulphonamide drugs by injection or by mouth for the prevention and treatment of wound infection is in many cases giving place to a more direct method, in which the powdered drugs are applied locally to the wound surfaces (Jensen, Johnsrud, and Nelson, 1939; Legroux, 1940; Colebrook, 1940; Hawking and Piercy, 1941; Colebrook and Francis, 1941; and others). The first method yields concentrations in the blood and tissue fluids usually ranging from 1:10,000 to 1:100,000, while the second establishes local concentrations ranging from saturation strength downwards. This second method raises problems concerning the toxicity of sulphonamide drugs to living cells which could hardly be expected to arise in acute form after other methods of treatment. Tissue culture provides one method of studying problems of this sort, because it is capable to some extent of reproducing *in vitro* the influence of the drugs on the behaviour of the various types of cells which play a part in wound healing. By means of it one should be able not only to rank a series of drugs in the order of their toxicity to living cells, but also to obtain a clear idea of the order of magnitude of the concentrations which are lethal to them.

The drugs chosen for investigation were sulphanilamide, sulphathiazole, sulphapyridine, and (in some tests) sulphadiazine; and various aspects of their influence on the behaviour *in vitro* of cells of three main types—fibroblasts, macrophages, and epithelia—have been put on record. In each case it has been possible to draw an instructive comparison between the action of the sulphonamide drugs and that of proflavine.

The method of direct application has been kept constantly in mind. For instance, a comparison of the drugs at equal or chemically equivalent concentrations alone would be misleading, for their *effective* toxicity depends largely upon solubility, and on other factors—such as the rate of transport from a site of local application—which themselves largely depend upon solubility. The basic cultivation media—adult chicken plasma or serum, in some cases with the addition of chick embryonic extract—are those which have come to be regarded as standard in cultivation work. None of the sulphonamide drugs affects the coagulation of plasma, and none is notably surface-active: Except with the highest concentrations of sulphanilamide, where a slight but significant osmotic effect must be

exerted, the interpretation of experimental results is not therefore complicated by secondary reactions of the reagents employed. Sulphonamide drugs prove, however, to be considerably more soluble in serum than in Tyrode's solution (see table, p. 153).

I. Action of Sulphonamide Drugs on Fibroblasts of a Cultivated Strain

Willmer (1933) and Willmer and Jacoby (1936) have described a technique for recording mitotic activity and cell-movement rate in fibroblast colonies which has given consistent results for some years under a wide variety of conditions. In principle it consists in photographing directly on 3-inch bromide paper film a sample of cells (100 to 400) from the peripheral part of a colony of fibroblasts growing in Carrel flasks to which a photographic glass base has been fitted. The photographs are taken automatically at six-minute intervals through specially designed inverted microscopes. Estimates of the percentage of cells in the photographic field undergoing mitosis per hour are made by a later detailed analysis of the films.

In the experiments to be described in this section single cultures from a strain of fibroblasts from the frontal bone of a 12-day-old chick embryo were planted into 30-mm. Carrel flasks containing a *coagulated phase*—in which the cells grow—of 0.2 ml. of an equal mixture of plasma and 20% embryo juice in Tyrode's solution, and a *supernatant fluid* of 1 ml. 20% embryo juice in Tyrode. "100% embryo juice" is the undiluted fluid removed by centrifugation from 8-day-old chick embryos crushed in a Latapie press. After twenty-four hours' cultivation at 38° C. a sufficient number of cells wander into the medium to make photography possible. Normal growth is recorded for approximately four hours. The supernatant fluid is then replaced by 1 ml. of a solution of the appropriate drug in a medium otherwise identical. The response of the cells to the drug is recorded for fourteen to eighteen hours, after which the supernatant fluid is again replaced by 1 ml. of 20% embryo juice in Tyrode. In short, it is possible over a stretch of twenty-seven to thirty hours to record normal growth, the action of the drug, and the nature of the recovery of the cells, if any takes place, from the action of the drug.†

In analysing the results the hourly fluctuation in mitotic rate is smoothed out by calculating the mean mitotic

* A report to the War Wounds Committee of the Medical Research Council.

† For the expenses of the research this author is indebted to the Research Committee of the University of Birmingham and to the Medical Research Council.

‡ For the maintenance of these cultures and other technical assistance, one of us (E. N. W.) is indebted to Mrs. Simon Reuss.

percentage over three-hour stretches, an adjustment which does not obscure major trends in the curve of growth. By this method the actions of sulphanilamide, sulphathiazole, and sulphapyridine have been tested at final concentrations in the culture flask corresponding to about 70% of that at which the drugs are saturated in Tyrode's solution at 38° C.* The results of these experiments, and others in which the drugs were applied at lower concentrations, are illustrated in Chart I (i, ii, iii). They may be summarized as follows:

Sulphanilamide at a final concentration of approximately 1:100 in the culture flask brings the division and migration of the cells to a standstill. Both are resumed within five hours after removal of the drug from a treatment lasting fourteen to eighteen hours (Chart I, iii, b). At a concentration of 1:1,000 sulphanilamide exerts no depressant action (Chart I, iii, a).

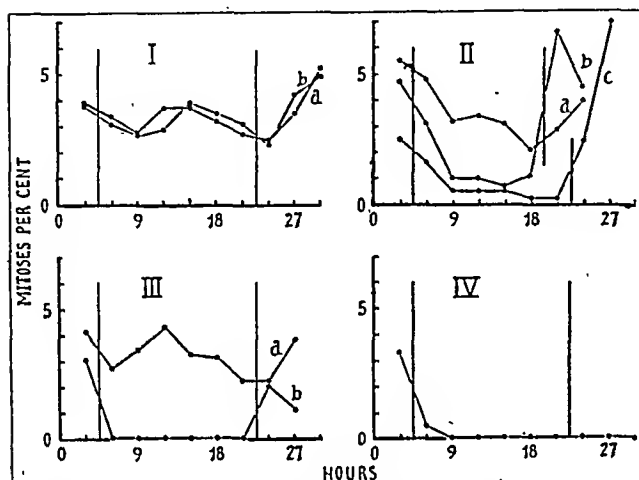


CHART I.—The action of sulphonamide drugs and proflavine on fibroblasts of a cultivated strain: the percentage of cells undergoing mitosis per hour, averaged over 3-hour periods (vertical axis), as a function of the time of incubation (horizontal axis). The vertical lines enclose the stretch over which the drugs were applied in solution in 20% embryo juice in Tyrode. The final concentration in the culture flasks corresponds to about 70% of the figures quoted. (i) a, b, Sulphapyridine 1:1,000. (ii) a, Sulphathiazole 1:10,000; b, 1:1,000; c, 7:700 approx. (iii) a, Sulphanilamide 1:1,000; b, more than 1:100. (iv) Proflavine 1:1,000,000.

Sulphathiazole differs from sulphanilamide in the wide range of concentration (1:10,000 upwards) over which it exerts an appreciable inhibitory effect; but even the 70% saturated solution fails to abolish mitosis completely (Chart I, ii, a, b, c). Recovery from fourteen to eighteen hours' subjection is rapid and complete, and shows a marked tendency towards compensatory overgrowth.

Sulphapyridine fails to affect mitosis or migration in 70% saturated solution (Chart I, i, a, b).

The order of increasing effective toxicity is therefore simply that of increasing solubility, although sulphathiazole appears to be the least favourable for growth at any assigned concentration. Only sulphanilamide could be expected to exert a clinically significant inhibitory action, but particular attention should be paid to the fact that recovery from its action under the conditions described here is rapid and complete. In marked contrast to these results are those from proflavine (Chart I, iv), which exerts a total and irreversible inhibitory effect, accompanied by disintegration of cells, at concentrations lower than 1:1,000,000.

* The solutions referred to in this section as "saturated" were prepared by prolonged incubation of an excess of the crystals in Tyrode (pH 7.85 at 38° C., followed by immediate Seitz filtration. The concentrations were found to be: sulphapyridine, 1:1,000 approx.; sulphathiazole, 1:700 approx.; sulphanilamide, more than 1:100.

II. Action of Sulphonamide Drugs on Freshly Explanted Fibroblasts

The preceding section records the action of sulphonamide drugs on tissues which have been grown for upwards of four passages (8 to 12 days) *in vitro*. It can be shown that during the course of cultivation the power of tissue fragments to resist the action of inhibitory substances rises sharply to a figure which eventually becomes constant and which is characteristic only of a particular "strain" of cells. Tests of an alternative type to those described in Section I can be devised which take advantage of the fact that *freshly explanted* tissues of a given source and embryonic age possess a characteristic power of resistance to growth inhibition. These tests consist in determining the concentration of a drug which is sufficient and necessary to suppress all outgrowth from a standard explant for 24 hours at 37° C. The method has been described by Medawar (1937, 1940). The standard explant is a fragment of the wall of the ventricle of a 10-day-old chick embryo heart, and the standard medium consists of 0.1 ml. of an equal mixture of cockerel plasma and a solution of the drug in Ringer's solution. Falling dilutions of the drug are prepared, at each level of which five or ten explants are incubated in separate cultivation chambers. After twenty-four hours it is easy to determine by inspection the concentration which is just high enough to inhibit all outgrowth. In the neighbourhood of this "threshold point" concentrations of the drug differing from each other by less than 10% are distinguishable.

After 48 hours' subjection to the action of the drug a further test can conveniently be applied. This consists in reculturing each explant, after washing for one hour in Ringer at room temperature, into a plasma and embryo-extraet medium. A later inspection of these subcultures then provides one type of estimate of the minimum lethal concentration of the reagent used, since it is possible to record what concentration of the drug, under the conditions described, the cultures can withstand for forty-eight hours without being "killed"—i.e., without undergoing changes irreversible by further cultivation in a normal medium. If the drug is comparatively non-toxic the cells are not killed by a concentration *higher* than that necessary to inhibit growth totally; a more toxic substance (e.g., proflavine) will, however, kill the cells at a concentration *lower* than that which allows a certain amount of growth to take place within the first twenty-four hours after explantation.

Results of test of these two types on four sulphonamide drugs may be summarized as follows:

Sulphanilamide.—The threshold point corresponds to just above half the concentration at which the drug is saturated in Ringer at 37° C. (1:150 approx.). Isolated cells which migrate from the explant at this concentration are smaller than normal and highly refringent. Recovery from forty-eight hours' subjection to this concentration is rapid and complete, but fresh explants are not able to withstand twenty-four hours' exposure at 37° C. to a saturated solution of the drug in the culture medium (1:60 approx.†). Osmotic effects as such probably play very little part in these reactions. Heart fibroblasts are capable of withstanding much higher osmotic pressures (e.g., that generated by 5% maltose) for much longer periods.

Sulphathiazole.—The threshold concentration proves to be approximately that at which the drug is saturated in the culture medium at 37° C. in the presence of excess crystals (1:500†). Recovery from forty-eight hours' subjection is rapid and complete. At concentrations as low as one-third of saturation strength cells which migrate into the culture medium during the

† These figures for solubility in 50% plasma are approximations based on the table of solubility in 40% serum which appears later (p. 152).

first day show no further progress between the twenty-fourth and the forty-eighth hour of cultivation.

Sulphapyridine (Plate, Fig. 7) and sulphadiazine permit the free migration of fibroblast cells among crystals lying in saturated solution in the culture medium at 37° C., and no reading can therefore be obtained by the method of thresholds. Cells at this concentration show minor abnormalities of a ooo-specific type—e.g., a tendency towards vacuolization—but are not abnormally refringent. Growth proceeds normally on recultivation. Sulphadiazine is slightly but not in a practical sense significantly more toxic than sulphapyridine.

These results on freshly explanted fibroblasts reinforce those of the previous section. They further suggest that neither sulphapyridine nor sulphadiazine when applied to wound surfaces need be expected to exert any depressant action on regenerative growth.

Proflavine in neutral solution in Ringer reaches threshold strength at a concentration of 1:120,000 ($\pm 5\%$), but recovery from forty-eight hours' subjection is only possible from an ill-defined concentration in the neighbourhood of 1:250,000. While they indicate that proflavine is a highly toxic substance, these figures are notably lower than those quoted in Sections I and III. The reason for this is probably that proflavine is powerfully adsorbed upon tissues—as it is, for instance, upon glass; so that the dose administered is as important as the concentration. The dose applied in the experiments described in Sections I and III is 1 γ , while the dose corresponding to the figure for minimum lethal concentration for forty-eight hours' treatment (1:250,000) is only 0.4 γ .

Rate of heart-beat in isolated fragments is profoundly stimulated by proflavine. The threshold for heart-beat inhibition and growth or cell-movement inhibition are strikingly different, for 10-day chick-heart explants are just capable of beating for forty-eight hours in a 1:10,000 solution of proflavine—i.e., in a concentration ten times greater than that representing threshold level for growth inhibition.

III. Action on Macrophages

A study of the action of sulphonamide drugs on macrophages is of particular value in a number of ways. The macrophages are themselves intimately concerned in the process of wound healing. The cells to be studied are taken from an adult organism. In culture, embryo extract and a plasma coagulum can be dispensed with: macrophages thrive and multiply actively in dilute serum. Conditions are thus more closely akin to those *in vivo* than is generally the case with tissue culture. Here as elsewhere, however, the conditions under which the cells are tested *in vitro* are more severe than they are in clinical application.

Pure cultures of macrophages prepared by Baker's (1933) technique from adult hen blood form a unicellular layer of isolated individuals clinging to the bottom of the ordinary D-type Carrel flask. These blood macrophages or "monocytes" are morphologically and functionally indistinguishable *in vitro* from the so-called tissue macrophages (Carrel and Ebeling, 1926; Jacoby, 1938). Attached to the flask they can be kept alive and multiplying for months under repeated feeding with 1 ml. of 20 to 40% blood serum in Tyrode per flask. Cultures were used for experiments after not more than eight days' cultivation in this basic medium.

In some preliminary experiments the cells were treated for seven days with somewhat dilute solutions of the appropriate drug mixed with serum. The range of concentrations used was: sulphanilamide 1:1,500–1:5,600, sulphathiazole 1:1,600–1:5,600, sulphapyridine 1:2,700–1:9,200. The experimental medium was replaced once, on the third of the seven days of treatment. Under these con-

ditions the macrophages remained outstandingly healthy, showing a range of variation in morphological appearance not distinguishable from that of control cultures.

Detailed quantitative records of mitotic activity, accompanied by morphological studies, were then made by serial photography according to the technique described in Section I. In normal cultures (Jacoby, 1937a) feeding with serum in Tyrode brings about, after a latent period lasting from twenty to twenty-four hours, a major wave of mitotic activity reaching a peak between the thirtieth and the fortieth hour. Less regularly, the major wave is followed by a minor wave with a peak between the fiftieth and the sixtieth hour, after which the cells gradually return to quiescence. The whole period represents a single growth cycle, the end of which is taken as zero time. At zero time the drugs dissolved in 40% serum were applied and left in contact

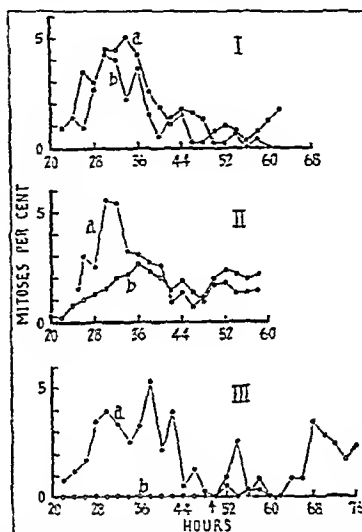


CHART II.—The action of sulphonamide drugs on adult hen-blood macrophages: the percentage of cells undergoing mitosis per hour, averaged over 2-hour periods (vertical axis), as a function of the time of incubation (horizontal axis). Except in iii b, where the arrow indicates the time at which the drug solution was replaced by normal feeding fluid, the drugs dissolved in 40% serum were in contact with the cultures throughout the period recorded. The normal latent period of about 20 hours is not included in the graphs.

- (i) a. Sulphapyridine 1:3,400; b. sat. sol. (1:800 approx.).
(ii) a. Sulphathiazole 1:2,300; b. average curve of 1:1,000 and sat. sol. (1:500 approx.).
(iii) a. Sulphanilamide 1:2,300; b. 1:500.

with the cells for a whole growth cycle—except where strong inhibition was obvious, in which case the experimental fluid was replaced by fresh dilute serum after forty-eight hours or sooner (Chart II, iii, b). Serial photography was started towards the end of the normal latent period and carried on for the next forty to fifty hours so as to cover the main phase of the growth cycle. The percentage mitoses per hour were determined and plotted as the average of two-hour periods.

At the lower range of concentrations referred to above, analysis by this method (Chart II, i, ii, iii, a) did not reveal any depressant effect on mitosis; and phagocytosis of disintegrating by normal cells—a process already known from normal cultures (Jacoby, 1937b)—was repeatedly observed. These a curves can thus be conveniently used to illustrate normal growth under serum feeding.

It was then found that the drugs were considerably more soluble in serum than in Tyrode (see table), and

use was made of this fact by *directly* dissolving weighed quantities of the drugs in 40% serum at 39° C. for twenty-four hours. Concentrations were thus reached which

Table showing Solubility of Sulphonamide Drugs in 40% Hen Serum and in Tyrode's Solution. Figures are mg. per 100 c.c.m.

	Sulphanilamide	Sulphathiazole	Sulphapyridine
40% serum at 39° C. ..	1,600	200	125
Tyrode at 39° C.	1,380	85	50

should be similar to those in wounds to which the powdered drugs are applied. At this higher range of concentrations (Chart II, i, ii, iii, b) certain interesting distinctions appeared, which may be summarized as follows:

Sulphapyridine.—The saturated solution in 40% serum (1:800 approx.) had almost no inhibitory effect within the growth cycle recorded (Chart II, i, b). The cells remain normal in appearance and in phagocytic activity; they move and divide in the neighbourhood of crystals.

Sulphathiazole.—At 1:1,000 or 1:500 (saturated solution) in 40% serum (Chart II, ii, b) the size of the major mitotic wave is somewhat reduced, although mitosis still remains vigorous. Certain morphological changes, however, persist during the entire period of application, and indicate a toxic effect of the drug: the cells round off as spheres or disks and become filled with a fair number of fat granules, while amoeboid movement is largely suppressed (Plate, Fig. 1). Within one or two days of replacing the experimental medium with fresh serum, normal morphology and growth are restored (Fig. 2).

Sulphanilamide saturated in 40% serum (1:60 approx.) and also at 1:100 causes disintegration and death of the cells. From a twenty-four-hours' application there was no recovery on feeding with fresh serum. These results do not exactly agree with those from fibroblasts reported in Section I; but differences in cultural conditions, in the size and distribution of the cell popula-

replacing the drug medium with fresh serum, normal growth is restored (Chart II, iii, b). In 1:1,000 similar gross inhibition was sometimes seen, while in other instances there was merely a prolongation of the normal latent period of twenty to twenty-four hours to thirty-six hours or more. This was followed by a marked mitotic response, during the course of which the morphological appearance of the cells, initially similar to that in higher concentrations of sulphathiazole, underwent a *spontaneous recovery* while still under the influence of the drug. Only a certain accumulation of fat granules persisted in the cells (Fig. 3). Again, recovery was quick and complete on feeding with fresh serum (Fig. 5). Phagocytosis was not observed in sulphanilamide cultures at a concentration of 1:500 or higher.

These results indicate that the relative toxicity of the three sulphonamides is the same for macrophages as for fibroblasts. A fact of particular interest is that while at equal concentrations sulphanilamide inhibits the division of macrophages much more strongly than sulphathiazole, the

latter produces more pronounced and persistent morphological changes indicative of impaired cellular vitality. In so far as the comparatively small number of these lengthy experiments makes possible, the results are summarized in Chart III, in which the amount of growth between the twenty-third and forty-eighth hours, expressed as the sum of the hourly percentages of mitosis, is plotted against the concentration of the drugs.

Proflavine was also tested on these macrophages. In a final concentration as low as 1:1,000,000 in 30% serum applied for twenty hours it caused complete disintegration of the cultures.

IV. Action on Epithelia

The growth of epithelia *in vitro*, while it may be prolonged and abundant, is much less regular and predictable than that of mesenchyme cells, and no satisfactory method for the quantitative analysis of their growth has yet been devised. The surface of the plasma coagulum is used, following the prescription of Ebeling (1924), and in the case of fibrinolytic epithelia it is desirable to wet the surface of the hardened coagulum with a saline solution of the drug at the appropriate concentration. This is done by applying the solution with a pipette over the whole surface of the clot and then removing it so far as is possible. The test tissues used were 10-day chick-embryo intestine and lung and late rat-embryo kidney. The results for the four drugs considered in Section II may be summarized as follows. Inhibition to fibroblasts and epithelia from a common source proceeds *pari passu*, and there is no indication of differential toxicity favouring one type or the other. Either epithelial sheets and fibroblasts grow together or neither grow. The concentrations at which lung and intestinal epithelia from the 10-day-old chick are just able to grow for twenty-four to forty-eight hours *in vitro* are not closely defined, but they may be reasonably approximated to the figures already quoted as threshold concentrations for the inhibition of 10-day chick-heart fibroblasts (1:150 and 1:500 approx. for sulphanilamide and sulphathiazole

LEGENDS FOR THE SPECIAL PLATE

FIGS. 1-5.—Illustrating the action of sulphathiazole and sulphanilamide solutions on cultures of adult hen-blood macrophages. $\times 165$.

FIG. 1.—Three days after the application of 1:1,000 sulphathiazole in 40% serum. Rounding off of the cells with fat accumulation.

FIG. 2.—The same culture: complete recovery following the replacement of the drug solution by fresh serum.

FIG. 3.—Three days after the application of 1:1,000 sulphanilamide in 40% serum. A partial recovery has taken place spontaneously, but a certain amount of fat remains.

FIG. 4.—Twenty hours after the application of 1:500 sulphanilamide in 40% serum. Inhibition is evident: the cells are small and shrunken.

FIG. 5.—The culture illustrated in Fig. 3, showing complete recovery from the action of 1:1,000 sulphanilamide for 3 days when the drug solution is removed and replaced by fresh serum.

FIG. 6.—Multilayered sheet of mixed epithelium and mesenchyme from the lung of the embryonic chick. The epithelial sheet has completely invested a collection of crystals of sulphadiazine lying in saturated solution in the culture medium at 37° C. Note the tendency of the epithelium to use the solid structure provided by the crystals as a support. $\times 120$.

FIG. 7.—Chick-heart fibroblasts from a fresh explant threading their way through crystals of sulphapyridine lying in saturated solution in the culture medium at 37° C. Cells are normal in size, amoeboid activity, and refringence, but show a slight tendency towards vacuolization. $\times 120$.

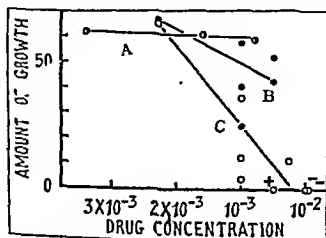


CHART III.—A summary of experiments described in Section III: the amount of growth between the 23rd and 48th hour, expressed as the sum of hourly percentages of mitosis (vertical axis), as a function of drug concentration (horizontal axis).

+ = Recovery in fresh serum; — = No recovery in fresh serum.

A = sulphapyridine; B = sulphathiazole; C = sulphanilamide.

tions, and perhaps chiefly in the duration of drug treatment may account for this discrepancy.

In concentrations of 1:250 and 1:500 cell activity, particularly multiplication, is almost completely suppressed (Fig. 4), but on

G. GREGORY KAYNE: EARLY BRONCHOGENIC TUBERCULOSIS

(For legends see text)



FIG. 1



FIG. 2



FIG. 3



FIG. 4



FIG. 5



FIG. 6

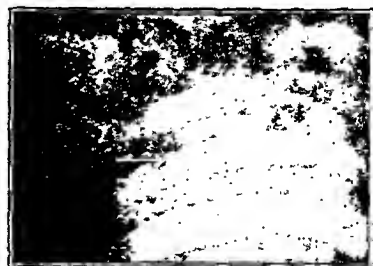


FIG. 7



FIG. 8

F. JACOBY, P. B. MEDAWAR, and E. N. WILLMER: TOXICITY OF SULPHONAMIDE DRUGS TO CELLS IN VITRO
(For legends see text)



FIG. 1



FIG. 2

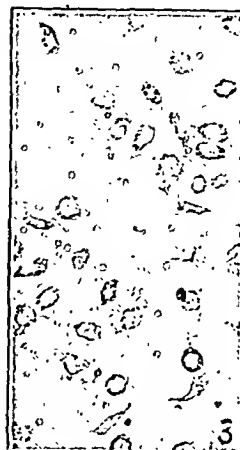


FIG. 3

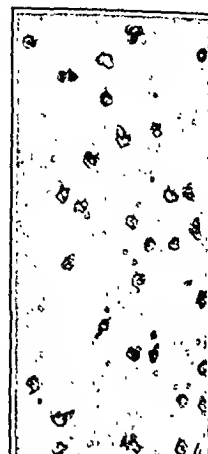


FIG. 4



FIG. 5

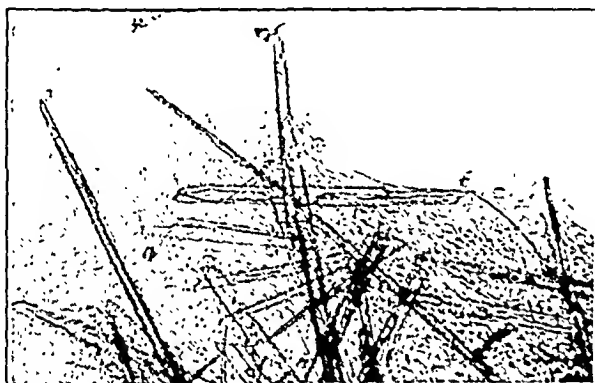


FIG. 6

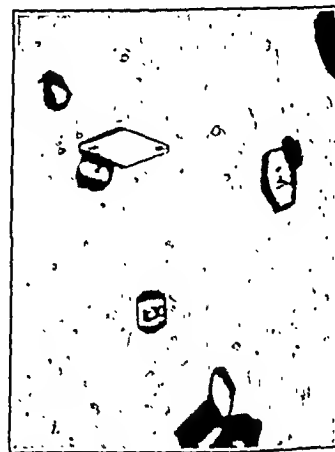


FIG. 7

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FIG. 9



FIG. 11

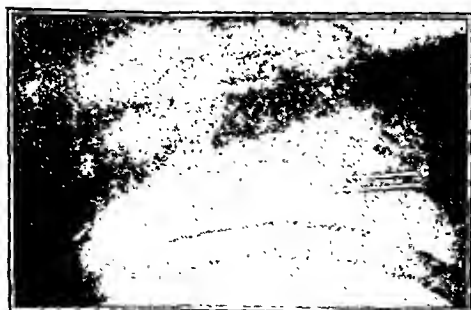


FIG. 10



FIG. 12

respectively). Epithelial sheets which occasionally spread in higher concentrations of sulphanilamide rapidly undergo maceration into separate cells.

A striking feature of these experiments is the ease with which epithelial sheets grow among and invest crystals of sulphapyridine and sulphadiazine lying in saturated solution in the culture medium. Needles of recrystallized sulphadiazine, for instance, act as a support for the growing cells; they tend to become completely invested by an epithelial sheet, forming a tent for which the crystal acts as tent-pole (Fig. 6). In short, it is in the highest degree unlikely that under the less stringent conditions of application *in vivo* either of these drugs could retard the new growth of epithelia over a raw surface.

Proflavine likewise shows no power of differential inhibition. The concentration which just permits the spread of epithelia from the intestine of the 10-day-old chick lies between 1:100,000 and 1:120,000.

Discussion

At the present time no method of analysing the general toxicity of drugs to living cells has been devised which combines the accurately controlled and detailed observations of tissue culture with conditions directly comparable to those under which the drugs are applied clinically. Owing to the absence of a circulatory system and of the detoxicating mechanisms of the organism as a whole, tissue culture tests are more stringent than clinical ones—a fact partly counterbalanced by the greater resistance of embryonic tissues to inhibition of their growth. This reservation can hardly apply, however, to the experiments on "adult" cells described in Section III.

The experiments described above, independently performed on a variety of cell types, are consistent among themselves in the sense that they rank the drugs considered in the same order of effective toxicity, while the order of magnitude of the significantly inhibitory concentration is found to be the same throughout. The results are in accord with somewhat less detailed observations by Wolff and Julius (1939) on sulphanilamide. Comparison of the drugs at equal concentrations shows sulphathiazole to be the least favourable, in view of the wide range of concentration over which it is appreciably inhibitory and of its pronounced effect on the morphological appearance of macrophages; but the effective toxicity—under the conditions of direct application which were envisaged in these experiments—is determined by relative solubility, and falls into the decreasing order: sulphanilamide \rightarrow sulphathiazole \rightarrow sulphapyridine and sulphadiazine. Studies on red or white blood cells by Fleming (1938), Osgood (1938), and Bullowa *et al.* (1940) tend towards the view that sulphanilamide is feebly toxic in high concentrations, while sulphapyridine is completely non-toxic. The action of various drugs on brain tissue has been recorded by Russell and Falconer (1940a, 1940b): powdered sulphanilamide and sulphapyridine produce no specific reaction, while 0.1% proflavine at pH 6.2 is hardly more harmful than neutral saline. The second of these observations contrasts sharply with the toxicity of proflavine as determined by tissue culture tests. Proflavine appears in these as a highly toxic substance, the order of magnitude of the significantly inhibitory concentration being 10^{-5} or 10^{-6} .

The experiments described above give one no ground for believing that the sulphonamide drugs accelerate growth, though such an action might be brought about indirectly by suppressing the inhibitory action of infective organisms (Levaditi *et al.*, 1940). They do not exclude the possibility that sulphanilamide and sulphathiazole in particular may exert an inhibitory effect on wound healing, however

transient (as Briker and Graham, 1939; Jeffrey, 1940; Veal and Klepser, 1941, have found for sulphanilamide). Colebrook and Francis (1941) do not, however, find that sulphanilamide exerts an appreciable inhibitory effect when dusted on to superficial wounds, and Taffel and Harvey (1940) have not been able to confirm the observations of Briker and Graham. The most striking feature of the tissue-culture studies described above is the remarkably feeble inhibitory action upon tissue cells of all the sulphonamide drugs considered. There is a *profoundly significant difference* between the thresholds for bacterial and cellular inhibition in all three cases. In short, the evidence from tissue cultivation is that in choosing between one sulphonamide drug and another for direct application to wounds their relative effects on tissues can be disregarded in favour of their relative specific bactericidal powers.

Summary

The treatment of infected wounds by direct chemotherapy with sulphonamide powders justifies a detailed analysis of the action of these drugs on living cells.

The effects of sulphanilamide, sulphathiazole, sulphapyridine, and (in some tests) sulphadiazine on fibroblasts, macrophages, and epithelia have accordingly been tested by a number of different cultivation techniques.

The drugs were applied in concentrations ranging from saturation strength downwards, and for periods lying between fourteen hours and three days.

Compared at equal concentrations, sulphathiazole is the most toxic of these drugs.

The effective toxicity under the conditions of clinical application is, however, determined by the relative solubility of the drugs, and falls into the decreasing order: sulphanilamide \rightarrow sulphathiazole \rightarrow sulphapyridine and sulphadiazine.

The growth inhibition and unfavorable morphological effects produced by the highest concentrations of sulphathiazole are followed by complete recovery on removal of the drug. Cells are not capable of withstanding prolonged subjection to the highest concentrations of sulphanilamide, but recovery readily takes place from concentrations of 1:150 downwards. Neither sulphapyridine nor sulphadiazine inhibits significantly in saturated solution at body temperature.

The feeble inhibitory action of the sulphonamide drugs is favourably contrasted with that of proflavine.

Attention is called to the profound difference between bacteriologically effective concentrations and those which are appreciably toxic to cells.

It is therefore suggested that in the choice of sulphonamide powders for direct application to wounds their relative specific bactericidal power should outweigh other considerations.

We wish to thank Colonel L. Colebrook, Dr. F. H. K. Green, and Dr. F. Hawking for their helpful advice and criticisms.

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ORIGIN, DIAGNOSIS, AND MANAGEMENT OF EARLY BRONCHOGENIC TUBERCULOSIS

BY

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(WITH SPECIAL PLATE)

There is scarcely a report by a medical officer of health, tuberculosis officer, or sanatorium superintendent that does not refer to the advanced stage of the disease in which those suffering from pulmonary tuberculosis first come for treatment under the tuberculosis scheme. The cry is, "If only we could get the cases early!" The emphasis laid on this plea implies that if people were seen early in the development of the disease transmission of infection to others would be avoided and the disease would be made to heal in all patients. It is not surprising, therefore, that some advocates of mass radiological examinations see in them the key to the control of tuberculosis. This should not, however, be taken for granted, because up to the present relatively few such early cases have been detected, treated, and followed up: indeed, no clear-cut conception of what constitutes an early case is being taught.

Definitions

The term "pulmonary tuberculosis" itself requires clarification. It usually refers to the disease commonly seen in adolescents and adults, characterized by gradual destruction of the lungs as a result of the intrabronchial spread of massive doses of bacilli following cavitation of a tuberculous focus. But other active tuberculous lesions are common in the human lung—those of the primary infection and of the dissemination that follows it. It would be well, therefore, to use the term "pulmonary tuberculosis" as implying any active lesion in the lung belonging to any phase in the evolution of tuberculosis, and to restrict the use of another term—that of "bronchogenic tuberculosis"—to the common type of bronchogenic disease.

In discussing the early stage of bronchogenic tuberculosis mention must be made of those lesions in the lung which occur during the phase of dissemination in the evolution of tuberculosis (Kayne, Pagel, and O'Shaughnessy, 1939) (of which chronic miliary tuberculosis is but one clinical type), for such haematogenous cases may simulate bronchogenic tuberculosis when the lesions cavitate (Case 1). These thin-walled "punched" cavities have, however, little caseous matter in their walls and probably only rarely lead to intrabronchial transmission of bacilli. The common

beginning of bronchogenic tuberculosis is a single focus, usually in the upper part of the lung, which enlarges, liquefies, and cavitates, when secondary foci develop as a result of intrabronchial transmission (this process has been accurately reproduced in animals). Since the disease takes on its grave aspect with liquefaction and cavitation of the first focus, early bronchogenic tuberculosis must be defined as the earliest recognizable caseous focus which has not yet opened into a bronchus. Such a focus does not give rise to abnormal physical signs, is often associated with no symptoms, either local or constitutional, and may even present no evidence of toxæmia as shown by a raised sedimentation rate or altered blood picture. But it can be detected in a radiograph of good quality when it is less than a quarter of an inch in diameter unless the focus is entirely hidden by the shadow of a bony structure. It may appear as a uniform cloudy haziness or as a group of nodules, some of which coalesce. To summarize, early bronchogenic tuberculosis is the smallest radiologically detectable focus with potentialities for liquefaction.

A small shadow in the upper part of the lung field may be caused by other tuberculous lesions (active or healed). Thus the pulmonary focus of an active primary infection may sometimes be seen as a distinct shadow in the lung field. Nowadays the primary infection occurs often during adolescence and not very rarely even in adults, but, as in children, enlargement of at least the corresponding hilar shadow is then seen—a change not met with in the early lesion of bronchogenic tuberculosis. Again, the pulmonary foci of dissemination associated with and following the primary infection may resolve completely, or may leave behind a few tiny nodules scattered throughout the lungs, or a group of rather bigger nodules at the apices (Simon foci), or one or more larger foci a quarter of an inch or more in diameter. The latter foci usually consist of a caseous centre with fibrotic capsule,

and have been termed "round foci." Finally, quite sizable lesions of bronchogenic tuberculosis may develop and heal unsuspected, so that one is presented with a single residual non-active focus which may be mistaken for a first or early focus of bronchogenic tuberculosis.

Origin of Bronchogenic Tuberculosis

The early lesion of bronchogenic tuberculosis occurs in an individual who has already overcome his primary infection, though the interval between the onset of the first infection and the lesion of bronchogenic tuberculosis may be as short as a few months (Case 2). There are several possible theories of the origin of the early lesion, since it is known that bacilli may remain alive in an apparently healed primary pulmonary focus (rarely), a primary glandular focus (more commonly), and in foci of dissemination (quite commonly). As a result of lowering of resistance or fol-

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FIG. 1.—Case 1 (May 31, 1939). Coarse miliary mottling in upper half of each lung.

FIG. 2.—Case 1 (June 11, 1940). In addition there is now a thin-walled irregular cavity in right upper zone.

FIGS. 3 and 4.—Case 2. Showing progression towards bilateral cavernous bronchogenic tuberculosis (films taken in August, 1939, and November, 1940).

FIG. 5.—Case 3. Round focus with calcified shell in left infraclavicular region.

FIG. 6.—Case 4. Primary calcified complex on left side (not reproduced) and roundish lesion in right mid-zone.

FIG. 7.—Case 5 (March 13, 1940). Faint circular shadow on right in fourth posterior interspace, and "filling" of right costo-phrenic angle (not reproduced).

FIG. 8.—Case 5 (November 4, 1940). Showing definite extension of shadow upwards and outwards.

FIG. 9.—Case 7. Roundish focus in left infraclavicular region with two tiny calcifications (marked C).

FIG. 10.—Case 7. Showing definite increase in size of shadow, six months later.

FIG. 11.—Case 9 (January, 1940). Calcified foci on both sides, with pleural thickening at left base (right upper zone only reproduced).

FIG. 12.—Case 9 (December, 1940). Showing a faint but definite shadow around a group of small calcified foci on right side.

* The views expressed in this paper are those of the author, and do not necessarily represent those of the Middlesex County Council.

following a contiguous non-tuberculous process, exacerbation might occur in any of these foci, which could themselves liquefy and cavitate, or, if the exacerbation occurs in the neighbourhood of a small bronchus, the discharge of a large number of bacilli into another part of the lung might give rise to a fresh focus, which would cavitate in due course. Neither of these alternatives seems to happen in the case of the primary pulmonary lesion, but both have been shown conclusively to occur in connexion with the remains of haematogenous disseminations. The apical remains (Simon foci) exacerbate and give rise to infiltrations lower in the lung, which may liquefy and cavitate; and "round foci" exacerbate and themselves cavitate. Another possibility is a new focus that develops as the result of a fresh exogenous infection. No pathological confirmation of this is available, but epidemiological and clinical evidence points strongly to its occurrence. Presumably a focus develops when massive and repeated doses of bacilli are inhaled. The lesion probably regresses spontaneously unless at the same time resistance has been lowered, when the lesion tends to progress to bronchogenic tuberculosis. Yet another possibility for which supporting evidence is scarce is superinfection. The mechanism would then be as follows. The introduction of a fresh massive dose would not itself give rise to a new focus in the lung, but the destruction of the bacilli so introduced would release toxins which could cause exacerbation of healed primary or disseminated foci.

To summarize, it may be stated with some assurance that the two common mechanisms from which arises the early lesion of bronchogenic tuberculosis are exacerbation of residual foci of dissemination and fresh exogenous reinfection with massive doses in people with lowered resistance, but the relative frequency of these two mechanisms cannot be established at present. A third, uncommon, origin is a bronchogenic sequel to a progressive chronic dissemination in the lungs.

Detection of Early Bronchogenic Tuberculosis

It is again stressed that early bronchogenic tuberculosis can be detected only by radiological examination. Evidence for this will be found in the work of Braeuning in Stettin and of Malmros and Hedvall in Lund, both of whom published monographs in 1938 on their findings in students, nurses, and hospital personnel. Braeuning reported on 86 people who presented an abnormal radiological picture within one year or less of having given a normal radiograph; primary infection as a cause of the abnormal shadows seen in the later radiographs could be excluded with reasonable certainty. In no fewer than 50 of the 86 persons no symptoms whatever could be elicited. In 10 of the 86 the interval between a clear radiograph and the development of a focus was not more than three months, so that the question of symptoms could be examined with special care; in no fewer than 6 there were no symptoms whatever. Similarly, in the majority of 43 students and nurses who were tuberculin-positive and gave an abnormal radiograph after an interval following a normal one, Malmros and Hedvall found that the onset of the radiological shadow was not accompanied by symptoms.

It is clear that early bronchogenic tuberculosis will not be detected if one waits until the individual consults his doctor, that it can only be discovered by mass radiological examination of the apparently healthy, and that the most fruitful results will be obtained in those exposed to massive infection or conditions lowering general resistance, such as home and work contacts, medical students, nurses, industrial employees, etc. The method to be used requires careful consideration. If such examinations are merely for the purpose of detecting well-developed bronchogenic tuberculosis in people who delay consulting a doctor or in whom

the doctor fails to recognize this possibility, then any method will do, including miniature radiography and screening. If, however, the mass examination is intended to detect the early focus of bronchogenic tuberculosis, then two conditions are essential—a good radiograph, and repetition of the examination every six months or so: for it is most desirable to have a normal film to compare with, and too long a delay between examinations may allow cavitation to occur before the recently developed focus had been detected.

Diagnosis of Early Bronchogenic Tuberculosis

The recognition of a radiological shadow as one of early bronchogenic tuberculosis is easier if a radiograph and a tuberculin-test result, dating no further back than a few months, are available. When a previous film is not available the shadow must be differentiated from a primary pulmonary focus. Simon foci, round foci of dissemination (Cases 3 and 4), and the healed residua of previously unsuspected bronchogenic tuberculosis. It has been shown that the focus of early bronchogenic tuberculosis is found as often above the clavicle as below it, and that it appears as a group of small foci or a shadow with denser nodules in it as often as in the form of a homogeneous cotton-wool shadow. In the light of recent work the distinction (stressed by the late Fishberg, for instance) between a very benign apical tuberculosis and an acute progressive infracavicular *Frühinfiltrat*, or "early infiltration" (as worked out by Assmann and Redeker), is no longer tenable. In practice what needs to be decided is whether the radiological shadow represents an active lesion. It has already been stated that there may be total absence of symptoms. There may be slight pyrexia; but Braeuning found that in 24 of 43 patients, in whom axillary temperature was recorded several times a day, no pyrexia could be detected. Similarly, in 42 of 75 patients in whom the sedimentation rate was noted the figure was normal, and this series included some patients with early lesions which rapidly cavitated. Again, 7 of 48 patients with definitely active lesions showed a perfectly normal blood picture. Only in a few of his patients were all these three investigations carried out, but in 3 of them they were normal. Similarly, Malmros and Hedvall conclude from their findings in 43 students and nurses that whether the focus begins as a group of small nodules or as a so-called "early infiltration" the sedimentation rate is generally not raised. It appears, therefore, that help in deciding whether the lesion is active or not must often be obtained by noting changes in the radiological shadow after an interval (Cases 5, 6, and 7).

A month seems a suitable interval, since this would generally allow enough time to produce a radiological change, and would as a rule, but only as a rule, not be long enough to allow gross harmful changes to develop, unless the case is already one of those which deteriorate rapidly even under treatment.

As will be shown later, another film after a short interval is also of great help in the management of the case. But if one is to rely on these slight radiological changes the standard technique of the films must be good and uniform, and changes that might be caused by technical differences must be carefully appraised.

Prognosis and Management

An attempt must next be made to estimate the outlook for the lesion. Serial radiographs will have already given some indication of its rate of progression. It will be of immense value to know whether the lesion developed as

a result of lowered resistance and exacerbation of old foci or as a new exogenous infection from massive contact with or without lowering of resistance. When only massive contact is a factor, interruption of this may be sufficient to allow natural regression of the lesion* (Case 8). If lowering of resistance is a factor, then clearly this will not be enough, and measures to increase this resistance, either in the home or in a sanatorium, will need to be taken. It may be very difficult or even impossible to find the incriminating factor or factors, but careful history-taking and investigation of the patients' environment should discover this with reasonable sureness in an important proportion of cases.

The first steps in the management of the individual patient are therefore serial films and investigation of aetiological factors. If the lesion is only doubtfully progressive, or is probably due to massive contact alone which can be interrupted, then it may be justifiable to allow the patient to carry on with his work, more rest in leisure hours being suggested, and monthly investigations with radiographs, sedimentation rates, etc., being continued. If the lesion is definitely progressive, and the factor of lowered resistance cannot be excluded, more is indicated. Before advising institutional treatment, measures short of this must be considered, because reluctance to give up work and leave home for several months is likely to be very great when the patient feels there is nothing the matter with him. When ceasing work is likely to be followed by the necessary restful conditions, good food, and discipline in the home or with relatives, then this home treatment might be tried in the slowly progressive case, provided monthly radiographs and other investigations are practicable. Failing this a stay in an institution is essential.

A digression on tubercle bacilli in the sputum is here necessary. The definition of early bronchogenic tuberculosis excludes radiologically detectable cavitation, but even a tiny focus, if situated in the neighbourhood of a small bronchus, would produce a slight amount of bacilli in any sputum expectorated, even if cavitation had not occurred, and therefore the presence of bacilli in the sputum does not necessarily remove the case from the group of early bronchogenic tuberculosis. On the other hand, the outlook for such a patient is worse, because extension to other parts of the lung is already possible. It may be that even among people with early foci who produce no sputum, bacilli would be grown from the gastric contents of some or many; this requires further investigation. In the American classification of pulmonary tuberculosis "minimal lesions" are defined as: "(a) slight infiltration without demonstrable excavation; (b) a small part of one or both lungs—total volume of involvement, regardless of distribution, shall not exceed the equivalent of the volume of lung tissue which lies above the second chondrosternal junction and the spine of the fourth or body of the fifth thoracic vertebra on one side"; tubercle bacilli may be present or absent. The official classification in this country is so antiquated that it still relies on physical signs and does not appear to recognize the existence of radiography: discussion of it is therefore futile. The presence or absence of tubercle bacilli in association with the early lesion will clearly affect the management of the patient. Thus, to begin with, their presence will indicate institutional treatment in every case.

Institutional treatment may consist of sanatorium regime alone, rest in bed, or rest in bed combined with collapse therapy; bed rest, continued until the lesion is quiescent, should be considered a *sine qua non* of properly conducted collapse therapy. Whatever benefits may be claimed for sanatorium regime alone, this is not justified in the cases discussed here, because it is so vital that the institutional stay of these patients, most of whom feel more or less well and are reluctant to give up work and most anxious to return to it, should be as short as is compatible with

safety. When there is no sputum, or no tubercle bacilli can be detected in the sputum (culture being of course employed), strict rest in bed, continued until there is evidence of quiescence as demonstrated by serial radiographs, sedimentation tests, and blood examinations, is sufficient unless the lesion shows signs of progression. If progression is evident at the end of a month's bed rest, or if there is no definite evidence of regression at the end of, say, two months, then continued bed rest alone is not justified. And to these patients, as well as to those whose sputum is positive, collapse therapy should be applied without delay. There is plenty of authoritative opinion to support this conclusion. Thus the following among American workers may be quoted: O'Brien (1933), Myers and Levine (1935), and John Alexander (1937). O'Brien favours phrenic interruption, permanent or temporary, according to the case. Turner and Collins (1936) show that artificial pneumothorax in these minimal cases is associated with very slight operative risk, that the percentage of cases with a free pleural space and therefore with an effective collapse is very high, and that the results are distinctly worse when the induction of a pneumothorax is delayed even by a few weeks. The general application of pneumothorax therapy for early bronchogenic tuberculosis does imply, however, that the treatment will be carried out both in institution and in clinic by experienced practitioners, or at least under their close supervision, and, if at all possible, by one physician throughout—the one who induced the pneumothorax.

Advice in regard to the treatment of early bronchogenic tuberculosis may thus be summarized: Get on with it at the beginning of the treatment, for as often as not it is the patient and not the physician who decides when it will end.

Mass Radiological Examinations

Unless the early cases of bronchogenic tuberculosis are properly managed and treated, little benefit will accrue from mass radiological examination: 15% of Braeuning's patients were sputum-positive within one year of a normal radiograph; 41% became sputum-positive within a short time of detection. A cavity was visible after a normal radiograph in 1 case within a month, in 7 within six months, and in 15 within a year. (Hence the importance of repeated radiographic examination at intervals of less than a year if infection from open cases to others is to be prevented.) Death took place from the time of a normal radiograph in 1 case within a month, and in 2 within four months. In most cases, however, the development of the disease was slow at first.

From this it appears that while mass radiological examination will be of distinct benefit to individuals and will result in decreasing infection to others, as a method of eradicating tuberculosis it is likely to play a truly effective part only under the following conditions:

1. That the examinations will be carried out extensively.
2. That the method of radiological examination used will be the best available—that is, radiographs will be taken with a satisfactory technique.
3. That re-examinations will be carried out at no longer interval than six months or so.
4. That full facilities will be available for detailed investigation and observation of all cases with an abnormal or suspicious radiograph.
5. That all persons shown by this means to be suffering from early bronchogenic tuberculosis will have proper and adequate institutional treatment.
6. That such treatment will not interfere with the return of the patient to his work and with the economic security of the family during the absence of the breadwinner, housewife, or mother.

To secure these conditions in full would probably necessitate economic and social changes in our community that

* Persistent massive contact in such a case might be harmful not only by influencing this lesion but by giving rise to a fresh lesion which would progress if resistance were subsequently lowered.

would themselves do more than mass radiological examinations to reduce the incidence of tuberculosis.

Case Reports

Case 1.—A girl aged 8. Mother suffers from advanced bronchogenic tuberculosis. Tuberculin-positive; no symptoms; radiograph on May 31, 1939 (Special Plate, Fig. 1), showed coarse milky mottling in upper half of each lung. Child not seen again till June 11, 1940, when she was stated to be well and bad put on 10 lb. There was tiredness, however, and a radiograph (Fig. 2) showed in addition to the milky mottling a thin-walled irregular cavity in the right upper zone, presumably due to coalescence and liquefaction of some of the larger foci.

Case 2.—A lad aged 16. Seen in a hospital in February, 1939; for unexplained fever: a radiograph on February 15 showed no abnormality, but one taken a week later revealed an opacity to right of superior mediastinum, and the tuberculin test was positive. Diagnosis: primary tuberculous infection with involvement of mediastinal glands. April 12: lymphocytic left pleural effusion; mediastinal shadow smaller. April 25 to June 7: in sanatorium. Radiograph on August 16 (Fig. 3) still showed enlargement of right paratracheal glands and remains of pleurisy at left base. Radiographs November 15 and January 31, 1940, revealed fresh foci at top of left apex, apparently unchanged in this interval, there being no symptoms, and sedimentation rate (S.R.)—Westergren 1 hour—remaining normal. Radiograph July 31 (Fig. 4) showed bilateral bronchogenic tuberculosis with cavitation. (Interval between onset of primary infection and fully developed bilateral cavernous bronchogenic tuberculosis thus not longer than seventeen months.)

Case 3.—A man aged 32, referred by recruiting medical board. Mother suffers from advanced bronchogenic tuberculosis. No symptoms; radiograph October 15, 1940 (Fig. 5), showed round focus with calcified shell in left infraclavicular region; S.R. normal. Radiographs one month and three months later showed no change in appearances of this focus. (Diagnosis: "round focus" of dissemination; calcifying or partly calcified primary focus excluded, as no calcification seen in corresponding hilar glands.)

Case 4.—A girl aged 11. Father died of bronchogenic tuberculosis six years ago; now in contact with brother suffering from advanced bronchogenic tuberculosis. Slight cough; S.R. normal; radiograph, March 6, 1939 (Fig. 6), showed primary calcified complex on left side and roundish lesion in right mid-zone. Admitted to sanatorium for observation: tuberculin test found positive. Throughout stay there and after discharge, radiographs showed no change in appearances of this focus. (Diagnosis: "round focus" of dissemination; it is possible, however, that the focus represented an "early infiltration" which was already quiescent when the girl was first seen.)

Case 5.—A woman aged 35. Intermittent contact until Christmas, 1939, with sister suffering from bronchogenic tuberculosis. History of pain in right side of chest in March, 1939, when she remained in bed for a month. No symptoms; S.R.=15. Radiograph on March 13, 1940 (Fig. 7), showed faint circular shadow on right, in fourth posterior interspace and partly covered by anterior part of second rib, and "filling" of right costo-phreic angle. April 15: no symptoms; S.R. normal; radiograph, apparently no change. September 10: no symptoms; S.R. normal; radiograph showed some change in shape of shadow. November 4: no symptoms, but had a "cold" a week before; radiograph (Fig. 8) now showed definite extension of shadow upwards and outwards; recommended for sanatorium. (Diagnosis: probably exacerbation of "round focus" of dissemination; note (1) the pleural effusion a year before first seen, (2) the interruption of contact.)

Case 6.—A girl aged 18. Father suffered from advanced bronchogenic tuberculosis (died October, 1940). November, 1938: no symptoms; radiograph showed infraclavicular shadow on left. February, 1939: no symptoms; radiograph, shadow unaltered. February, 1940: no symptoms; weight about the same; radiograph showed increase in size of focus. April, 1940: confessed to fatigue during past two months; no abnormal physical signs in chest; S.R.=16; radiograph showed further increase in infraclavicular shadow. In sanatorium from May to August, September, 1940: no symptoms; radio-

graphically, shadow was "harder" in appearance, indicating fibrosis. (Diagnosis—most likely sequence: (a) healed dissemination with residual small foci; (b) development of "round focus" which remained latent; (c) exacerbation of this focus due to ? superinfection and/or lowering of resistance.)

Case 7.—A man aged 25, referred by recruiting medical board. Two years previously radiographed at a tuberculosis dispensary elsewhere: this radiograph, inspected by me, revealed no abnormality in lung fields. First seen May 23, 1940: slight cough and sputum; radiograph (Fig. 9) showed roundish focus in left infraclavicular region with two tiny calcifications in one part of it; S.R. normal; sputum negative. June, 1940: very slight cough and sputum (negative); put on 2 lb.; S.R. normal; radiograph, apparently no change. August, 1940: no symptoms; very slight sputum (negative); lost 3 lb.; S.R. normal; radiograph, apparently no change. November, 1940: had a "cold" last week; slight cough and sputum; has put on 3 lb.; S.R. normal; radiograph (Fig. 10), when compared with film taken in May, showed definite increase in size of shadow. (Diagnosis: slowly progressive lesion, probably due to exacerbation of tiny round healed foci of dissemination. This case also illustrates the cumulative effect of very small increases in size of radiological shadows.)

Case 8.—A girl aged 17. Mother suffers from advanced bronchogenic tuberculosis and admitted to sanatorium. June, 1939: no symptoms; radiograph showed shadow in right second anterior interspace. July, 1939: radiograph suggests decrease in this shadow. October, 1939: radiograph, shadow smaller and "harder" in appearance. (It was therefore concluded that the shadow on the first radiograph had represented an active focus of early bronchogenic tuberculosis.) December, 1939: no symptoms; working. March, 1940: no symptoms; radiograph shows the shadow originally seen replaced by a very few fibrotic strands and nodules. (Diagnosis: early bronchogenic tuberculosis ("early infiltration"), ? origin, regressing without treatment, contact having been interrupted; therefore presumably arose as the result of massive infection without lowering of resistance.)

Case 9 (This case, though not referred to in the text, is included because it is closely connected with the subject of this paper, as it shows the really early stage of a true "relapse").—A woman aged 28. Case diagnosed as pulmonary tuberculosis in 1934, when a radiograph showed "(R.) slight infiltration of upper zone, (L.) infiltration of upper and middle zones with cavity in upper zone"; later admitted to sanatorium, where a left A.P. was induced, which was carried on until December, 1937. Seen in November, 1938, May, 1939, and January, 1940, when on each occasion a radiograph (Fig. 11) showed the same appearances—calcified foci on both sides, with pleural thickening at the left base. When seen in December, 1940, she was feeling fit but had a slight cough; she had lost over 6 lb. since January, and had been working seven days a week; S.R. normal; radiograph (Fig. 12) showed a faint but definite roundish shadow around a group of small calcified foci on the right side. Note: (1) the calcified foci on the right side were not present in the film of 1934, so that they did not represent a healed dissemination, but healed lesions of bronchogenic tuberculosis; and (2) the group of foci around which the recent shadow is seen had themselves changed in appearance. This suggests the diagnosis of recent exacerbation, due to lowered resistance, of a "healed" focus of bronchogenic tuberculosis, the exacerbation having caused some of the calcified foci to be "ejected" or at all events to change in position.

Summary

It is suggested that the term "pulmonary tuberculosis" should be used as implying any active lesion in the lung belonging to any phase in the evolution of tuberculosis, and the use of the term "bronchogenic tuberculosis" be restricted to the common type of bronchogenic disease.

"Early bronchogenic tuberculosis" is defined as the smallest radiologically detectable focus with potentialities for liquefaction.

The two common mechanisms leading to the early lesion of bronchogenic tuberculosis are exacerbation of residual foci of dissemination and fresh exogenous reinfection with massive

doses in people with lowered resistance. Another, uncommon, origin is a bronchogenic sequel to a progressive chronic dissemination in the lungs.

Early bronchogenic tuberculosis is generally *not* associated with symptoms or signs (including sedimentation rate and blood picture), and can be detected only by radiological examination of the apparently healthy, particularly among groups exposed to massive infection or circumstances lowering resistance.

The focus of early bronchogenic tuberculosis must be differentiated from other tuberculous lesions: a primary pulmonary focus, apical Simon foci, "round foci" of dissemination, and the healed residua of a previously unsuspected bronchogenic tuberculosis. It is found as often above as below the clavicle, and appears as a group of small foci or as a non-homogeneous shadow as frequently as in the form of a homogeneous cotton-wool shadow (*Frühlinfiltrat*, or "early infiltration"). Help in deciding whether the lesion is active or not must often be obtained from serial radiographs.

Help in assessing the outlook for the lesion is obtained from serial radiographs and by finding the causative factor or factors; mode of origin, massive contact, and lowered resistance must be considered.

Treatment will depend to some extent on these factors. Treatment in the home may be considered under certain circumstances, but institutional treatment is usually essential.

Rest in bed until the lesion is quiescent is indicated whenever institutional treatment is advised. Collapse therapy should be used in addition when there is no evidence of regression of the lesions within a very few weeks. Reasons for these conclusions are discussed.

The relations of tubercle bacilli in the sputum to the definition of early bronchogenic tuberculosis and the classification of tuberculosis are discussed, as well as the significance of this finding in connexion with treatment.

The importance of mass radiological examinations in connexion with the detection of early bronchogenic tuberculosis is stressed, but the method to be used is critically examined. The conditions under which mass radiological examinations are likely to play a decisive part in the eradication of tuberculosis of human origin are brought forward.

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The papers by Hart, Hilton, and Morland deal with tuberculosis in medical students detected by radiological examination. The papers by Schemmel, by Uehlinger, and by Voigtmann deal with "round foci."

J. Fénéon (*Thèse de Paris*, 1940, No. 189) states that it has been well known since Fournier's time that syphilis may give rise to osteo-articular lesions. They are rare, however, and occur in the course of active syphilis. The part played by syphilis in the aetiology of chronic rheumatism is much more important, hydrarthroses and arthritis of the hip-joint being the most frequent manifestations. It is often difficult to determine the existence of syphilis in an old-standing case which has been inadequately treated and may be associated with other infections. Inconstant results are yielded by chemotherapy, which should be employed with caution as the patients are affected by diffuse sclerosis. Orthopaedic surgery is important in the correction of deformities.

EMPLOYMENT OF AIR-RAID NOISES IN PSYCHOTHERAPY

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A large proportion of patients admitted to a neuropathic military hospital revealed that their neurotic breakdown was either determined or in part precipitated by the unaccustomed stress of noises, such as gun-fire, shell-bursts, exploding bombs, sirens, planes, and dive-bombing. Some of these soldiers were Dunkirk casualties, but the majority were men who had not served outside England. Experience showed that treatment along orthodox psychotherapeutic lines, which included physical training, occupational therapy, route marches, games, etc., was impeded in these cases by too quiet an environment in hospital. While other symptoms had been resolved there remained a certain hypersensitiveness to air-raid noises.

The type of patient who came into this group and who formed the material for the treatment here outlined consisted of those in whom anxiety was the main presenting symptom. Their symptoms were related closely to experiences of a traumatic nature—physical or psychological—when in the "front line." It was considered that a close approximation between hospital life and life in the Army was necessary if these men were to remain well when returned to their units. An attempt was made to "de-condition" the state of hypersensitiveness to warfare sounds by reproducing the disturbing noises till the patients gradually became more normal in their reactions.

Method

At first the apparatus used for reproducing these noises was rather crude, consisting of a small portable field siren and an assortment of tin boxes and sticks. Later, with the helpful co-operation of the B.B.C., it was possible to make use of gramophone records of actual warfare. Technicians made to our specification records of sirens, the firing of A.A. and machine guns, sounds of planes, dive-bombing, and explosions. Individual sounds or a composite effect could be reproduced when required. Records combining reassurance talks with actual bombing noises were also made. The following technique was employed:

The patient was given a simple explanation of the treatment and its object. He was placed in a state of relaxation, and details of the pulse rate, respiration, blood pressure, presence of tremors, restlessness, and the like were recorded. He was then subjected to the particular sound deemed to be the precipitant in his case. Notes were made of changes occurring in the physical and mental state, and after a short rest period the stimulus was again given. Depending on the response obtained, this was repeated three to seven times at each session, at the end of which the mechanism and meaning of fear were explained. The record chart, revealing a gradual improvement in responses—a phenomenon almost invariably present—was shown to the patient after the first session.

Reassurance and encouragement on common-sense lines were given to certain patients. They were told: "Men, women, and children in our badly bombed cities have developed a new lease of life. They are in better mental trim than those in safe areas. They have faced the raids, have found them not so bad as anticipated, and have got over them. They carry on with their jobs

and take a pride in being fit for fire-fighting and other duties. You can do the same, and this treatment will help you to get accustomed to raid noises."

Conditioning and Abreaction

Though the procedure was intended to be a means of "conditioning" cases to noxious sounds, it soon became evident that it could be used as a speedy and practical method of abreacting patients. The process of letting a patient re-live terrifying emotional experiences has a therapeutic effect. As a measure for producing abreaction the employment of war noises is much simpler than hypnosis or hypnarcosis. It is quick, effective, and does not demand too great technical skill. The patient is enabled to recall terrifying incidents which had determined his symptoms, and by expressing them in the secure atmosphere of the hospital his self-control and confidence are helped. The following case illustrates the use of the method as an abreactive agent.

A private aged 22 who was in good health until shelled badly in France developed acute anxiety symptoms, thereafter tending to become worse when in bombing raids in this country. After admission to hospital he was given a course of "sound-therapy," and on the first application he became very agitated, volunteering the information that the noise "brought it all back again." The blood pressure and pulse rate showed marked increase after hearing warfare noises. Though the patient was aware that the sounds were artificial, he reacted briskly when the stimulus was given, vivid memories of the initial traumatic experience being recalled.

It was established in a number of cases that this procedure could easily reveal a wealth of psychological material, and by releasing emotional tension have a beneficial effect.

Some people cannot stand up to the stress of noises without help. It is not a question of "scrimshanking" but of constitutional make-up. They can be helped by realizing that knowledge and a sense of security will see them through. Giving them sane simple explanation and advice and getting them accustomed to disturbing stimuli increases their stability and sense of security and relieves apprehension and exaggerated fears. Our experience would indicate that the repetition of noxious stimuli is of value in restoring function in these cases. The principle of conditioning is very much that of the horseman who mounts immediately after a fall in order to prevent the association of fear and riding.

One man who complained of trembling, palpitation, and loss of control during air raids since the Dunkirk evacuation was conditioned to warfare noises in a week, and during subsequent air-raid alerts was no longer disturbed, being finally discharged to duty. Another soldier, with a similar history, at first reacted so strongly to the sounds given that he rushed screaming from the room. At the end of six days' treatment he was perfectly calm and showed no reaction whatever.

Conclusion

Air attack is being employed on all fronts to demoralize our people. It is now evident, however, that the anticipated number of psychiatric casualties as a result of air raids has not been justified. Actually there has been no increase in the incidence of neurosis or psychosis in our bombed cities. A corporate sense of discipline, preparedness, and individual effort has maintained morale. Fear has to a large extent been dissipated by the activity of fire-fighting and other defence measures. Fear, which is simply a normal protective instinct, can be countered by enlightenment, and aerial bombardment is unlikely to achieve its demoralizing object if the experience is not a complete surprise. Apprehension and anxiety concerning air raids are more likely to affect those who are inactive and have

not been accustomed to warfare noises. Repetition of bombardment noises would appear to assist in raising the power of endurance and in enabling the individual to stand up to this new form of attack.

Our thanks are due to various members of the B.B.C. staff for their valuable help in producing the records used in this investigation. We are also indebted to Colonel G. W. Will, O.B.E., for permission to investigate cases under his care.

CHEMOTHERAPY IN ACUTE MIDDLE-EAR DISEASE: "MASKED MASTOIDITIS"

BY

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I have recently had three cases (quoted in detail below) referred to me in quick succession which have much exercised my mind on the subject of chemotherapy in acute disease of the middle ear.

In view of Dr. J. B. Jessiman's (1941) article on the subject, which drew forth prompt criticism from Mr. Lionel Colledge (1941), it would seem that there is ample justification for uttering a warning against putting too great reliance on drugs of the sulphonamide group. They have admittedly proved of marked value in the control of infections of the middle-ear cleft, but it is a mistake—which may have tragic consequences—to assume that, quite irrespective of whether myringotomy has or has not been done, all is of necessity well with the patient because the temperature has fallen, mastoid tenderness has disappeared, and the other symptoms and signs have cleared up. Such cases, indeed, call for very careful watching, since the sulphonamides can "mask" a mastoiditis most effectively, while serious complications may develop in the most alarmingly sudden manner.

Furthermore, it should be noted that in each of the cases quoted below sulphapyridine has been employed. Now, this agent is excellent for pneumococcal infections, but even its most enthusiastic supporters must admit it to be of very considerably less value than sulphanilamide where the infection is of streptococcal origin. After all, pneumococci are, it is true, responsible for many cases of middle-ear infection, but a number of cases are undoubtedly due to streptococci or other organisms. We should therefore be on our guard against thinking as it were in terms of sulphapyridine to the exclusion of sulphanilamide. Such blind faith can only result in a proportion of failures, and these will inevitably bring quite unwarranted discredit on a group of most valuable therapeutic agents.

It is suggested that the correct procedure in every case of threatening or frankly developed middle-ear infection is to take swabbings from the tonsils, nasopharynx, and/or purulent discharge itself (whether the result of perforation or myringotomy) and, if bacteriological examination reveals the presence of streptococci, then sulphanilamide (and not sulphapyridine) should be administered. It is only by such conscientious use of the appropriate member of the group that we can secure more consistently satisfactory results and so gain for these agents that confidence in them which is their just due.

Lastly, while agreeing with most of the relevant comments by Mr. R. Thomas (1941), I cannot find myself in agreement with his expressed wish that "the day will soon come when this simple operation [he specifies "paracentesis"] will become part of the armamentarium of every general practitioner." In the first place, paracentesis has been rightly

displaced from favour by the far more effective procedure of myringotomy; and, secondly, "every general practitioner" does not possess the experience and nicety of judgment which alone can decide whether myringotomy still has a reasonable chance of averting an acute mastoid or whether things have already gone too far for anything short of immediate mastoidectomy to have a hope of relieving the condition and possibly preventing a catastrophe.

Case I

A gunner aged 22 was admitted to a military hospital on January 17, 1941, with a history of left otalgia followed by otorrhoea. Temperature 99.4°, pulse 80. "Exacerbation of an old C.O.M.S.(L)" was diagnosed. Next day temperature tended to swing between 100.6° and 97.4°. On the 19th it settled to normal, and he was given guttae glyce. and phenol, fomentations, s.v.r. drops, and mist. aspirin. He was discharged to a convalescent home on the 25th, with normal temperature but profuse otorrhoea. From January 28 to 31 sulphapyridine, 1 gramme four-hourly, was given. Temperature was very slightly irregular above and below normal. He was transferred to a convalescent depot on February 7.

On February 10, when referred to me, there was thin somewhat offensive left otorrhoea, slight deafness in the left ear, medium-sized postero-inferior perforation, but no vertigo or tinnitus. He was returned to the convalescent depot with the recommendation that he be kept under close observation and that dry mopping and insufflation of 1% iodoboric powder be carried out. On the 13th he was readmitted to hospital with general malaise and severe pain behind the left ear. Otorrhoea was profuse and the left ear was pushed somewhat forward; there was no mastoid tenderness, but the patient looked ill. Subacute left mastoiditis was diagnosed. The next day left epitympano-mastoidectomy was performed. Very extensive involvement of the mastoid region was found. The bone was of mixed cellular and sclerotic type. Aditus, attic, antrum, and cells contained pus under some pressure. Healing by first intention was secured, and recovery was uneventful; the otorrhoea soon dried up, and there was very little loss of hearing.

Case II

A lance-corporal aged 21 was referred to me at a military hospital on January 21, 1941, with a history of having first noticed left-sided otorrhoea while on leave. There was slight deafness, but no pain; trismus, said to date from the extraction of a left lower wisdom tooth, was present. He stated that he had been treated by a civilian doctor and given, among other things, tablets of sulphapyridine, but no details as to dosage, etc., were available. He looked ill. There was a moderate amount of thin non-offensive otorrhoea, left cervical adenitis, and medium-sized postero-inferior perforation, but no mastoid tenderness.

He was admitted and kept under close observation, with dry mopping of the otorrhoea, counter-irritation over the cervical glands, gargles, and mentholization. During the next few days the trismus improved, but the temperature showed a slight tendency to swing between 98° and 99°. In the afternoon of January 26 there was a sudden exacerbation, with malaise, swelling of the left parotid region, slight left facial paresis, and gradual filling up of a fluctuating swelling on the posterior aspect of the lobule of the left ear. On the 27th he had a definite toxic appearance; the above-mentioned swellings had increased and the left facial paresis had deepened. Temperature normal; pulse 98. Left epitympano-mastoidectomy was performed. There was generalized osteomyelitis in an acellular mastoid with a perforation near the tip, "tracking" into the lobule of the ear and into the parotid region. This was thoroughly cleared and the wound packed open, secondary suture being performed on February 5. The wound then healed by first intention, the facial paresis recovered completely, the otorrhoea dried up, and the perforation in the drum healed. The hearing is good.

Case III

A second-lieutenant aged 28 was admitted to a hospital on February 18, 1941, with severe otalgia in the left ear of sudden onset and a history of acute left otitis media two years previously. Slight pulsatile left otorrhoea was present, but no

mastoid tenderness. Sulphapyridine and a spirit-and-flavine wick were used, and on March 11 he was given a week's sick leave, the ear being then dry and all symptoms relieved. On March 15 diplopia developed, and on the 18th he consulted the eye specialist, who referred him to me. He gave the following history: For some days he had had fairly severe neuralgic pain centred somewhat vaguely between the left ear and the left eye, which had gradually changed to a dull ache behind the left eye; then on the 15th, as stated above, he had for the first time noticed the diplopia. On examination I found complete paralysis of the left external rectus; in other words, he presented the complete picture of the Gradenigo symptom-complex, indicating the presence of petrositis. A small perforation was found in the anterior portion of Shrapnell's membrane, from which a thin trickle of pus was escaping. Radiographs showed considerable relative radio-opacity of the left mastoid region and the petrous pyramid, with loss of the cellular outlines.

A left Schwartz mastoidectomy was performed on March 21. There was widespread involvement of the mastoid cells, which contained pus, while the mucosa was thickened. Two polypi were impacted in the aditus, and on their removal pus under considerable pressure escaped from the attic region and the middle ear. Healing took place by first intention, and convalescence was uneventful. All symptoms have been removed, while with the assistance of electrical stimulation of the paralysed muscle complete recovery from the paralysis has been secured and the diplopia has disappeared. The perforation in the drum has healed and the hearing seems to be normal.

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Medical Memoranda

Intestinal Haemorrhage as a Complication of Sulphonamide Therapy

The recent occurrence of melaena in two children under treatment with sulphonamide drugs stimulated an inquiry into the recorded incidence of this complication. The scanty references in the literature and the absence of records of its occurrence in this country make these notes and observations of value.

CASE REPORTS

Case 1.—A boy aged 5 was admitted to the Southport Infirmary on January 23, 1941, with a history of severe vomiting of two days' duration. Lumbar puncture produced 4 c.cm. of turbid fluid from which meningococci were later grown on culture. Next day he was given 0.5 gramme of sulphapyridine soluble intramuscularly and transferred to the borough isolation hospital. On admission he was drowsy and irritable, and the temperature was 98.4° F. He did not appear to be very ill. Soliuseptasine 0.5 gramme intramuscularly was ordered four-hourly. Next day after five injections his temperature had remained normal, but head retraction and opisthotonos were pronounced. Lumbar puncture produced no fluid, and external puncture only 2 c.cm. of opalescent fluid. Sulphapyridine soluble 0.5 gramme intramuscularly was ordered three-hourly. On January 27 the boy was much improved and took 0.5 gramme of sulphapyridine by mouth four times daily for four days. On January 31 he appeared normal, and received three 0.5-gramme doses of sulphapyridine, and on February 1 two doses of 0.5 gramme each. In the night of February 1 he passed a small tarry motion, and on February 2 two large melaena stools. He was very pale, but his condition did not give rise to anxiety. Parenteral salines were given. As we were unable to account for the melaena a blood film was made late at night and suggested a diagnosis of myeloid leukaemia. The temperature was 99° F., the spleen was not palpable or enlarged to percussion, the liver was not enlarged, no enlarged glands could be felt, no petechiae were seen, the urine was normal, and there was no evidence of jaundice. The blood film, however, showed a considerable increase of white cells, estimated at more than 100,000, of which 92% were polymorphs, 6% myelocytes, and 2% lymphocytes. The red cells were rather pale, and showed anisocytosis; 2% nucleated red

cells were found. Unfortunately the cell counts were deferred until next day and the child collapsed and died suddenly during the night.

Case 2.—A girl aged 8 was admitted to the Southport Infirmary on February 12, 1941, with a history of headache and vomiting of a few hours' duration. Lumbar puncture produced 6 c.cm. of opalescent fluid from which meningococci were later grown on culture. The child was admitted to the borough isolation hospital the next day, after receiving an intramuscular injection of 1 gramme of sulphapyridine soluble and 1 gramme of sulphapyridine by mouth. On admission she was very listless and semicomatose, temperature 100.4° F. Sulphathiazole 1.5 grammes was ordered four-hourly. The temperature became normal the next day and did not rise above 99° F. thereafter. On February 14, following difficulty in swallowing, 1 gramme of sulphapyridine soluble was given intramuscularly four-hourly, followed by sulphathiazole 0.75 gramme four-hourly for three days. On February 18 the child did not appear well and seemed more comatose. Seven grammes of sulphathiazole was given in the next twenty-four hours, when it was finally stopped. On February 20 she passed a small melaena stool, but remained well and did not complain. A blood film appeared normal and a white cell count totalled 14,200. On February 21 another final melaena stool was passed, and the child thereafter progressed satisfactorily until discharge on March 10.

DISCUSSION

In neither child was there a history of a tendency to bleed and the family history in each case was negative. In Case 1, apart from the abnormal findings in the blood film, there were no clinical signs to suggest that the child was suffering from myeloid leukaemia, but the melaena was originally attributed to this possibility in the absence of any more feasible explanation. The occurrence of melaena in Case 2 gave reason to the consideration that the bleeding in Case 1 had been due in large part at least to the sulphonamide drugs.

Long and his associates (1940) report the rare occurrence of hyperleucocytosis during sulphanilamide and sulphapyridine therapy, generally in the presence of acute haemolytic anaemia, of which there was no evidence in this case. They also report that unexplained bleeding from the gastro-intestinal tract has been seen in one or two cases of sulphanilamide and sulphapyridine therapy, and that one patient who received sulphapyridine had bleeding severe enough to cause death. They record no instance of gastro-intestinal bleeding following sulphathiazole. Blake recorded two instances of gross intestinal haemorrhage in patients receiving sulphanilamide, in neither of whom was there any other plausible explanation for the untoward reaction.

These two records of melaena occurring among a comparatively small number of patients receiving sulphonamide drugs may stimulate the interest of others with greater experience and better facilities for investigation and lead to a better knowledge of its true incidence.

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H. D. Wright (*J. Path. Bact.*, 1941, 52, 237). In a record of the three types of *C. diphtheriae* in 8,040 cases of diphtheria in Liverpool during 1937-40, states that this period was marked by a notable increase in the number and proportion of *gravis* cases. There was a slight decrease in the proportion of cases in the age period 5-9 years. The difference in age incidence between the different types was slight. The case fatality was highest in the *intermedius* infections, particularly among the older children, and lowest in the *mitis* group. The greatest number of deaths were due to the *gravis* type. Deaths from toxæmia predominated in the *intermedius* and *gravis* infections and from pneumonia or respiratory involvement in the *mitis* infection.

Reviews

HARDY ANNUAL

The Medical Annual, 1941. A Year Book of Treatment and Practitioner's Index. Fifty-ninth year. Editors: H. Letheby Tidy, M.D., F.R.C.P., and A. Rendle Short, M.D., B.Sc., F.R.C.S. (Pp. 516; 39 plates, plain and coloured. 25s. net.) Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd.

This valuable work, as its devotees know, is published by Messrs. John Wright at Bristol, a town that has borne the full brunt of enemy attacks from the air. The publishers and the editors have not, however, been deterred by what must have been considerable difficulties, and both are to be congratulated on maintaining the standard of the familiar green-covered volume. There is one small criticism that we would make. In a yearbook that is primarily meant for the general medical reader we doubt whether there is much point in including special plates illustrating, for example, the prevention of elephantiasis chirurgica, seminoma of the testis, an operation for persistent thyroglossal duct. The illustrations are, as usual, very well reproduced, and there are a number of excellent line drawings in the text.

It is impossible to refer in detail to the numerous items, arranged in encyclopaedic form from A to Z. The article on vaginal thrush is accompanied by two instructive half-tone illustrations: a long and helpful article on electroencephalography is contributed by Mr. Grey Walter and Prof. F. L. Golla; the two editors—Dr. Letheby Tidy and Prof. Rendle Short—contribute articles on the medical and surgical aspects respectively of abdominal disorders; Prof. R. M. F. Picken describes schistosome dermatitis, which so far has been found to occur in one place only in Great Britain—Roath Lake, Cardiff. The common and the uncommon all receive skilful treatment at the hands of practised commentators.

STATISTICAL STUDIES OF TUBERCULOSIS

Studies on Tuberculosis. Four Papers by Different Authors. The American Journal of Hygiene Monographic Series, No. 16, 1941. Baltimore: The Johns Hopkins Press. 1941. Publication financed by the Rockefeller Foundation, New York City.

This monograph is devoted to four papers describing two series of epidemiological investigations.

Eugene L. Opie, Persis Putnam, and E. Joyce Saward portray the spread of tuberculosis in negro families of Jamaica, B.W.I. The disease follows a much more rapid course than in the white people of European extraction, and is readily transferred from the first sufferer in a family to other members of the household, adults as well as children, so that many of them may die within two years after the disease has been introduced into the family. The proportion of those with tubercle bacilli in the sputum is much greater than among white persons of the United States, and greater than among American negroes. This factor and uncleanly habits, unhygienic housing conditions, and lack of facilities for segregation all promote the spread of disease in Jamaica. Though the tuberculin reaction in Jamaica, as elsewhere, has little value as an index of manifest disease, the frequency of lesions visible radiographically and of manifest disease increases with intensity of reaction. From what has already been said, it may be anticipated that asymptomatic and latent lesions were found much less often in Jamaican negroes than in white adults (and even less frequently than in American negroes). The authors conclude that the high level and rising incidence (with age), frequency, and mortality from tuber-

culosis in the Jamaican adolescents and adults following exposure to the disease occur as the result of exogenous infection.

A. H. Graham, P. W. Auston, and Persis Putnam made a survey of tuberculous infection in a rural area of East Alabama, and traced the fate of persons exposed to tuberculosis in white and negro families. Manifest tuberculosis among negroes was found to begin earlier, run a shorter, sharper course, and more often end fatally than among white persons. These were characteristic differences, as was the higher frequency of latent tuberculosis among white persons—that is, among negroes lesions were more likely to progress to disease and death; among white persons there was more tendency toward healing and calcification. The authors do not doubt that tuberculosis spreads from persons suffering with the disease to those in contact with them; that this is true of persons whose exposure begins in adult life as well as those first exposed in infancy, childhood, or adolescence; and that exogenous infection occurs in rural as well as in urban areas.

These elaborate, carefully worked out statistical studies illustrate once more the importance of natural resistance in tuberculous infection, and the role of exogenous infection in the incidence of manifest tuberculous disease at all ages in people with low natural resistance. In our opinion it would, on the other hand, be unwise to assume that the latter holds good to an equal degree in regard to pulmonary tuberculosis in adults among the more resistant European communities.

PRACTICAL ORTHOPAEDICS

Orthopedic Surgery for Nurses, including Nursing Care. By Philip Lewin, M.D., F.A.C.S. Third edition, revised and reset. (Pp. 462; illustrated, 17s. 6d. net.) Philadelphia and London: W. B. Saunders Company. 1941.

Orthopaedics is a specialized branch of surgery, but its principles can never be divorced from those of general surgery. In this country nurses usually receive their orthopaedic training before their general training, and in consequence the teacher of orthopaedics labours under the disadvantage of having students with little or no knowledge of pathology and general surgical principles. It is essential that the student-nurse should build her storehouse of knowledge not on the shifting sands of current orthopaedic practice but on the rock of general surgical principles. The ideal textbook must first discuss the anatomy, physiology, and pathology of the framework of the body, and the principles of the surgery of wounds, infections, and deformities must be clearly enunciated. This textbook fails singularly in this respect, and is concerned rather with the accumulation and tabulation of a vast amount of detail more suitable for a medical graduate. For instance, should any student-nurse be expected to know the thirty-seven differential diagnoses for tuberculous disease of the spine as listed on p. 150? Again, in the chapter on the orthopaedic operating room, though the author sets out in detail many aspects of theatre routine, he does not mention the reasons for and principles of asepsis. Further, in the chapter on fractures, one of the least commendable in the book, the three cardinal principles of treatment are obscure, and there is practically no mention of compound fractures. However, such criticism may be unjust, since the book is primarily intended for American use, where the nurse may already have been well grounded in general surgery.

For a graduate-nurse or medical student this book has a great deal to commend it. Its chapters are well arranged and the material is up to date, even such matters as arthrograms for congenital dislocation of the hip and plasma transfusion for shock being mentioned. The book contains a wealth of practical detail, particularly in the chapter on

orthopaedic nursing care. The chapters on poliomyelitis are excellent and deal with the subject more thoroughly than any English textbook, and here the principles of treatment are clearly explained.

This book of almost 450 pages covers the whole field of practical orthopaedics and includes over 200 well reproduced diagrams and illustrations.

PSYCHOLOGY OF BREAST-FEEDING

The Nursing Couple. By Merrell P. Middlemore, M.D. With an introduction by Edward Glover, M.D. (Pp. 195. 7s. 6d.) London: Hamish Hamilton Medical Books. 1941.

When psychologists make assertions about infant feeding, paediatricians and obstetricians are apt to feel that enthusiasm is proving more of a stimulus than experience. For this reason the late Dr. Merrell P. Middlemore's book on *The Nursing Couple* is of great value, for here is a medical practitioner, trained as an obstetrician and as a psychologist, recording her observations and conclusions as a result of studying the behaviour of newborn babies at the breast in a hospital ward, and hence, possibly for the first time, it is likely that some of the truth on this important subject has been set down with scientific accuracy. That psychological factors enter into breast-feeding, successful and unsuccessful, is well recognized, but Dr. Middlemore's painstaking analysis sets out in some detail what these factors actually consist of, and all concerned with breast-feeding will learn much from a close study of the book. It clearly emerges that the nurse is the dominating figure in the successful establishment of lactation. Too stern a technique, too rigid a programme, and a lack of sympathetic understanding of the emotional background of the nursing couple—mother and baby—spell failure. It is equally clear that some sort of programme is necessary, and it is enthusiasm rather than experience that has led Dr. Edward Glover in his introduction to suggest that all will be well if babies are fed when they are hungry. It is just such lack of "discipline" that led the late Sir Frederick Truby King to initiate his great work—for as superintendent of a mental home he saw the wrecks produced by the absence of some sort of order in the nursery. Dr. Middlemore's book should certainly be read by all doctors and midwives, and much of its contents will help the expectant mother.

Notes on Books

Control of Pain in Dental Practice, edited by Dr. J. L. T. APPLETON (Lippincott, 15s.) contains a series of articles by different contributors which deal with the innervation of the teeth, local anaesthesia and general anaesthesia. The contributors are members of the medical and dental schools of the University of Pennsylvania. An article by Dr. H. Prinz on the early history of pain control in dentistry is of special interest because the medical profession owes to the dental profession the discovery of the use of nitrous oxide and ether as anaesthetics. In a chapter on the pharmacology of drugs, Prof. C. F. Schmidt gives an interesting summary of the advantages and disadvantages of intravenous anaesthesia.

Medical Organization and Surgical Practice in Air Raids (J. and A. Churchill, 12s. 6d.) first appeared in March, 1939. It has since been reprinted twice, and the authors, Brigadiers P. H. MITCHNER and E. M. COWELL, have now brought out a second edition. Between the two editions the war has happened, and the first two chapters, both dealing with air raids, have consequently been rewritten in the light of bitter experience. Other chapters have also been revised to include, for example, further information on the sulphonamides and the use of blood plasma. Mitchner and Cowell are sure guides to the many problems embraced by the title of their book, and the second edition deserves the success that attended the publication of the first.

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EQUINE ENCEPHALOMYELITIS

It is becoming only too obvious that in order to unravel the many problems associated with virus diseases one must be, among other things, a highly competent field naturalist. African horse sickness, for instance, can remain latent in an area for many years in the absence of all Equidae, though how or where it remains latent is unknown. Yellow fever, it seems, can somehow maintain itself in the absence of all human beings; infection of man is, in fact, merely an unfortunate incident in the life history of a virus that primarily exists as an inapparent infection of animals. There are much the same lacunae in our knowledge of what has been called, somewhat unfortunately, "equine encephalomyelitis." For some years past a very fatal encephalomyelitis of horses has been recognized in the New World, from Canada to the Argentine. Cases are seen chiefly in the late summer and autumn, and in some years enormous epizootics occur: in 1938 in Minnesota alone there were 23,686 cases in horses, with 4,979 deaths. The problem of equine encephalomyelitis was complicated at the outset by the discovery made by Ten Broeck and Merrill¹ that there exist in the U.S.A. two strains of the virus which are immunologically quite distinct. These two strains are known as the eastern type and western type respectively, the Appalachian Mountains forming a rough dividing line. The symptoms and the pathological changes caused by the two viruses are, however, closely similar both in horses and in experimental animals, except that the disease is more fulminating when caused by the eastern strain. Both viruses are of the same size as determined by differential filtration and centrifugation, while both are quite distinct from the causal agent of European equine encephalomyelitis, Borna disease, as well as from the virus of a Russian form of equine encephalomyelitis, which is most probably an atypical rabies. An Argentine strain, however, was identical with the Western American virus; but a Venezuelan strain, on the other hand, examined by Beck and Wyckoff,² was immunologically different from both American strains, though perhaps remotely related to the eastern virus. Thus at least three distinct immunological strains of the equine encephalomyelitis virus exist in the New World. Now, as is well known, after exhibiting a long geological succession all Equidae suddenly died out in America at the end of the Pleistocene Period. They were not reintroduced until the time of the Spanish conquest. The question therefore arises whether the various strains of equine encephalomyelitis virus have arisen since the discovery of the New World by Columbus, or

whether they have lived in other hosts, causing inapparent infections. The first step in the elucidation of this problem was the discovery that both the eastern and the western viruses could be transmitted by mosquitoes under laboratory conditions. While the eastern strain is transmitted by *Aedes cantator*, a salt-marsh mosquito, the western variety is transmitted by *A. aegypti*, *A. vexans*, *A. atropalpus*, *A. triseriatus*, *A. nigromaculis*, *A. taeniorhynchus*, and *A. albopictus*. *A. sollicitans* transmits both strains.

Although equine encephalomyelitis tends to occur in the late summer and autumn, no mosquito has actually been found infected under natural conditions, the same being true also of *Dermacentor andersoni*, a tick which Syverton and Berry³ have found capable of transmitting the western strain of the virus. A fresh complication arose when it was found that both the eastern and the western strains were causing a highly fatal encephalomyelitis in man in some outbreaks, as in Saskatchewan in 1938 in the absence of mosquitoes. The first case was described as long ago as 1930 by Meyer, Haring, and Howitt,⁴ but it was only in 1938 that it became evident (cf. Fothergill *et al.*,⁵ Feemster,⁶ Webster and Wright,⁷ and Howitt⁸) that a very considerable number of infections were occurring throughout the United States, more especially in children. Many of these were fatal, but Farber and his colleagues,⁹ Davis,¹⁰ and Platou¹¹ have more recently described cases with residual paralyses, mental changes, and other nervous sequelae. Shortly after human cases had been described in the New England States, Tyzzer, Sellards, and Bennett,¹² and later Van Roekel and Clark¹³ and Beaudette¹⁴ all isolated the eastern virus from wild ring-necked pheasants, while Fothergill and Dingle¹⁵ obtained the same virus from wild pigeons. Whether pheasants and pigeons form the only reservoir from which horses and men can be infected remains uncertain. Under laboratory conditions a very considerable number of wild birds and rodents such as voles, rats, and mice can be readily infected, while many wild and domesticated birds either succumb or carry the virus in their blood even though they fail to show clinical symptoms (cf. Davis¹⁶ and Howitt¹⁷).

It is obvious that transmission of the infection, possibly by mosquitoes, to horses and man represents but a part of the story: the lacunae can be filled in only by intensive oecological studies. So far observations have yielded largely negative results; Howitt,¹⁸ for instance, in California failed to isolate the virus from the brains of forty-three wild animals and birds, representing fourteen different species. Davis,¹⁹ however, brought forward evidence that birds such as the domestic sparrow, pigeon, and cow-bird can acquire the virus by the bite of infected mosquitoes, and that infected birds may serve as a source from which mosquitoes can become infected. C. Ten

¹ Science, 1936, 84, 186.² Ibid., 1931, 74, 227.³ New Engl. J. Med., 1938, 219, 411.⁴ Amer. J. Publ. Health, 1938, 28, 1403.⁵ Science, 1938, 88, 305.⁶ Ibid., 1938, 88, 455; 1939, 89, 541.⁷ J. Amer. med. Ass., 1940, 114, 1725.⁸ J. Pediatr., 1940, 16, 591.⁹ Amer. J. Dis. Child., 1940, 60, 1155.¹⁰ Science, 1938, 88, 505.¹¹ J. Amer. vet. med. Ass., 1939, 94, 486.¹² Proc. 3rd Internat. Congress Microbiol., 1939, p. 303.¹³ Science, 1938, 88, 549.¹⁴ Amer. J. Hyg., 1940, 32, Section C, 45.¹⁵ J. Inf. Dis., 1940, 67, 177.¹ Proc. Soc. exp. Biol., N.Y., 1933 31, 217.² Science, 1938, 88, 530.

Broeck,¹⁸ it is interesting to note, found neutralizing antibodies in the sera of fowls from farms where horses had died from encephalomyelitis. There is thus suggestive evidence that birds may possibly serve in nature as alternative hosts for the virus of equine encephalomyelitis. Mammals may also play a similar part. Syverton and Berry,¹⁹ in 1936, found that Richardson's ground squirrel, *Citellus richardsoni*, was highly susceptible to the western strain of the virus of equine encephalomyelitis, while one specimen was refractory to inoculation and presumably immune. In 1940 Gwatkin and Moore²⁰ showed that the brains of certain of these ground squirrels from Alberta harboured the virus. No virus was, however, found by Gwatkin²¹ in some hundreds of ticks, *Dermacentor andersoni*, but Kitselman and Grundman²² have recently reported isolating the virus in Kansas from assassin bugs, *Triatoma sanguisuga*. Thus by studies in various parts of America the full story of the equine encephalomyelitis virus is being gradually revealed.

EFFECT OF CARBOHYDRATE ON PROTEIN METABOLISM

It is seldom that experiments in metabolism are performed first on human beings and later on animals. This, however, has been done by Cuthbertson and Munro^{23 24 25} in their investigation of the influence of carbohydrate eaten at the same time as protein or at a different time. Early observations showed that when carbohydrate is eaten at the same time as protein, and the calorie content of the diet is in excess of energy requirements, there is storage of nitrogen and sulphur, more especially when the excess calories are in the form of carbohydrate rather than of fat. Larson and Chaikoff,²⁶ working on dogs, found that to get this effect the carbohydrate must be taken less than four hours before or after the protein meal. Cuthbertson and Munro,²⁷ continuing their observation on human beings, found that a negative nitrogen balance of some 2 grammes daily was produced by eating the carbohydrate and protein moieties of an adequate diet separately over short periods of time. The nitrogen was lost mainly in the form of urea and was equally distributed between the day and night portions of the urine. If a part only of the dietary protein was dissociated from the carbohydrates the nitrogen balance was undisturbed. If carbohydrate in excess of energy requirements was ingested over long periods, storage of nitrogen and sulphur resulted whether the carbohydrate was taken with or separately from the protein.

Krebs²⁸ has observed that deamination by liver slices is inhibited in the presence of easily oxidizable substances such as lactic, succinic, and α -keto acids (but not glucose), and Cuthbertson and Munro suggest that when carbohydrate is ingested with protein it may yield a more active form of glucose within the body, and thus

ensure that some of the amino-acids escape deamination and go to replace the effete products of endogenous metabolism. Thus nitrogen balance is attained. A surfeit of carbohydrate may save even more amino-acids from the deaminases, with the result that the storage depots are further charged with protein. More prolonged surfeit feeding of carbohydrate seems to result in a storage of carbohydrate also. Nitrogen balance on an ordinary diet in which the proportions of carbohydrate and protein vary is probably attained through the mechanism of storage and depletion of carbohydrate stores as needed. If all the protein is ingested separately from the carbohydrate, the deaminases are free to break down the amino-acids, and the excreted nitrogen consists of that taken in as protein plus the daily endogenous nitrogen.

To gain more exact information Cuthbertson and Munro²⁹ have experimented on rats. They fed four adult male rats, each of about 300 grammes in weight, on a diet of dried egg yolk (12%), dried egg albumen (6%), uncooked potato starch (17%), uncooked rice starch (40%), cane sugar (10%), butter (10%), De Loureiro's salt mixture (1931) (5%), Brewer's yeast extract 2 c.cm. daily per rat, and cod-liver oil two drops per rat per day. The mean daily intake per rat for seven days was 17.5 grammes. During the next twelve days the diet was separated into two fractions: fraction A consisted of the potato starch, rice starch, cane sugar, cod-liver oil, yeast extract, and half the butter and salt mixture; fraction B consisted of dried egg yolk, dried egg albumen, and half the butter and salt mixture. The A fraction (carbohydrate plus fat) was given freely at 8.30 a.m. each morning and the residue removed and weighed at noon. Of the B fraction (protein plus fat) 4.0 grammes were given to each animal at 4.30 p.m. each day, and the meal was always eaten within a few hours. After the first five days of this diet the rats were weighed fasting. During the next seven days they lost weight (average 7.0 grammes per rat), and their output of urinary nitrogen was 0.165 gramme. They were then given the A and B fractions mixed in amounts equal to the mean value of the daily intakes in the previous period. There was an average gain in weight of 5 grammes, and the daily output of urinary nitrogen fell to 0.145 gramme (with a mean difference from the average of 0.02 gramme). The experiment was then repeated on young rats (weighing about 66 grammes). They were first fed on a diet similar to that already described, and then one in which the protein part consisted of ashless casein (12 parts) and dried egg albumen (6 parts) only, the whole of the fat (as lard) and salt mixture being incorporated in the carbohydrate part of the diet. The "paired feeding" technique was followed—that is, each rat in the group receiving the two parts of the diet mixed together was given an amount equal to that which its "opposite" had eaten the previous day. This was particularly important, for the rats receiving the portions separately lost appetite for the carbohydrate fraction though not for the protein.

In both experiments there was practically no difference between the average increases in weight of the two groups of rats, though these were below the increase

¹⁸ Arch. Path., 1938, 25, 759.

¹⁹ Proc. Soc. exp. Biol., N.Y., 1936, 34, 822.

²⁰ Canad. J. comp. Med., 1940, 4, 78.

²¹ Ibid., 1941, 5, 113.

²² State College Agr. exp. Stn. tech. Bull., 1940, No. 50 (October).

²³ Biochem. J., 1937, 31, 694.

²⁴ J. Nutrit., 1937, 13, 287.

²⁵ Biochem. J., 1939, 33, 128.

²⁶ Ibid., 1935, 29, 1620.

²⁷ Biochem. J., 34, 1002.

in weight of a group in the second experiment given an unrestricted mixed diet. In the second experiment, where nitrogen output was measured, the rats receiving the food fractions separately lost 0.0928 gramme of nitrogen, and those receiving the mixed fractions lost 0.0930 gramme. Thus the metabolism of protein in the young rat apparently remains unaffected by separating the protein from the carbohydrate moiety of the diet. It does, however, reduce the appetite, which is reflected in a small increase in body weight. The behaviour of the adult rat corresponds with that of the adult human being—namely, when protein and carbohydrate are eaten separately there is a small loss of nitrogen and also of body weight.

X-RAY INJURY AGAIN

Although the harmful effects of x rays on living tissues were noted within a few months of Röntgen's "preliminary communication," it was not until about 1903 that some consideration was given to the dangers to which those working with x rays might be exposed. Protective clothing and other devices made their appearance, but there were no satisfactory means of judging their efficacy. The first organized move towards protection against x-ray injuries was made by the British Röntgen Society in 1915, but the medical conscience was not generally aroused until a number of deaths occurred from aplastic anaemia in 1920 and 1921. In the latter year the British X-ray Protection Committee published the first set of protective recommendations; it stressed the importance of protection at the first International Congress of Radiology held in London in 1925, and three years later persuaded the second Congress to form an International X-ray and Radium Protection Commission, which subsequently adopted the British recommendations almost verbatim. It speaks well for the foresight of the British committee that the recommendations remained virtually unchanged by the revision made at the fifth International Congress, held in Chicago in 1937, but it is a poor reward for their labours that it should now be found necessary to publish the letter on page 175. There were not lacking signs even before the war that the medical conscience had gone to sleep again, a lapse due in part to the skill of the engineer in producing fool-proof apparatus. But even fool-proof machines are not meant to be used by fools. For example, the portable x-ray apparatus commonly supplied to E.M.S. hospitals gives an x-ray intensity of 165 r/min. at 15 cm. when running at 65 kV and 5 mA. so the radiologist gives instructions that the apparatus is not to be used without a 15-cm. cone. A surgeon in the theatre, however, asks the radiographer to remove the cone so that he can have the tube close underneath the patient; the intensity at 6 cm. distance is then 1,000 r/min., so that in one minute's screening he may not only burn the skin of the patient but almost sterilize his assistants as well. Because it is difficult for a radiographer working in the operating theatre not to obey the surgeon's orders, the responsibility of the surgeon for knowing what his order entails is all the greater. It is not impossible that some of the skin troubles put down to "plaster idiosyncrasy" are in fact due to excessive x-ray exposure, and for prolonged fluoroscopic work an accumulative timing device which turns off the apparatus when the total exposure reaches a certain previously determined limit is very desirable.

A related difficulty is occurring in radiotherapy, and is also probably due to the dispersal of hospital staffs over

the countryside. Postal directions for the use of radium or radon in a patient whom the sender has never seen are at their best unlikely to serve the true interests of the patient, and at their worst are improper. It would be idle to deny that some of these difficulties have their origin in a feeling that radiologists are trying to maintain a kind of vested interest; but "the first consideration is that the use of x rays and radium is dangerous both to the patient and to the doctor unless the latter thoroughly understands their use."

INHERITANCE OF HARELIP AND CLEFT PALATE

The problem of the inheritance of harelip and cleft palate is a difficult one, and no uncomplicated Mendelian scheme will fit the facts. Transmission is in general recessive, but the proportion of individuals affected is much less than the expected quarter. Furthermore, there is a sex difference, the condition being commoner in males than females. As in other similar instances, a two-gene hypothesis has been advanced: the combined action of an autosomal and a sex-linked gene, both recessive. Csik and Mather¹ have shown that the sex difference cannot be due to sex-linkage. It is fairly clear that only a proportion of the bearers of the abnormal gene show any malformation, and that, for some reason at present unknown, that proportion is higher in males. Mather and Philip, in an analysis in a recent paper,² use the methods associated with the names of Fisher and of Haldane, applying them to two large collections of data, those of Sanders and of Schröder. To add to the difficulty of analysis and interpretation Schröder's data were admittedly selected for high incidence. First of all it was found that the two sets of data differ. Sanders's data are homogeneous and indicate the presence of an autosomal recessive gene. Actually, it is possible that any one of several genes might be responsible; the methods used could not elucidate this point. Schröder's data are not homogeneous. While a proportion of cases is due to an ordinary recessive gene (or one of a number of such genes) others give clear evidence of partial sex-linkage. It is remarkable that almost simultaneously with Haldane's demonstration of partial sex-linkage in the transmission of spastic paraplegia³ another instance should have been discovered. (Briefly, partial sex-linkage means the transmission of a gene situated on the pairing portions of the X- and Y-chromosomes and showing a far more subtle relation to sex than ordinary, sex-linked, X-borne genes, such as that responsible for haemophilia.) Having established that at least two genes must be responsible in Schröder's cases, a re-examination of the descriptions of the cases revealed that the genetic difference did correspond to a clinical difference, though not an absolute one, for the partially sex-linked cases tended to be more severe. The authors of this paper have performed a service in showing that, provided the new methods are used, successful analyses can be made when the genetic situation is far from simple, and, furthermore, when the data are far from perfect. The devising of the new methods has been a triumph of statistical skill, though fortunately their use does not demand corresponding mathematical abilities. Further examples of the proper use of the Fisher methods will be very welcome, however, to those who are not mathematicians and are starting to use them with some natural timidity.

¹ Wood, F. Carter, *J. Amer. med. Ass.*, 1931, 96, 1760.

² *Ann. Eugenics*, 1938, 8, 126.

³ *Ibid.*, 1930, 10, 405.

⁴ *J. Genetics*, 1941, 41, 141.

LIVER FUNCTION IN GRAVES'S DISEASE

It has been shown by Elmer and his co-workers¹ that the liver is the organ most concerned with the excretion and detoxication of thyroxine. Liver damage in hyperthyroidism might, therefore, be of great clinical interest; and there is now evidence that it often occurs. This evidence, which has been reviewed by Lichtman,² who also contributes new data on cinephen oxidation and galactose tolerance, is derived from three sources. The administration of thyroxine to animals produces functional and anatomical changes in the liver; necropsy material from thyrotoxic patients has disclosed a high proportion of abnormal livers; and liver-function tests have frequently given abnormal results. One of the few uncertain links in this chain concerns the possible role of increased intestinal absorption in those tests of hepatic function which depend upon the oral administration of the test substance, and we have already noted in these columns³ the divergent views of Althausen, Loekart, and Soley⁴ and of Maelagan and Rundle⁵ on the impaired galactose tolerance, which is evidently a characteristic finding. It appears that increased absorption occurs in thyroxinized rats and probably in thyrotoxic patients,⁶ but it has not been shown that such increased absorption would necessarily impair galactose tolerance by itself, for it has not been studied apart from thyroid intoxication. The question is difficult to investigate directly in the human being, but it is significant that many of the intravenous liver-function tests, which must be independent of the absorption factor, have given positive results. Thus, Youmans and Warfield⁷ found retention of phenoltetraethylphthalein in the blood in twenty-two out of forty-eight cases, and Maddock, Collier, and Pederson⁸ retention of bromsulphalein in eight out of thirteen cases. There was a positive Takata-Ara reaction in six out of fourteen of Ragins's cases,⁹ while Haines, Magath, and Power¹⁰ obtained abnormal results with the intravenous hippuric acid test in four of the six cases in which the test was done. It is still possible that increased absorption is partly responsible for the results where oral methods are used; if so, these might well possess an advantage from the purely diagnostic point of view. At present there is no general agreement on the clinical value of these tests in Graves's disease. Several authors have been impressed with the diagnostic possibilities and with the likelihood of relation between liver damage and thyroid crisis.¹¹ The latter is, however, denied by others,¹² and further work will evidently be necessary.

ISINGLASS AS A TRANSFUSION FLUID

In order to restore and maintain the volume of circulating fluid a transfusion fluid must answer the following requirements: (1) The molecule of the dissolved substance must be of such a size that the fluid will not leave the vessels too freely. (2) The solution must exert an osmotic pressure and possess a viscosity approaching as closely as possible that of whole blood. (3) It should be as nearly as possible isotonic with the contents of the red cells. (4) It must be non-antigenic and innocuous. A 7% solution of ordinary gelatin made from animal sources¹³ in 0.9% saline is satisfactory except as regards the last point. Cases have been recorded in which gelatin has been responsible for infection

with anthrax or tetanus. Fish gelatin or isinglass should theoretically be free from such contaminations. N. B. Taylor and E. T. Waters¹⁴ have just published some interesting experimental observations on the use of special purified isinglass in dogs after severe haemorrhage. A 7% solution in 0.9% saline was employed. This was found not to gel at room temperature. When the blood pressure had fallen to a dangerously low level after bleeding the isinglass solution was transfused slowly (in from 15 to 20 minutes) into the femoral vein. In most of the experiments haematocrit determinations were made before and after bleeding in order to check the proportion of the blood volume which according to calculation had been lost, though the authors realize that such figures are not altogether reliable. In experiments in which large quantities of blood were rapidly removed it was found that transfusion with isinglass, even when incomplete replacement was affected, caused and maintained a satisfactory rise in blood pressure, though the animals subsequently died, probably from other contributory factors such as unsatisfactory anaesthesia. In a series of survival experiments in which an amount of blood was withdrawn which might be expected to cause death in an untreated animal, very good results were obtained with transfusions of isinglass. The animals made complete and uneventful recoveries. It was found that a mild degree of sensitization which lasted only two weeks followed the transfusion. It is hoped that further purification may prevent such sensitization from occurring. The fate of isinglass after its introduction into the body is now being investigated. The authors suggest that it is probably broken down and used by the tissues, and is therefore preferable to gum acacia, which the body is unable to metabolize as a transfusion fluid. The viscosity of isinglass is about double that of serum and plasma; this, it is suggested, is also an advantage. It would appear from these preliminary studies that if a really pure non-sensitizing isinglass can be prepared it will merit more extensive trial on human as well as on animal subjects.

VITAMIN B₆ (ADERMIN)

Rat acrodynia, caused by a deficiency of vitamin B₆ in the diet, is characterized by symmetrical dermatitis with oedema and scalliness, mainly on the peripheral parts of the body—e.g., mouth, nose, paws, ears, and tail. Chick *et al.*¹⁵ have distinguished three different types of skin lesions in rats cured respectively by riboflavin, filtrate fraction, and eluate fraction (containing vitamin B₆) from yeast extracts. During a deficiency of riboflavin, rats developed an eczematous condition of the skin, particularly of the nostrils and eyes. When deprived of the filtrate fraction, which contains pantothenic acid and probably other essentials also, the rats' coats were poor and matted and the pigmented areas over the heads and shoulders often became grey. The fur of the forearms and abdomen was frequently stained with a reddish exudate containing protoporphyrin. Rats deprived of the yeast eluate fraction (containing adermin) developed the characteristic dermatitis and, in time, a tendency to fits of an epileptic nature. These fits showed different stages—a sudden rushing about and leaping into the air, with the eyes protruding and sometimes suffused with blood; a helpless condition with muscular twitching of the limbs and tonic spasms; a comatose state with a slowed and weakened heart-beat and absence of corneal reflex; and gradual recovery, first of the head and fore-

¹ *Iodine Metabolism and Thyroid Function*. Oxford, 1938.² *Ann. intern. Med.*, 1941, 14, 1199.³ *British Medical Journal*, 1941, 1, 367.⁴ *Amer. J. med. Sci.*, 1940, 199, 342.⁵ *Quart. J. Med.*, 1940, 9, 215.⁶ *Arch. intern. Med.*, 1926, 37, 1.⁷ *West. J. Surg.*, 1936, 44, 513.⁸ *J. Lab. clin. Med.*, 1935, 20, 902.⁹ *Ann. intern. Med.*, 1941, 14, 1225.¹⁴ *Canad. med. Ass. J.*, 1941, 44, 547.¹⁵ *Biochem. J.*, 1940, 34, 580.¹⁶ *Ibid.*, 595.

paws and later of the hind legs. Pure vitamin B₁₂ cured these rats and also prevented the onset of the condition in the control animals. Schneider *et al.*⁴ have found that acrodynia may be cured by giving vitamin B₁₂ together with unsaturated fatty acids or the filtrate from rice bran extracts similar to the liver and yeast filtrate fractions. Apparently acrodynia in their rats was not the simple dermatitis due to a deficiency of vitamin B₁₂ only, but a more complicated one due to a deficiency of at least two factors. György and Eckardt⁵ distinguished three different kinds of cutaneous lesions in rats which were supplied with vitamin B₁₂, aneurin, and riboflavin, and they also concluded that the rat needs at least one other member of the vitamin B complex for perfect nutrition. The use of vitamin B₁₂ in human nutrition has recently been reported by Spies *et al.*⁶ who obtained dramatic relief of symptoms (extreme nervousness, insomnia, irritability, abdominal pain, weakness, and difficulty in walking) in patients who had been treated successfully for pellagra and beriberi but had remained on their deficient diets and retained the above symptoms. Antopol and Schotland⁷ obtained considerable improvement in the condition of 6 cases of pseudohypertrophic muscular dystrophy. It is, however, possible to give too much vitamin B₁₂. Unna⁸ has found that the L.D.₅₀ of vitamin B₁₂ hydrochloride for rats is 3.7 grammes per kilogramme following subcutaneous injection and 5.5 grammes per kilogramme following oral administration. Doses above 1 gramme per kilo produced toxic manifestations in dogs, rabbits, and rats, characterized by impairment of the co-ordination and tonic convulsions, but this dose was at least 1,000 times the therapeutic dose. The metabolism, circulatory and respiratory systems, and isolated smooth muscle organs of normal animals were not affected.

THE MENOPAUSE

Puberty and romance are not strangers. The young woman becomes conscious of new hopes and new powers which are undismayed by the occasional faint whisperings of a nameless fear. Autumn irrevocably follows summer, and so the years of full glandular activity and co-ordination lead at last to that stage of hormone readjustment which marks the critical period of "the change of life." Fears now predominate, for a while at least, though time often proves them ill founded when, instead of a dreaded disintegration, there is revealed that new physical and spiritual beauty which Whistler has immortalized in the portrait of his mother. From earliest times the menopause has been regarded as the critical stage in a woman's life, but it is surprising what confusion still exists in the minds of both laity and profession as to which symptoms are to be regarded as normal and which are warnings of impending or present dangers. There has been controversy for many years over the question whether an artificially induced causes more distress than a spontaneous menopause and whether symptoms are worse after irradiation or surgery. Hugh McLaren⁹ has published two interesting papers on this subject from the department of obstetrics and gynaecology of Aberdeen University. His first dealt with the normal and the second with the induced menopause. In the first group it was found that hot flushes occurred in approximately 50% of cases before the menopause, but less commonly afterwards. They did not usually cause incon-

venience, but the incidence of severe flushing was greater after than before. Post-menopausal atrophy of the genitalia was found to be by no means a constant feature, but when it did occur the vagina was involved at an earlier stage than the external genitalia. In over half the cases studied, however, there was little anatomical or physiological change. When the menopause was induced by irradiation or by removal of the ovaries it was found that hot flushes caused inconvenience in half the cases, being much more common than during a normal menopause. They seldom appeared, however, when a hysterectomy was performed with conservation of the ovaries. In view of the argument which has centred from time to time on this question of ovarian conservation these results are significant.

The analysis also revealed that atrophy of the vaginal mucosa was rare when ovarian tissue was conserved, but took place in 14% of cases of radiation menopause and in 28% when oophorectomy was performed with hysterectomy. A complication of radium therapy to which the author draws attention is the occurrence of vaginal strictures, which happened in 8% of his series. This figure excluded the many cases of stenosis of the vaginal fornices, which is common even after a normal menopause. The change thus induced in the anatomy and physiology of the vagina may have serious results in the domestic life of the patient, and the possibility of this should be remembered when the choice of treatment is being considered. Though there is much that commends radiation as a means of inducing the menopause, the superficial advantages must not be allowed to mask the real dangers. The greatest of these lies in the failure to select the suitable case carefully. In view of the possibility of overlooking an early carcinoma it can scarcely be over-emphasized that no woman should have a radiation menopause induced either by radium or by x rays before an exploratory curettage has been performed. It should also be remembered that excessive bleeding and intermenstrual bleeding are pathological, and without investigation should never be dismissed lightly as signs of "the change of life." The fact that such avoidable mistakes are still made is one reason why the menopause continues to be a critical period in the life of a woman.

THE HALF-YEARLY INDEXES

The usual half-yearly indexes to the *Journal* and to the *Supplement* will soon be ready. They will, however, not be issued with all copies of the *Journal*, but only to those readers who ask for them. Any member or subscriber who wishes to have one or both of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Accountant, British Medical Association House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this.

In the *Supplement* this week (p. 15) we publish a letter which has been sent by the Secretary of the Central Medical War Committee to the Under-Secretary of State for War on the commissions now being granted to women doctors. At present women practitioners serving with the Army for the duration of the war are not officers of the R.A.M.C. In the opinion of the Central Medical War Committee they should be granted the same rank, status, and title as men, a women's branch of the R.A.M.C. being created if necessary. The present position constitutes a denial of an accepted principle of the medical profession, which recognizes no distinction between the sexes in the execution of professional duties.

⁴ *J. Biol. Chem.*, 1940, 132, 539.

⁵ *Biochem. J.*, 1940, 34, 1143.

⁶ *J. Amer. med. Ass.*, 1939, 112, 2314.

⁷ *Ibid.*, 1940, 114, 1058.

⁸ *J. Pharm. exp. Ther.*, 1940, 70, 400.

⁹ *J. Obstet. Gynaec. Brit. Emp.*, 1941, 48, 1.

SURGICAL PRINCIPLES IN DIVISIONAL MEDICAL UNITS

BY

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The work of divisional medical units under conditions of active service is mainly aimed at the efficient evacuation of casualties. It has become clear in the present campaign that a smooth and rigid scheme of treatment and evacuation from aid posts to casualty clearing stations as was possible in 1917-18 cannot be achieved. The medical services in the field must adapt their activities to events, and though it is impossible to forecast the circumstances under which individual units will work, the general principles of wound-treatment should form the background of their action in relation to the individual wounded man. There is no doubt that the treatment he receives in the zone in question has a great influence on his subsequent condition, and an attempt will be made below to define what should or should not be done with a wounded man in regimental or field ambulance posts.

We started this war with a clear idea of the ideal wound treatment: this was founded on the experiences of 1914-18, and was to some degree coloured by reports on Spanish practice in their civil war. Since then experiences with our Expeditionary Forces and at home have done little to alter the established principles, though they have brought to light the value of the sulphonamide group of drugs in prophylaxis. Moreover, there has been activity on the research side both in relation to these drugs and into the value of antisera for anaerobic infections. The importance of fluid replacement in the treatment of shock has become fully recognized, and the provision of preserved blood or a substitute has been put on a sound basis.

Importance of Early Operation

Whatever adjuvants to wound treatment we may now possess nothing has lessened the proved importance of early operation for the majority of the wounded if serious infection is to be avoided. The operation in general will be one of débridement or the establishment of drainage, in accordance with the time-lag imposed and the surgical conveniences available. Primary repair is aimed at only for intra-abdominal injuries and those of the chest wall and skull. Primary suture of a somatic wound is not advisable except in very carefully selected cases. The ideal time for operation after the man has been injured cannot be defined with absolute precision. It is generally recognized that the period during which a radical excision or repair operation is likely to be satisfactory is within at most twenty-four hours of injury. Subject to the necessary period of resuscitation most authorities would reduce the ideal time-lag to twelve hours.

Our organization in the forward area is based, therefore, on getting the seriously wounded into the care of a surgical centre with the minimum of delay. The term "surgical centre" is used to imply any organization where formal surgery and the full process of resuscitation can be carried out. The difficulties in conforming to this ideal under the varying conditions of modern war are only too patent. We have to admit this handicap and aim at adaptability and elasticity in this matter as in other spheres of Army activity.

Treatment in Forward Units

The following may be laid down as the procedures to be carried out for the wounded at the aid post before transfer to the surgical centre:

1. A simple dressing of adequate size is applied to the wound if this has not already been done.

2. If the patient has not already received it, A.T.S. (3,000 units) should be given and the fact notified on his field medical card. The employment of anti-gas-gangrene

serum at this stage may be of value, but a decision as to its general use has not been arrived at. Sulphanilamide may be administered to the more seriously wounded, especially in cases in which fractures are present. It should be given by the mouth, a 2-gramme dose to start with and 1 gramme at four-hourly intervals subsequently up to a total of about 20 grammes. A note as to the time the treatment started and the dosage given should always be entered on the man's documents for future guidance. The question of packing the wound with sulphanilamide is referred to below.

3. *Shock*.—The first need of the wounded man is for rest, warmth, relief of pain, and drink. Simple though these demands are in quiet periods, in forward units they cannot always be completely satisfied under conditions of activity. When achieved they go far to bring a man out of primary shock. Transfusion of serum or plasma will of necessity be limited by the conditions of the aid post and other circumstances. In general, it may be said that the transfusion of a pint of serum or plasma at this stage should be reserved for serious fracture cases or for those in which a severe haemorrhage has been controlled by ligature. For a serious burn similar treatment will sometimes be advisable before evacuation, but it is evident that the storage of the necessary material and the conditions for the proper administration of a transfusion will exist only in the larger aid posts.

The following notes are concerned with the treatment of special conditions.

Fixation of Fractures

Satisfactory fixation of fractures before evacuation is of the first importance if secondary wound shock and increased local damage are to be avoided. For fractures of the thigh and in the region of the knee the Thomas splint is of the greatest value. It should be applied in accordance with the recognized method, over the clothes with the boot and sock still in place. Traction is exerted through a clip or skewer attached to the boot or by binding the foot to a foot-plate. Traction should not be severe, nor should it aim at a complete reduction of any overlap of the fragments which may be present. A splint with a large-sized ring must be used for these cases, and therefore the result of forced traction is to push the ring up into the femoral angle, producing a condition that is both uncomfortable for the patient and liable to produce a pressure sore. The tension applied should only be sufficient to stabilize the fragments. The ring of the Thomas splint, when too large, can be to some extent stabilized by packing between the upper part of the thigh and the outer section of the ring. Judicious suspension of the ring from a suspension bar attached to the stretcher will also have the same effect.

Fractures of the tibia and fibula may be treated in the same splint. As a rule little or no traction is required, but control of the rotation of the lower fragment should be obtained by binding the foot to the foot-piece. In fractures of the lower half of the leg a simple box splint with a foot-piece is, I think, preferable. This can be made from Cramer wire splinting or, if this is not available, from boards or Gooch splinting. A similar arrangement should be employed for the splintage of injuries about the ankle or foot.

In the upper extremity, fractures of the humerus in the proximal half of the bone, and including injuries to the scapula, are best fixed by binding the arm to the side with a pad placed between the arm and the chest wall; the forearm is supported by a sling. If the fracture is in the lower half of the bone or about the elbow-joint the use of a posterior splint extending from the shoulder to the hand is desirable, the elbow being set at about a right-angle. This splint is most conveniently made from Cramer wire splinting. If it happens to be available a plaster-of-Paris slat instead of the wire splint will serve even better, but there must be no question of applying a complete encircling plaster bandage in this phase. Fractures of the forearm, wrist, and hand should be immobilized on a section of Cramer wire splinting bent at a right-angle to hold the elbow. It should be noted that fixation of fractures in this

stage aims at immobilization rather than rectification of position. It will be sufficient if the limb is aligned in its splint in approximately the normal position. Tight bandaging, especially of the forearm and about the elbow, should be avoided.

Fractures of both lower and upper jaws can for the purposes of early transport usually be adequately fixed with the four-tailed bandage. If there is a tendency for the tongue to fall back owing to complete destruction of the symphysis, a stitch or two should be used for either fixation or traction. A feeding-cup with a rubber tube extension on the spout will facilitate feeding. If possible the man should be transported in the sitting position.

Spine.—It has become customary to advise the transport of spinal injuries in the prone position. This position is very uncomfortable and distressing for a stretcher journey of any length. Moreover, it renders access for catheterization impossible without considerable disturbance. The theory supporting this practice is that extension of the spine is thereby maintained, the position of extension preventing vertebral displacement and tending to reduce any deformity present. The prone position certainly has the advantage that it prevents the formation of dorsal pressure sores, though not those on the ventral aspect. It is clear that missile wounds of the spine, whether associated with cord symptoms or not, are not subject to this argument. The same may be said of impacted flexion fractures. It is doubtful if the position is of much importance in the case of fracture-dislocations provided that gross flexion of the spine is not allowed to occur. It is therefore advised that spinal injuries should be transported in the supine position. The man should be lifted by three persons, one of them taking care to support the spine at about the level of the injury in such a way as to prevent flexion. On the stretcher the lumbar curve is maintained by a small cushion or folded blanket. For cervical injuries extension is sufficiently maintained by a similar arrangement placed just above the shoulder level. In spinal injuries and wounds in which the cord or cauda has been involved the important point in early treatment is the avoidance of pressure sores and infection of the bladder. Pressure sores on the heels are less likely to form if sock and boot are left on, unless the latter are wet through. If available an air ring should be put under the buttocks. When retention of urine is present a gentle attempt at expression should be made; if this fails and the man is very uncomfortable catheterization may be carried out, but only if it can be done with aseptic precautions. If the case has to be retained for some days or if the period of transport is long, it will be well to tie the catheter in (Taylor, 1941).

Ribs.—If only a few ribs are broken the disturbance necessary for proper strapping should be avoided unless dyspnoea is extreme and the man is clearly unfit for transport. When many ribs are staved in it is best to strap the chest, completely encircling both sides. This fixation of the lower part of the chest will enforce diaphragmatic breathing, but it reduces the dyspnoea resulting from irregular chest movements.

Other Special Conditions

Amputations.—Primary amputation in the forward area should only be undertaken when the lesions of the soft parts are so gross or the damage to the main vessels is so complete that survival of the distal part is out of the question. If evacuation is good even when these conditions are present, operation should be deferred until the surgical centre is reached, so that a more formal procedure can be there carried out than is usually possible in an aid post. It is said that the development of secondary wound shock can be checked (M.R.C. War Memo. No. 1, 1940) in such cases by the application of a tourniquet immediately above the wound.

Chest Wounds.—Wounds in this area rarely require more than a surface dressing unless an open pneumothorax or sucking wound is present. In this latter event it is important to close the opening effectively. Suture with this in view should not be carried out unless complete wound

excision can be coupled with it. A large greased pad covered with mackintosh tissue should be strapped over the opening (Barrett, 1940). Elastoplast will be most satisfactory for the purpose, but ordinary adhesive tape will serve. The strapping should overlap and extend over the whole pad. Occasionally an early pressure pneumothorax may be met with. Cyanosis and dyspnoea, together with displacement of the apex beat and sometimes the trachea, will enable a diagnosis to be made (Sellors, 1941). When it is recognized it should be relieved by needle puncture at once.

Abdominal Wounds.—In the ordinary way the wounds will be protected and the patient marked for early evacuation to the surgical centre. Morphine should be given in those cases in which diagnosis of perforation of the gut is evident from the position of the wound or from the clinical signs. No attempt should be made to return prolapsed viscera or omentum; they should be covered with a normal saline pack or plain dressing and bandaged, a note being made of the state of affairs on the F.M.C.

Head Injuries.—A simple protective dressing only should be employed, even when there is prolapse of brain. A note as to the mental state of the patient and a record of the pulse and condition of the pupils or any paralysis which may be present should be made on the F.M.C.

Burns.—The treatment of burns in the initial phase is directed to preventing shock, which may prove fatal. If, however, the burn is of such a size as not to endanger life the main consideration is quick healing and the restoration of function. The danger to life from extensive burns is best treated by some method of surface coagulation. Tanning has proved the most satisfactory in this respect. The tanning is perhaps best effected with tannafax jelly or the application of compresses wrung out in 2% tannic acid. The latter method of application is most convenient in cases to be evacuated shortly. Smaller burns, and any burns of the face and hands, should not be tanned; they should be powdered with sulphanilamide and then covered with vaselined lint or gauze. No attempt at surgical cleansing is made. There are several pastes on trial for application under these conditions, but it cannot yet be said that any have proved their superiority to the simple method suggested (E.M.S. Memo., 1941).

Haemorrhage.—As a serious problem haemorrhage does not appear as often in aid posts as one would expect from a perusal of first-aid treatises. No doubt if a major vessel is torn open a man dies before aid can be given, and he does not reach the aid post. If a medium-sized vessel is divided completely it has considerable capacity of retraction, and in the condition of shock which is produced by the injury self-sealing will very likely occur. When bleeding is obviously continuing from a wound an attempt should be made at the dressing station to control the bleeding-point with a ligature or forceps. If a tourniquet has been applied it is most undesirable to continue its use for longer than is necessary. In a large proportion of cases in which a tourniquet has been applied in the field haemostasis would have occurred without its use, for it takes place after the tourniquet has been in position for half an hour or so. For haemorrhage from minor vessels firm pressure exerted by a pad bandaged in place, coupled with recumbency, will often suffice for control.

Priority in Evacuation.—When evacuation is normal and the journey to the surgical centre can be effected in about an hour abdominal injuries should have precedence. Fractures and sizable retained foreign bodies should come next, and chest and head injuries last. If the pressure of casualties is very great this order will clearly have to be altered, and the alteration must be determined by the medical officer on the spot, since he has a knowledge of the local conditions and surgical possibilities.

Isolation of an Aid Post.—When evacuation is impossible and an aid post is isolated and therefore saddled with the responsibility for the wounded over possibly a period of several days, it is clear that an attempt should be made to produce the conditions of a surgical centre. In fact, this will not often be practicable on account of the lack of personnel and of the necessary amenities. Formal or radical operations for abdominal wounds will seldom be carried out,

and the same may be said for chest and head injuries. The surgical treatment of open fractures will be directed to effecting free drainage rather than radical wound excision. Amputations should be carried out for gangrene or for local infections which may threaten life.

Pansément d'Attente.—The main efforts of available personnel should be directed to the prophylactic use of sulphanilamide for all serious wounds—or, if circumstances permit, all wounds. This treatment should be made effective as soon as possible. From 5 to 20 grammes should be introduced into each wound, according to its size; a total of 40 grammes should not be exceeded in any individual. Enlargement of the wound may be necessary to give complete access. Foreign bodies which have been located and are easy to remove should be extracted at this stage. The powder should, so far as is possible, be brought into contact with the whole wound surface or track; it should not be tightly packed in. An insufflator, if available, may be used; but it would appear that introduction with a small spoon of known capacity is more convenient. If instead of powdered sulphanilamide the tablets are used, the latter should be crushed before introduction in order to facilitate absorption by the tissue fluids. The prophylactic use of the drug by mouth as detailed above should be reserved for cases in which the development of serious infection is deemed probable: missile fractures and irregular retained foreign bodies are instances which would come into this category.

Summary

The above is a brief outline of the surgical principles which should determine our treatment of the wounded man in the forward area, together with an attempt to summarize practice. In war any set plan can seldom be carried through in every detail. We should have a clear conception of the ideal at which we aim, and in action do our best to attain it despite unforeseen difficulties and inevitable handicaps.

I should like to acknowledge my indebtedness to Brigadiers F. Laing and E. M. Cowell and to Colonels J. Weddell and L. Colebrook for useful suggestions and advice in the preparation of this memorandum.

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WORK OF THE LISTER INSTITUTE STUDIES OF VITAMINS IN WHEAT FLOUR

It is fifty years since the Lister Institute (then called the British Institute) of Preventive Medicine was incorporated, but as active work did not begin until 1893 any jubilee commemoration is postponed until the year after next, by which time it is hoped that the dawn of peace will be stimulating research in every field. Meanwhile the report of the Governing Body for 1941 contains an account of much interesting work. Probably the studies on accessory food factors claim the most immediate importance in view of the food situation in this country.

The Division of Nutrition, which is located at Cambridge, has been devoting its energies to filling the gaps in knowledge which still exist as to the nutritive value of different portions of the wheat grain. The flour generally used in this country for making white bread represents 73% of the wheat grain, the remainder being discarded and used for animal feeding. Wholemeal flour (100% extraction) has been shown to be richer in mineral constituents and to contain more vitamin B₁, more of the vitamin B₂ complex, and proteins of higher nutritive value than white bread. But some of the previous investigations are based on results which could be criticized in the light of more

modern methods, and therefore it was thought desirable to investigate further the digestibility of bread made from wholemeal and white flour respectively, the relative nutritive value of the proteins contained in each, and their content of the different members of the vitamin B₂ complex.

Superiority of Wholemeal

So far as digestibility is concerned, the observations were made on six volunteers who for ten or eleven days consumed diets consisting almost entirely of bread made from the different types of flour. In the white bread ingested, "5% of the energy" and 9% of the nitrogen was found in the faeces, the corresponding figures for the wholemeal bread being 13 and 14% respectively. It is calculated that in the manufacture of white flour about 20% of the total energy available to man in the wheat berry is discarded, while of the nitrogen 27% goes into the offals. None of the subjects was adversely affected by the wholemeal breads, of which they consumed 2 to 2½ lb. daily.

The nutritive value of the proteins of white and wholemeal flours was studied by comparing the growth of young litter-mate rats. After adjustments had been made to secure a fair comparison, the rats on wholemeal diets were found during the observation period of nine weeks to have a weight increase nearly twice that of rats on the white-flour diet. A 30% superiority in nutritive value for the proteins of the whole wheat was confirmed by other experiments. Similar experiments on rats were carried out to determine the value of B₂ vitamins in the flours. The diets were made equal in other respects, but the rats receiving the white-flour diet, even though fortified with vitamin B₂, showed a rate of growth which was only about one-half that of the group receiving the wholemeal. The superiority is attributed to the higher content of B₂ vitamins in the wholemeal as compared with the white flour.

Some work has been done on the fat-soluble vitamins in wheat flour. In the process of milling a considerable part of the fat contained in the germ of the wheat grain is disseminated throughout the flour. The fat-soluble vitamins present in this oil are provitamin A (carotenoids) and vitamin E. The biologically active fraction of provitamin A is very small, so small that rats living on a diet composed almost entirely of flour failed to obtain sufficient to protect them from vitamin-A deficiency. Wholemeal flour is no richer than white flour in this respect. The bleaching of flour to get rid of its creamy colour destroys the carotenoid pigments, but the amount is so small that it cannot be regarded as a serious nutritive loss; the possible damage to other nutrients, especially vitamin E, is under investigation.

Yeast as a Human Food

The nutritive value of yeast, with its high content of B vitamins, has been studied, more particularly the supplementary value of the B vitamins of the type of yeast known as *Torula utilis* to those in straight-run white flour. The addition of 2½% yeast to white flour makes it as good a source of B vitamins as wholemeal flour, and the addition of 5% makes it a better source. This amount of yeast may be added to white or wholemeal breads without seriously affecting their palatability, and in soups, meat and vegetable stews, and many other dishes yeast may be added in reasonable amounts with advantage. Work done on vitamin C showed that tomatoes grown in the open had markedly more antiscorbutic potency than those grown under glass. Some biological tests have been carried out on strawberries, the jam of which is popular and can be made available at times of the year when natural vitamin C is not so plentiful as at others. The antiscorbutic potency has been found to be of the same order as that of citrus fruits.

Scrological and Biochemical Studies

Only the briefest reference can be made to much other research work. An inquiry has been held into the toxicity for mice of *Cl. welchii* strains from war wounds and air-raid casualties. While there is little doubt that the more toxic strains are likely to exert a more harmful effect upon the resistance of the patient than the less toxic, it is equally clear that even the least toxic are capable of setting up gas gangrene. The main source of danger lies in the conditions obtaining in the wound.

Experiments have been continued on antityphoid vaccination, especially with a view to preserving the Vi antigen. It has now been found that a vaccine that is not only killed with alcohol but preserved in it still contains the Vi antigen in its effective form after storage in the cold for at least nine months, and probably much longer.

In some work on the antigenic complex of *Bact. dysenteriae* (Shiga) it has been shown that agar, which by itself is non-antigenic, can be rendered antigenic by combination with the polypeptide components isolated from the antigen of this organism or the O form of *Bact. typhosum*.

The study of the manifold effects of sex hormones has been proceeding. One point investigated is whether oestrogenic hormones are necessary in the male organism for the normal development of the sex organs. In the male organism such large quantities of this female hormone are produced that some consider that for the commercial manufacture of oestrone the urine of the stallion is a better source than that of the mare. Therapeutic treatment with oestrogens of male patients suffering from prostatic hypertrophy has been advocated. The Lister Institute workers, however, find that when administered simultaneously with male hormones, oestrogens produce a very small increase in the development of the sex organs as compared with that which can be produced by increasing the dose of male hormone alone. It is concluded that the female hormone is not only unnecessary for the normal development of the sex organs in the male organism but may be harmful in view of the pathological (including precancerous) changes which oestrogens produce, and in any case its therapeutic application in the treatment of diseases of the male sex organs is not warranted.

To the National Collection of Type Cultures of Micro-organisms, which is housed at Elstree, 150 strains, many representing new types, have been added during the year.

MINISTRY OF HEALTH STAFF

The following appointments and promotions in the medical staff of the Ministry of Health have recently been made by the Minister of Health:

Senior Medical Officers: E. L. Sturdee, O.B.E., M.R.C.S. (in charge of the Regional Medical Organization, including environmental hygiene; succeeded Dr. H. A. Macewen, O.B.E., who has retired from the service of the Ministry). W. A. Lethem, M.C., M.D. (Food and Nutrition).

Principal Regional Medical Officer of the London Region: M. D. Mackenzie, M.D.

Deputy Senior Medical Officers: N. M. Goodman, M.D., C. J. Donelan, M.B., Miss G. I. Brodie, M.B., V. D. Allison, M.D.

Regional Medical Officers: G. V. Davies, F.R.C.S., D. L. MacKenna, M.B., W. G. McKenzie, M.C., M.R.C.S.

The German journal *Archiv für Schiffs- und Tropen-hygiene* has with the new year changed its name to *Deutsche Tropenmedizinische Zeitschrift*, and will in future appear fortnightly instead of monthly.

BEIT MEMORIAL FELLOWSHIPS

A meeting of the trustees of the Beit Memorial Fellowships for Medical Research was held on July 23. It was noted that out of the thirty present Fellows thirteen had already been seconded at their own request for more direct service during the war, and six others have undertaken some research work for Government Departments on problems arising out of the war.

Election of New Fellows

The following elections were made, all with permission for each Fellow to be seconded at any time for war duties:

Senior Fellowship (£700 a year).—T. R. R. Mann, M.D.Lwov, Ph.D.Camb. To continue his work on intracellular metallo-protein compounds, especially of red blood cells, at the Molteno Institute of Biology, Cambridge University.

Fourth-year Fellowships (£500 a year).—J. F. Danielli, B.Sc., Ph.D.Lond. To continue his work on the permeability of muscle fibres and of capillaries, at the Biochemical Laboratory, Cambridge University. Miss C. O. Hebb, M.A.Dalhousie, Ph.D.McGill. To continue her studies of physiological problems in relation to high altitudes, at the department of physiology, Edinburgh University. H. Lehmann, M.D.Basle, Ph.D.Camb. To continue his work on the influence of shock and of the suprarenal glands on glycogen synthesis, at the Biochemical Laboratory, Cambridge University.

Junior Fellowships (normal value £400 a year).—E. F. Gale, B.Sc. Lond., Ph.D.Camb., Fellow of St. John's College, Cambridge. To study bacterial amine production as a cause of non-specific infantile diarrhoea, at the Biochemical Laboratory, Cambridge University. W. Holmes, B.A.Oxf., Senior Demy of Magdalen College. To study the regeneration of nerve fibres after injury, at the department of zoology, Oxford University. Miss M. F. Lockett, M.D.Lond., M.R.C.P. To identify renal pressor substances responsible for experimental high blood pressure, at the Pharmacological Laboratory, Cambridge University.

Reports of Societies

YELLOW FEVER IN AFRICA

At the annual general meeting of the Royal Society of Tropical Medicine and Hygiene, with the president, Sir RICHARD CHRISTOPHERS, F.R.S., in the chair, a paper was read by Dr. G. M. FINDLAY on the present position of yellow fever in Africa.

Dr. Findlay said that recent events had clearly demonstrated the specificity of the mouse-protection test for immunity to yellow fever in the blood of human beings, and had shown that the area which had been marked out by this test as the endemic zone in Africa coincided very closely with the actual distribution of yellow-fever cases. The endemic zone now extended from the west coast of Africa just to the north of Cape Verde, along the southern border of the Sahara to the Anglo-Egyptian Sudan, and thence, bending southwards, it crossed the White Nile and extended as far east as, and quite possibly beyond, the Sudan-Abyssinian border; the eastern border of the area extended southwards through the western part of Uganda, and thence diagonally across the Belgian Congo to the mouth of the Congo River. Any area in this zone was liable to be the site of an explosive outbreak of yellow fever.

Three epidemiological types of yellow fever could be recognized in Africa—urban epidemicity, rural epidemicity, and rural endemicity. The first type was carried on by *Aedes aegypti* and was apparently due to the importation of yellow fever from the country into the town; in the second type it was impossible to exclude *A. aegypti* as a vector, as this mosquito was so widely distributed throughout rural Africa. The factors favouring rural endemicity were as yet unknown. It seemed most unlikely that infection could be maintained solely by the man-mosquito cycle. Although 20% of wild monkeys in the endemic zone were known to contain immune bodies in their blood, it was not considered likely that monkeys were sufficiently numerous to carry on infection in the absence of man. The possibility of other alternative hosts must therefore be considered. So far no wild animals other than one ostrich had been found to possess immune bodies in their blood, although in Columbia marsupials and certain other wild animals had been found to possess an acquired immunity. The sera of

numerous domestic animals in Africa—cows, sheep and goats, horses, pigs, dogs, and a camel—have been found to contain virucidal bodies against yellow-fever virus. The specificity of the mouse-protection test as applied to animals required further investigation, but the results so far obtained were suggestive. The possibility of a reservoir other than the mosquito but with a longer life could not altogether be excluded. The two chief problems in relation to yellow fever in Africa were the more efficient control of yellow fever in the endemic zone and the prevention of the spread to East and South Africa, with further extension to India and the Far East. Infection could be carried either by the infected mosquito or by the infected human host. Owing to the greater rapidity and the greater volume of traffic there was now much more chance of the virus spreading from the present endemic area and being carried either by plane, motor car, ship, or train to non-endemic areas. If infection reached East Africa there was at present a considerable chance of its passing across to Southern Arabia and India, because the dhows traffic was a replica of the shipping which during the seventeenth and eighteenth centuries carried yellow fever between Africa and America.

The methods of preventing the extension of yellow fever comprised more concentrated attacks on the breeding of mosquitoes and more efficient control of aerodromes and of persons travelling by air from endemic to non-endemic zones. In immunization was to be found a most efficient means of prevention, and it was quite time that regulations were promulgated to forbid the residence in any yellow-fever area of any non-African who had not been immunized against the disease. In certain selected areas mass immunization of the whole population must be considered. At present the greatest difficulty in the efficient control of yellow fever lay in the multiplicity of authorities, each of whom was concerned solely with the condition of affairs within his own borders. Until there was a greater correlation of administrative effort yellow fever would continue to be a menace to the health of Africa and of the whole tropical world.

General Discussion

Dr. HUGH SMITH (International Health Division of the Rockefeller Foundation), who had recently been in charge of yellow-fever investigations in Colombia, gave a brief account of the present position in South America. In the past three years there had been no instance of an *Aedes aegypti*-transmitted outbreak, although there had been many outbreaks of jungle yellow fever. In Colombia yellow fever recurred again and again at intervals of one or more years in the same isolated valleys, often within a short distance of a previous outbreak. Intensive studies had been made of all outbreaks, and so far no other arthropod than mosquitoes had been found infected. On eight occasions, however, virus had been isolated from wild *Haemagogus* mosquitoes. It was very difficult to account for the continuance of yellow fever in these areas, some of which were practically uninhabited. A high percentage of monkey blood, however, was positive for yellow fever, thus strongly supporting the suggestion that yellow fever could maintain itself in the absence of man. Although yellow-fever virus did not pass from one generation of *Aedes aegypti* to another through the egg, it was possible that this might happen with other mosquito vectors, and this question was now being investigated. The absolute impossibility of diagnosing yellow fever on clinical grounds was stressed. In eradicating yellow fever it was essential to combine immunization with eradication of *Aedes aegypti*; it was not, however, always easy to immunize a high percentage of the population. Efforts were now to be undertaken to eradicate *Aedes aegypti* from the whole of the Amazon Valley.

Colonel F. P. MACKIE drew attention to the difficulties imposed on air travellers by the differing regulations in force in different countries. Some countries accepted a certificate of non-exposure for six days; others insisted that if a person had been immunized against yellow fever he could not be admitted for ten days, while others extended the period to twenty-one or twenty-three days. Colonel T. MENZIES asked if combined vaccination against small-pox and yellow fever was recommended. It had been practised in certain French colonies. Dr. H. S. STANNUS said that he had never seen a case of blackwater fever in an

African, although such cases had been recorded. He suggested that they might in reality have been cases of yellow fever. Prof. T. F. HEWER drew attention to the difficulty in diagnosing cases of acute and subacute liver necrosis from yellow fever. Such cases, which were not uncommon, might in Africa be associated with black vomit. Brigadier RICHARDSON asked if there was any truth in the suggestion that dengue immunized against yellow fever.

Dr. FINDLAY, in reply, said it was now generally agreed that persons who had been inoculated against yellow fever were immune to the bite of an infected mosquito ten days later. There was absolutely no scientific justification for imposing quarantine periods of twenty-one days or over. Dr. HUGH SMITH concurred in these statements. It was impossible for anyone who had lived in an endemic zone to say that they had not been exposed to yellow fever, and certificates of "non-exposure" granted by any country in the endemic zone were therefore farcical. So long as immune bodies could be shown to be present in the blood by the mouse-protection test there was no need for re-immunization. If it was impossible to have a mouse-protection test carried out it was advisable to be re-inoculated every two years, although there was considerable evidence to show that anyone who had ever had immune bodies in his blood was immune for a considerable number of years. Combined inoculation by scarification of vaccinia and yellow fever was not favoured. Dengue and yellow fever gave no cross-immunity.

NASOPHARYNGEAL DISEASE IN MENTAL DISORDER

At the one hundredth annual meeting of the Royal Medico-Psychological Association, held in London on July 17, a discussion took place on diseases of the ear, nose, and throat in mental disorder.

Dr. T. G. GRAVES, president of the Association, said that the region of the ear, nose, and throat was a part of the body where there was the greatest concentration of functionally differing nerves and end-organs and other essential lines of communication, and this area also, from the point of view of absorption, formed the beginning of the visceral sheath. Here, therefore, disease, effecting positive and negative disturbances of sensation, could in the mind confused by toxæmia emanating from the same source produce an erroneous conception of environment. He added that clinicians who professed interest in the chronic infective process seemed to regard its importance very differently. For example, quite recently two important but separate clinical reviews had covered the subject with the sentence, "Of course, obvious septic foci should be removed." The adjective "obvious" seemed a meaningless and therefore unnecessary qualification.

Mr. H. G. BEDFORD RUSSELL said that it was often forgotten that the earlier response on the part of the tissues to infection with streptococci was the production of oedema, not pus. The presence of pus might be misleading in the establishment of the diagnosis of sinusitis. The phenomenal power of swelling possessed by the sinus lining resulted in localized pains in various parts of the head. The generalized headache might be understood when it was recalled that the trigeminal nerve supplied the meningeal as well as the nasal sinuses. There was considerable evidence that migraine was associated with an urticaria of the sphenoidal lining rather than inflammation thereof. He described a number of cases in which nervous disorder had been associated with unsuspected nose trouble, with oedema of the sinuses. There was a flavour of mental disorder about the symptoms of many patients who consulted rhinologists—he believed that this was more marked than among the patients who consulted gynaecologists. A typical trouble among these patients was carcinophobia.

Septic Absorption from Sinuses

Mr. ERIC WATSON-WILLIAMS said that the nasal accessory sinuses were, more often than the ear, the source of chronic septic absorption which caused trouble regarded as neurotic. Of the last 200 private patients seen by him who proved to be suffering from nasal sinusitis 87 complained of what might be

called a "toxic neurosis." Chronic toxic absorption produced a very definite effect on the mentality, often perhaps mild, but not seldom profound, and sometimes going beyond the borders of what a fairly tolerant public considered sanity. In the watch for focal infection it was not enough to pay regard only to the obvious sources, the teeth and tonsils; the ear should not be ignored, and a complete investigation should be made of the nasal accessory sinuses.

Mr. J. C. HOGG said that it must not be supposed that the rhinologist was often confronted with an obviously psychotic patient, but one could not help wondering how much incipient mild mental disorder was overlooked in a busy clinic. It was easy to take the view that sinusitis was due to pus, and that if there was no obvious pus there could not be sinusitis; but rhinology did not lend itself readily to over-simplification. Very slight pathological changes in the membranes lining the nasal sinuses would often give rise to severe and crippling headache; on the other hand, there might be widespread disorganization of the nasal sinuses without any pain whatsoever. Mr. R. S. STRANG said that he was quite convinced from the results he had seen that considerable amelioration or even cure of mental states could be obtained by the removal of chronic infective conditions of the ear, nose, and throat, even when such conditions were not obvious. He regarded a complete investigation of this region in mental patients as offering some hope of improvement. Mr. S. E. BIRDSALL said that the rhinologist saw a large number of cases of sinusitis, but in only a few of them could mental disorder be said to exist. Out of 80 such cases at a children's hospital, only 5 had been referred on account of what could be described as mental symptoms, such as listlessness, inattention, and excessive fatigue. School medical officers in their reference of cases evidently had in mind a connexion between being a dunce and having large tonsils, but in very many cases he thought it could be shown that the sinuses and not the tonsils were at fault. With regard to the ear, he believed that among deaf-mutes mental depression was uncommon; the deaf-mutes whom he happened to know were exceptionally happy and lively people. But it was very different with the person with acquired deafness of high degree (leaving on one side senile deafness), who was usually introspective, morose, depressed, and ill adjusted.

Dr. F. A. PICKWORTH, who gave a lantern-slide demonstration of pathological conditions, said that infection of the sphenoidal sinuses was not *per se* a cause of mental disorder, but was a source of vascular changes in the brain. He believed that such vascular changes inhibited neuron integration by obstruction at various synapses, so that the pattern of motor behaviour was rendered abnormal, and that clinical mental disorder became evident when such vascular changes were extensive or had a certain anatomical localization. Dr. H. F. FENTON said that as the superintendent of a mental hospital he had formed the firm opinion that cases of toxic infection did occur among mental patients, and that chronic as well as acute cases could be successfully treated. When focal sepsis was found and eradicated mental and physical improvement ensued in the majority of cases; in many the response was remarkable, and in those in which recovery did not occur there was generally a reduction in psychomotor activity, better behaviour, and improved health. Dr. ARTHUR POOL asked why, although practically the whole population suffered from colds, only a small percentage developed sinusitis. He suggested that a good many patients got and maintained their infection because they had not the right diet which enabled them to withstand the infective process. Before any patient was subjected to the severe operations which had been outlined he should be given the benefit of medical treatment, with the administration of adequate quantities of vitamin C, together with a regulation of the salt content of the diet. Dr. W. J. T. KIMBER wondered whether the change in the atmosphere and spirit of a mental hospital in which these methods of investigation and treatment were introduced might not have a psychological effect which in part explained the results. The more hopeful treatment of patients was in itself a valuable factor.

Dr. ASTLEY COOPER referred to some statistics circulated by the president, from which it appeared that out of a total of 3,050 patients, nasopharyngeal sepsis had been found in 2,754 (over 90%). This meant either that it was a universal cause

of mental disease and that its eradication ought to produce recovery or that the very universality of the condition made it negligible as a cause. "Improvement" appeared to be as inevitable as in all the recently introduced "successful" treatments of schizophrenia.

Dr. A. A. W. PETRIE (president-elect of the Association) said that he was not entirely convinced that ear, nose, and throat trouble was the most important cause of mental disorder, but he shared with other medical superintendents the view that intensive investigation of patients for signs of focal sepsis was entirely to the good.

Local News

ENGLAND AND WALES

Mental Welfare

In the early part of 1939 the Mental Health Emergency Committee was constituted to function, in the event of war, in order to prevent the overlapping of mental health services. It included representatives of the Central Association for Mental Welfare, the Child Guidance Council, and the National Council for Mental Hygiene; later on representatives of other bodies were added. In its first report, covering a period of two and a quarter years, it describes the assistance its mental health workers have been able to render in reception areas among children who have been evacuated. The value of such work in its experimental stage was brought home to the Ministry of Health, which agreed to recognize the payment of these workers as an evacuation expense. A survey was made of the hostels for difficult children, and, with the beginning of intensive raids, help was given in the shelters and rest centres, as well as in the receiving areas in which the homeless people, especially those suffering mentally or nervously from the result of raids, were subsequently billeted. The Central Association for Mental Welfare, which also issues its report for two years, has to confess to some enforced suspension of activity, but it has been in a position to institute lectures on psychology to teachers, to arrange a course for medical practitioners, to help in arranging special billets for mentally unstable, subnormal, or senile individuals whose condition has been rendered more acute through shock, fear, or the destruction of their homes, to continue the visitation of epileptics in London and the Home Counties, and to carry out much other useful work. It is regretted that the report of the Feversham Committee on voluntary mental health services should have had to be shelved, but it is felt that the co-operation which has come about between mental health bodies as a result of the war has vindicated the recommendations of the report to a degree which would have been impossible to attain by ordinary propaganda alone. When the pages of the Feversham report are reopened and their contents publicly discussed "the discussion will be carried on in the light of incontrovertible practical experience, and the battle—if battle there be—will have been half won at the outset."

Appeal for London Hospitals

An appeal for £125,000 a year for hospitals during present circumstances was made at the annual meeting at the House of Lords of the King Edward's Hospital Fund for London, at which the President, H.R.H. the Duke of Kent, took the chair. The Duke of Kent said that uppermost in everyone's minds to-day, when they thought of hospitals, was the large number which had been bombed, and the endurance and bravery shown by the staffs as well as by the patients. The number of hospitals in the Metropolitan area, in which the Fund made its distribution of donations, which had been severely damaged now totalled 43, while a further 30 had been less seriously damaged in air raids. The Duke continued: "From what I have seen myself of hospitals in London and elsewhere, I can endorse all that has been said about what they have suffered and the way they have stood up to it. We are all specially grateful for the practical expression of sympathy which has come from our friends in the United States. . . . Our annual report refers to the schemes of some of the hospitals for moving part of their civil work to the country.

The King's Fund is watching this experiment with sympathy and interest, particularly because of the financial liabilities implicit therein. The King's Fund has already given additional help to the hospitals in the difficulties caused by the war and the conditions preceding the war. The annual distributions, both for 1939 and for 1940, were maintained at £300,000. Emergency grants totalling £80,500 were also made to a few hospitals during these two years. The combined result was that the total of grants and special administrative services was £307,000 in 1939 and no less than £384,000 in 1940." Reference was made to the work of the Voluntary Hospitals Parliamentary Committee, which included members of the King's Fund, the Nuffield Trust, and the British Hospitals Association, in presenting the case of the voluntary hospitals in connexion with Workmen's Compensation, the Purchase Tax, and the War Damage Act.

Hospital Contributory Schemes

Steps to increase and co-ordinate hospital contributory schemes are to be taken by a new representative committee set up by the King Edward's Hospital Fund for London. Contributory schemes have grown rapidly during recent years until they now provide an important part of the income of voluntary hospitals. Sir Kenneth Wigram, who is also connected with the Nuffield Hospital Trust, is the chairman of the new Contributory Schemes Committee, which includes representatives from the Voluntary Hospitals Committee, the Hospitals Savings Association, and the Hospital Saturday Fund. The Committee will examine the different schemes in the metropolitan area, making recommendations, and will also deal with the relation of London hospitals to schemes in the Provinces. The secretary is Mr. T. W. Place, for some years secretary of the British Hospitals Contributory Schemes Association.

Birmingham Accident Hospital

Since April last the Queen's Hospital, Birmingham, has become the Birmingham Accident Hospital and Rehabilitation Centre. Certain of the medical, nursing, and administrative staff have been taken over, as well as the buildings and equipment, and thus a specialized hospital has been established devoted entirely to the treatment and rehabilitation of men and women injured as a result of accident. The Board of Management has appointed Mr. William Gissane, F.R.C.S., of St. James Hospital, Balham, to be clinical director, and he is expected to take up his duties early in September. He will be assisted by a full-time staff with specialized knowledge, and a number of consultants will be associated with the work. The operating theatres, plaster rooms, and x-ray services will be available at all hours. There are 280 beds, certain of which will be set aside for observation cases in order that patients suffering from wounds may have a short period of in-patient treatment to ensure that complications will not develop. Rehabilitation by remedial exercises and occupational therapy will be carried out in a department to be set up for the purpose. Schemes have been prepared by the Board for the establishment at this hospital of schools for the training of nurses in industrial nursing and of selected personnel for industry and industrial first aid. The provision of a mobile surgical unit is also part of the Board's policy.

Merseyside Hospitals Council

The report of the Merseyside Hospitals Council for 1940 states that the income last year soared to a new high record of £280,284. The employers subscribed £46,220. In the three years immediately before the war the amount which it was possible to pay to the voluntary hospitals had each year fallen short by an average of £47,500 of the actual cost of the hospitals' services to members and their dependants—a sum very like that by which the hospitals collectively failed to balance their budget each year. This amount was made up during 1940 partly as a result of a plan known as the extra penny—whereby members subscribe not only a penny a week for every £ but for every part of a £—and partly because of the sharp upward curve in employment. Last year the associated voluntary hospitals received £113,246, which was £2,138 more than was distributed to them in 1939, leaving a balance of £47,000 from the year's revenue, which was held back for very good reasons. Some of the hospitals have moved to new quarters, others have suffered in air raids, and in the closing months of the year their many and varied needs were not

clearly known. Therefore the Distribution Committee, after discussing the financial position in all its aspects, decided to suspend the distribution of this reserve at least until the hospitals' financial position was known as at the end of the year 1940. Other items in the distribution were £33,104 for treatment in municipal hospitals, £14,667 to voluntary medical institutions other than the associated hospitals, £10,604 to civil war charities, and £9,400 to the medical staffs' fund. The offices of the Council have been moved to 40, Upper Parliament Street, Liverpool, their former headquarters having suffered air-raid damage.

SCOTLAND

Orthopaedic Progress in Scotland

At the annual meeting of the Princess Margaret Rose Hospital for Crippled Children, held recently in Edinburgh, Mr. W. A. Cochrane, the surgeon in charge, speaking of the success of treatment, said that many instances of notable achievements could be supplied. Sufferers from infantile paralysis had been cured, and in a number of very severe cases had been enabled to walk and lead an independent life. Deformed feet had been reconstructed and shortened legs restored to normal length. Upwards of 75% of the crippling conditions of childhood could be cured sufficiently for the child to grow up in a position which enabled him to earn his living on more or less equal terms with normal people. Besides carrying out its main purposes, the Princess Margaret Rose Hospital had been extended to provide for orthopaedic war casualties in the civilian population and in the Forces. Dr. Andrew L. Davidson, Chief Medical Officer of the Department of Health for Scotland, paid tribute to the hospital for its pioneer work in orthopaedics and its efficient organization. The care of the cripple, he said, was not only a medical but a social problem. The ideal to be aimed at was the prevention of crippling. Hitherto welfare work for cripples in Scotland had been backward and limited in scope, but even in these difficult times steps were being taken to establish regional orthopaedic schemes to cover the whole country.

An Edinburgh Nutrition Inquiry

The Edinburgh branch of the Children's Nutrition Council recently sponsored an inquiry into the adequacy of incomes and expenditures of 103 families with slender means, and has now issued a report entitled "Food and the War." The B.M.A. minimum diet, as laid down in the 1933 report of the Committee on Nutrition, was used as a basis for the inquiry, the items of food being repriced at their cost in Edinburgh in November, 1940. The income level of the families investigated was that of the unskilled labourer. The report states that the cost for an adult man had risen since 1933 from 5s. 11d. to 12s. 6d., the rise for children was rather less, but on the whole food prices for a family were about doubled. Out of 76 families whose food bills were examined, only eight are regarded as spending enough to buy a diet adequate in every respect. The main cause of the inadequacy was lack of means; other factors were imperfect catering or inability to obtain a sufficient variety of foodstuffs. In achieving even the low nutritional standards brought to light, half of the families were over-spending their income and running bills from week to week with shopkeepers. The children, according to this report, suffer from lack of essential protective foods and may show the stigmata of stunted growth, deficiency diseases, and an inability to withstand the ravages of infections. While much could be done by furthering the knowledge of correct eating and the best possible use of available food in the homes, the main task is to ensure that enough food of the right kind is obtainable by all. Four measures are advocated: a wide development of communal feeding, expansion of all social services relating to food, extension of the National Milk Scheme to include children up to the age of 16 at least, and distribution of certain vitamins as a social service. Greater use should be made of Scotland's agricultural potentialities. A more equitable distribution of available foods is called for, and steps should be taken to ensure that wages, allowances, and old age pensions keep pace with rising costs of living. Copies of the report may be had from the Secretary, Children's Nutritional Council, 37, Esslemont Road, Edinburgh, 9 (price 3d., by post 4½d.).

Correspondence

Radiodermatitis

SIR.—There is good reason to believe that the risk involved in setting fractures or removing opaque foreign bodies under the fluorescent screen is not generally appreciated, and as the practice appears to be on the increase the Council of the Faculty of Radiologists desires to draw attention to this risk.

That the risk is a real one is shown by reports of cases of x-ray dermatitis of the hands and faces of surgeons in the E.M.S. in this country. There is also a report from Leddy and Rigos from the Mayo Clinic (*Amer. J. Roentgen.*, May, 1941, p. 696). They record fifty-five cases of x-ray and radium dermatitis in doctors in the period 1919-34 and eighty from 1934-9. Of the latter group only five were radiologists and the remainder physicians and surgeons. Of these eighty cases fifteen were the result of x-ray therapy and the balance occupational—that is, resulting from diagnostic procedures or handling radium. Forty-six cases (only three being radiologists) were directly due to manipulations under the screen—either setting of fractures or removal of foreign bodies. In thirty cases the injuries to the hands have gone the length of ulceration, twenty-one of the ulcers being malignant.

As no screen apparatus in use at present, not even the recent model using indirect vision, can protect the hands against the rays if the fractured limb is being manipulated or the foreign body being removed while the current is on, these two procedures should be actively discouraged. In both, the operator's hands are inevitably exposed to the direct beam of the rays. The Council of the Faculty is of opinion that these methods should be used only in very exceptionally difficult cases, and that, when used, the manipulation and viewing with the current on should alternate so that the hands are never in the direct beam. The Council also recommends that a radiologist well versed in the factors involved should be in attendance when these methods are used. Further safeguards are the use of an adequate filter, small milliamperage, and low kilovoltage—for example, 2 mA at 55 kV peak. Experiments show that the output is very greatly reduced if these factors are adopted.—I am, etc.,

M. H. CUPE,

London, W., July 24. Honorary Secretary, the Faculty of Radiologists.

Cardiac Arrest during Anaesthesia

SIR.—Mr. Hamilton Bailey's admission (July 19, p. 84) that he has performed cardiac massage on forty patients whose hearts "suddenly and unexpectedly became still during general anaesthesia" provides a terrible indictment of his anaesthetic service. Such a host of catastrophes could only result from grossly incompetent anaesthetists or, and far more probably, from the widespread use of chloroform.

Prevention is surely better than cure, especially since the cure was successful in only 10% of the cases. With all deference, may I suggest that Mr. Hamilton Bailey would do his patients a greater service by forbidding the use of chloroform in his theatres, except when it is specially indicated, than by drawing up rules of procedure to be adopted when the use of this drug has already caused complete cardiac arrest.—I am, etc.,

Manchester, July 19.

H. J. BRENNAN.

SIR.—Mr. Hamilton Bailey states (July 19, p. 84) that he has performed cardiac massage about forty times; only four patients have survived. One would be interested to know what type of general anaesthetic was administered, and particularly whether chloroform was used in any, or many, of these cases.—I am, etc.,

Durdee, July 19.

F. R. BROWN.

SIR.—Referring to the subject, "False Anaesthesia in Childhood," to be discussed by a body of anaesthetists, the late J. H. Nicol said he would prefer to entitle it "Anaesthetists' Incompetence." I was reminded of that remark by the very frank paper by Mr. Hamilton Bailey on cardiac massage for impending death under anaesthesia, and was surprised that, in times when the administration of anaesthetics has passed almost

entirely in hospital and nursing-home practice to the specialist, he should have found it necessary to perform cardiac massage "about forty times." If such an extreme procedure for resuscitation were so often necessary, how many times more must Mr. Bailey's work have been interrupted by the need for measures short of cardiac massage! That raises in my mind the question, "Has the competence of the anaesthetist kept pace with the increasing bulk of his plated paraphernalia?"

To one having come from a chloroform school, where, in the present view, mishaps would be expected to have been more numerous than to-day, it is astonishing that in these days of specialist administration any surgeon should be so unfortunate as to be called on to perform cardiac massage so often. Has Mr. Bailey been unfortunate in his choice of anaesthetists, or has he himself a penchant for this surgical procedure? As a general practitioner I do not feel competent to answer; perhaps others will.—I am, etc.,

Glasgow, July 20.

J. W. PATTERSON.

Early Cardiac Massage

SIR.—No one will question the wisdom of Mr. Hamilton Bailey's contention that in the operating theatre at all times everything should be in readiness for the immediate application of injection into the heart and of cardiac massage should these become necessary. Some, however, will be apprehensive lest his article encourage the early use of cardiac massage in non-abdominal cases, before simpler measures have been efficiently tried. I allude especially to immediate and complete lowering of the head. Is Mr. Bailey convinced, for example, that in the case which he describes, when the patient was out of his hands at the moment of collapse, if the boy had at once been inverted and the tongue drawn forward and the chest compressed breathing and circulation would not have started again? As regards adrenaline injection has it not been generally accepted that it is the mechanical stimulus of the needle entering the auricle which is important regardless of any injection fluid?—I am, etc.,

London, July 25.

J. BLOMFIELD.

Da Costa's Syndrome

SIR.—I have read Dr. Paul Wood's illuminating Goulstonian lectures (May 24 and 31 and June 7) with great interest, but there are some points to which I have to draw attention.

In discussing the mechanism of heart pain which is found in the vast majority of patients suffering from effort syndrome, Dr. Wood mentions four different theories; evidently he has overlooked the myalgia of major pectoralis, which in my experience is responsible for heart pain in the majority of cases. I described (*Brit. J. phys. Med.*, 1938, 1, 302) the characteristic "myalgic spots" present in functional heart diseases. In 1940 (*Lancet*, 2, 326) I described these typical myalgic spots again as simulating so-called heart neurosis, and in a case of angina of effort. The myalgic spots are constantly to be found in the origin of major pectoralis near the sternum on the left side in left mammary pain and on the right side in right mammary pain. This origin of heart pain is by no means a theory but a fact which can be verified easily. Since I have been in the Army I could confirm it again and again.

In discussing the question whether the heart pain is local or referred Dr. Wood says: "I have found no evidence in the literature relating to the effect of intramuscular novocain [i.e., injections] on referred pain." In the *Lancet* and the *Practitioner* (1941, 145, 167) I stated most emphatically that novocain injected into a myalgic spot definitely relieves referred pain. I recommended this method not only therapeutically but also as a diagnostic test to prove conclusively that a given pain is referred. The statement, "It is well known that local intramuscular injections of novocain abolish local pain of such lesions as fibrositis," is not correct. On the contrary, in fibrositis or rheumatic myalgias referred pain only is present, and is abolished by injection into the corresponding myalgic spots.

In myalgias of rheumatic, traumatic, or idiopathic (unknown) origin patients complain of referred pain only, which does not coincide with the myalgic spots, of which they are definitely unaware. In all these cases novocain injection into the myalgic spots, not just tender spots but characterized by objective signs, relieves pain almost instantaneously and cures the disease per-

manently. Tentatively I have put forward as a working hypothesis the conception that the myalgic spots are due to a local hypoxia caused by vasoconstriction by reason of stimulation of sympathetic fibres. Since the pathological condition is situated in the muscles, one has to bear in mind the fact that adrenaline has a dual effect, causing vasoconstriction in small doses and vasodilatation in large ones (McDowall, R. J. S., *Control of the Circulation*, London, 1938, p. 268). In my opinion sympathicotonia—a hyperfunction of the sympathetic—is the cause of the effort syndrome. It is known that stimulation of the sympathetic causes a discharge of sympathin (Cannon and Rosenbluth) into the blood, which may or may not be identical with, but is most likely similar to, adrenaline.

I would like to mention here that dizziness may be caused by a myalgia of trapezius, and that breathlessness might be due to the pectoralis myalgia, since it gives rise to pain which is aggravated on breathing. In this connexion it is interesting to mention that ephedrine may produce some of the symptoms of effort syndrome, as anorexia, frequency of micturition, dry mouth, and a changed type of breathing (own experiment).

Owing to lack of space I cannot discuss the many factors which have a bearing on the function of the autonomic nervous system. There is conclusive evidence that the Ca:K ratio influences the sympathetic and parasympathetic in an antagonistic way (Zondek, S. G., *Biochem. Zschr.*, 1922, 132, 362). It is extremely interesting that the same ratio has also a marked bearing on the tone of the capillaries—vasodilatation by Ca excess, and vasoconstriction by K excess (Sollman, T., *Manual of Pharmacology*, 1935, p. 346). In addition the blood vessels are influenced antagonistically by the local pH, being dilated or constricted by an acid or alkaline pH respectively.

Dr. Wood has conclusively shown that fear and emotional strain play a part in the effort syndrome. I fully agree with him but would like to add that these mental factors have a bearing on practically every disease, be it somatic or functional. Nevertheless one is in my opinion not justified in labelling a patient suffering from effort syndrome as psychoneurotic or hysteric. M. B. Bender (*Amer. J. Physiol.*, 1938, 121, 609) experimenting on monkeys, suggests that during fright a discharge of a sympathetic-adrenergic and a parasympathetic-cholinergic substance takes place; hence fear and emotional strain cause a psychosomatic reaction, and not a purely mental one. Neither is it fair to label a patient suffering from "heart pain" as a psychoneurotic, since to him the pain is a real fact and cannot be talked off, even by a heart specialist's assuring him that his heart is healthy. On the other hand, extremely gratifying results are obtained by appropriate treatment of the myalgic spots. On pressure on such a spot we elicit the very pain he is suffering from ("You have got it," the patient sometimes says spontaneously), and injection of a few c.cm. of novocain solution relieves his "heart pain" easily and almost instantaneously, and permanently. This has a double effect in so far as it relieves his pain, and in doing so it convinces him to his own satisfaction that his heart is healthy, thus cutting the vicious circle so well elaborated by Dr. Wood. I am confident that these favourable results can be obtained by every physician who takes the trouble to locate the myalgic spots (not tender spots) and apply the appropriate treatment.

In conclusion I should like to say that it must be our concern to relieve a patient's justifiable complaint, instead of labelling him a psychoneurotic.—I am, etc.,

M. GOOD, M.D.,
Lieut., R.A.M.C.

June 12.

Treatment of Crush Syndrome

SIR,—In view of the high mortality among persons who have been held crushed under debris for some time, whatever treatment they have received, it seems worth while offering a simple suggestion for a line of treatment which I am told has not been tried.

It is possible that some deleterious substance derived from the injured tissues reaches the body as a whole during the time between release from pressure and commencement of treatment in hospital.

All first-aiders are keen to apply tourniquets, and, I am told, apply them in such a way as to stop venous and lymphatic return from the limb. I suggest it would be worth applying a

constriction round the proximal end of a crushed limb, as soon as the limb or part of it is released from pressure, at the site of the incident before moving the patient. If sufficient skill is available, possibly a rubber Esmarch bandage applied tightly to the whole limb from above downward might be considered.

I do not presume to suggest whether the surgeon should amputate, or release the limb from pressure an inch of its length at a time, or gradually diminish the pressure on the limb as a whole.—I am, etc.,

Trowbridge, July 22.

E. CURPHEY.

Lack of Calcium

SIR,—Dr. I. Harris (July 19, p. 102) doubts that adults are suffering from lack of calcium and challenges "the authorities" to exhibit twelve patients with an "unsatisfactory condition of the bones." During the last year alone we have seen three elderly women with generalized osteoporosis complicated by collapse of a vertebral body.—We are, etc.,

London, W.1, July 25.

GEORGE GRAHAM,
H. JACKSON BURROWS.

Persistent Streptococci after Puerperal Fever

SIR,—The following case raises a point of some importance and seems worth recording.

About three weeks ago a man was admitted to hospital with a shallow ulcer about 1 inch in diameter on the ventral surface of his penis, about 1 inch behind the glans. A film from this showed a few pus cells and numerous small streptococci, and the culture was a pure growth of haemolytic streptococci which proved to belong to Group "A."

On going into the possible cause of the infection it transpired that the man's wife had puerperal fever after the birth of a child at the end of February while the patient was away from home on A.F.S. duty, from which he returned about ten days before his admission to hospital. Cultures from the wife's cervix and vagina were taken; the former yielded a pure culture of a haemolytic streptococcus, and in the latter the predominant organism was also a haemolytic streptococcus. Both these strains belong to Group "A."

The three strains were sent to Dr. S. D. Elliott of the Emergency Public Health Laboratory Service at Cambridge and he very kindly Griffith-typed them. All three belong to Type B 3264, a type recognized by Dr. Griffith as a new type which has not yet been assigned a number in the *Str. pyogenes* group.

The persistence of haemolytic streptococci in the cervix and vagina some months after an attack of puerperal fever raises the important point of the advisability of cultures being taken from all such cases to ensure that they do not become carriers. Presumably the woman would become immune to the organisms herself, but would be a potent source of infection at a later confinement.—I am, etc.,

Hastings, July 22.

P. LAZARUS-BARLOW.

The Darning of Hernias

SIR,—I was very interested to read Mr. Rodney Maingot's article (May 24, p. 777) on the floss-silk method of repair for direct inguinal hernias. Most people are agreed that catgut, being an absorbable material, is unsafe to use in the repair of a hernia. After so many days the catgut is absorbed and an undue strain may easily tear asunder the adhesions, not yet firm, left at the site of the catgut stitches. A lattice-work of an unabsorbable material inserted under no tension and forming a permanent framework on which fibrous tissue is laid down will obviously be a much safer method.

The fascia lata method of Gallie is an excellent one and gives very good results. But it entails making a long wound in the thigh and stitching the edges of fascia together after the removal of the required number of the strips, all of which add considerably to the length of the operation. There are a great number of fasciotomes on the market, but on the whole they are most tricky instruments to use. They often go wrong half-way through the operation and one is forced then to cut down; they leave a potential space in the thigh

for a haematoma; and a bernia of muscle occurs through the cut margins of the fascia lata, which can be a cause of great worry to the patient. Floss silk does quite as well as fascia lata, and, what is very important, one can use unlimited amounts, whilst one is limited to a maximum of about four strips, from each thigh, of the fascia.

About a year ago I did a radical cure on a man of 28 for a scrotal hernia *en glissade* (the size of a small football) which contained all his sigmoid colon and a great number of loops of small intestine. It was a hernia which, starting as an indirect, finished as a direct, with a neck some four inches in diameter. It would have been very difficult to do a satisfactory repair with fascia lata in that case. There would not have been enough with fascia, taken even from both thighs. Literally, I used yards of floss silk. The man has since joined the Army as A1.

The danger of a non-absorbable material is, of course, the possibility of sepsis. But if the silk is thoroughly boiled—Mr. Maingot recommends two hours—and then kept in some spirit which is washed off just before the operation, or if one uses the ampoules containing sterile floss silk as sold by John Bell and Croyden, then it is absolutely safe. It is a tragedy when a clean hernia case goes septic. Then the whole surgical ritual should be thoroughly looked into. Some months ago two of my cases in which floss silk had been used unfortunately went septic, and yet both eventually healed up completely without discharging any silk and are dry to-day, some months after leaving hospital. This shows that floss silk can cause no harmful effects, even in the presence of sepsis. I think this is greatly due to the fact that there is no chemical or other substance on the floss silk that by causing a tissue reaction and producing an out-flowing of serum keeps up the discharge from the wound. So once the bacterial infection has died out the wound can heal and stay healed.

I think Mr. Maingot's suggestion of closing the crural canal from above to prevent the possibility of a femoral hernia is an excellent one. It should be reserved for direct hernias, however, when the fascia transversalis is almost non-existent. In indirect hernias it would be unwise to do this as one would have to tear through the fascia transversalis, which is after all a very important barrier to the posterior wall of the inguinal canal.

As man-power for the Services is such a vital consideration at the moment, and as hernias are so frequent in the soldier class, the choice of a satisfactory radical cure becomes a matter of national importance, especially when one remembers the reported recurrence rates—8% to 12% in the best hands. In view of this Mr. Maingot has rendered a great service in bringing up once more this question of the best method of repair of hernias, and I am sure that his floss-silk method will do a great deal in helping to lower the recurrence rate and making men fit for Army duty quicker after their hernia operation.—I am, etc.,

G. STAFFORD MAINGOT, F.R.C.S.
E.M.S. Surgeon.

Herts, July 22.

Lung Collapse after Eye Operation

SIR,—I was interested in Dr. Roger Lane's case of lung collapse after eye operation (July 19, p. 86). In 1934 (*Trans. ophthalmol. Soc.*, 54, 280) I drew attention to the occurrence of unexplained pulmonary complications after operations on the eye, the clinical picture being dullness and diminished breath sounds at one base with slight fever developing about a week after operation. As physician to Moorfields Hospital I saw many examples of this, and a smaller number of cases in which haematemesis occurred after operations on the eye in patients who had not any previous history suggesting chronic gastric or duodenal ulcer. I suggested tentatively that in both of these groups the visceral disorder might be excited reflexly by the eye operation, the afferent path being the trigeminal nerve and the efferent the vagus. The relationship between the eye and vagus function is close, as we see in the oculo-cardiac reflex and in the vomiting which often accompanies acute glaucoma.

This clinical experience recalls the perforating ulcers of the oesophagus, stomach, and duodenum which may follow experimental lesions of the hypothalamus or, rarely, operations on the brain, and which have been attributed by Cushing and others to a central disturbance of vagal innervation.—I am, etc.,

W. RUSSELL BRAIN.

London, W.1, July 25.

Treatment of Chronic Hypertensive Nephritis by Renal Extracts

SIR.—The annotation in the *Journal* of July 5 (p. 22) on the treatment of hypertension by renal extracts suggests that the case recorded below may be of interest.

A man aged 47 was admitted on October 16, 1940, to the French Hospital under the care of Dr. H. S. Stannus with old-standing chronic nephritis with hypertension; blood pressure 250/120; blood urea 160 mg. per 100 c.c.m.; albumin 10 grammes per litre of urine. Marked anaemia of pernicious type and albuminuric retinitis with almost complete loss of vision in the right eye were also noted. Ordinary methods of treatment availed nothing, and a month after admission two successive attacks of acute oedema of the lungs nearly proved fatal. The blood pressure remained at 230/120; the blood urea had risen to 202 mg. per 100 c.c.m.; muscular twitchings were marked, minor convulsions occurred from time to time, and mental agitation with confusion was present. At the same time almost uncontrollable vomiting was noticed and an acneform eruption (*acné urémique*) remarked.

The administration of renal extract at this point produced rather remarkable effects. Given in the first instance by rectum on account of the vomiting, it was continued by mouth as soon as the vomiting subsided, there being no preparation available for parenteral administration. Three days after the beginning of treatment vomiting ceased, followed by disappearance of the mental and nervous symptoms and lastly the cutaneous manifestations. The patient felt better and looked better; he was once again able to enjoy nourishment. The blood pressure fell to 180/100, but the blood urea continued to rise: 202 mg. per 100 c.c.m. on November 18 to 250 mg. on November 23, 285 mg. on December 2, 300 mg. on December 17, 340 mg. on December 30, 360 mg. on January 7, 388 mg. on January 13, and 420 mg. on January 24, 1941, the day before death. The blood count towards the end revealed 1,500,000 red cells per c.c.m. with 30% haemoglobin. Despite the mounting blood urea the patient remained pretty comfortable to the end and free of the symptoms which had troubled him before the administration of the kidney extract.—I am, etc.,

The French Hospital, London, W.C.2, July 14.

M. BENDIT.

Note by Dr. H. S. STANNUS:

The extract of kidney was used only as a last resort in an attempt to alleviate the distressing symptoms suffered by the patient. The "relief of symptoms" which occurred was quite remarkable, though probably the treatment made no difference in the course of the disease to a fatal issue. Of course, it is not certain that the amelioration in the condition was due to the extract: the constitution of the product is not even known; moreover, the value of a single observation is doubtful. On the other hand, taken as above recorded the case is not without interest as a clinical observation, always remembering the final dictum of Irvine H. Page in the Edward Gamaliel Janeway Lecture for 1941 (*J. Mt. Sinai Hosp.*, 1941, 8, No. 1, 23): "Administration of renal extract is not yet to be considered a practical treatment."

Ether Convulsions

SIR.—May I say to Mr. Dickson Wright (July 12, p. 68), through you, that in my letter (June 21, p. 945) my first object was to describe the features of a typical ether convulsion, and that the description I gave was based upon observations made a good many years ago in a series of six or seven cases. Novocain was not used in any of them. The more recent case which I quoted for completeness (and in which ether was not given deliberately) reproduced this picture so completely that I included it as an ether convulsion. Mr. Dickson Wright tells me that it was a typical novocain convulsion. The natural inference is that the two manifestations are identical—a conclusion supported by Mr. Hamilton Bailey (July 5, p. 32), who also states the attractive hypothesis of a common toxic factor.

Mr. Hamilton Bailey also points out that by the time ether vapour reaches the patient any warmth previously imparted to it has been lost—a statement with which I agree. When I spoke of heated ether I referred to the practice of heating ether in a strong metal container in a hot-water bath to such a tempera-

ture that its vapour is driven off under considerable pressure. I believe that many analyses failed to disclose any toxic agent, and I know that a number of reported cases have occurred under open ether. Despite these facts, the evidence of my own observations points, in the absence of any more convincing evidence to the contrary, towards a toxic factor in the elaboration of which the heating of ether may play an important part.—I am, etc.,

Liverpool, July 22.

CHARLES WELLS.

Treatment of Impetigo Contagiosa

SIR.—The following observations on the treatment of impetigo in Army patients may prove of value to medical officers who are now called upon to treat this class of patient.

In civil life it was my practice to use 5% sulphapyridine ointment in the treatment of this condition, and the results obtained were excellent, cure usually resulting in from three to seven days. Prior to the introduction of sulphapyridine I used the routine method of starch poultice plus lotio cupri-zincica and ung. hyd. ammon. dil., and with this about three-quarters of the cases cleared up within three weeks and the remainder after a more or less prolonged period.

During the last six months I have had occasion to treat quite a number of cases of impetigo contagiosa in soldiers. I first used 5% sulphapyridine ointment, but with very little success, no case healing up completely with its use. I then went on to "alibour" lotion and dilute ammoniated mercury ointment, and again the results were entirely unsatisfactory. The problem then presented itself as to why these two methods of treatment which were so successful in civil life failed to produce the same effect in the Army. A possible solution was suggested to me by my orderly. He observed that in Army patients any ointment will prove unsatisfactory as a therapeutic agent, owing to the fact that the comparatively high-collared tunics have rubbed off the ointment in a very short time and the collar becomes a dirty greasy mess on which no doubt the streptococcus of impetigo finds a good place to incubate and which acts as a focus for the continued spread of the disease.

On active service it would be a considerable nuisance if soldiers suffering from such a mild illness as impetigo had to either go without their tunics or have their face covered with any form of dressing during the day. It was therefore decided to try the effects of an antiseptic lotion alone, and we chose the old-fashioned 1 in 1,000 corrosive sublimate because it was cheap, easily obtained, and sufficiently easy to make up for any unqualified dispenser. This has proved a very satisfactory method of treatment. The lotion is dabbed on three times daily, the man shaves every third day and has his razor and brush sterilized by the orderly in the medical inspection room immediately after shaving. The face is uncovered during the day, but an aseptic dressing is put on at night to prevent spread by means of the pillow. By this method it has been found possible to cure most cases of impetigo in Army patients within ten days.—I am, etc.,

July 21.

E. SNELL, Lieut., R.A.M.C.

Chronic Sick

SIR.—Very reluctantly I ask you to publish one more letter from myself on the subject of the "chronic sick." I say reluctantly because a week ago I had quite made up my mind that the "chronic sick" had very few friends either in the Ministry of Health, among medical members of Parliament (with the striking exception of Sir E. Graham-Little), or in the medical profession generally, and therefore it was a mere waste of time pursuing the subject any further.

In your issue of July 19 (p. 100), however, there appears a long letter from Dr. Leonard G. Parsons upon which I should like to make several brief observations. The main body of the letter is devoted to various comments and criticisms of a letter in the *Journal* of June 28 (p. 987) from "De Senectute." I am not concerned to defend "De Senectute"; no doubt, whoever he is, he can look after himself. But I am concerned with those parts of Dr. Parsons's letter which refer (a) to the occupation of beds by the evacuated chronic sick which were "provided for acute and Service sick and air-raid casualties," and (b) to the nursing of the chronic sick by "members of the C.N.R., Red

Cross, and Order of St. John," as well as his suggestion that auxiliary hospitals are unsuitable for the care of the chronic sick.

With regard to (a) the comment I wish to make is that this is only another example of the incompetence and unpreparedness of the Ministry of Health in all matters concerning the measures which should have been taken long before war broke out to provide suitable accommodation in the less vulnerable areas not only for the chronic sick but for many other types of evacuees. Ordinary common sense, foresight, and prudence, which should have characterized the work of the Ministry of Health, were simply not there. If they had been it would not have been necessary to take "panic measures" a year or more after war broke out to provide suitable accommodation outside our great industrial towns for evacuees of all kinds, including the "chronic sick," aged and infirm, and young children. But what happened was that those who were then responsible for the policy of the Ministry were so obsessed with the notion that the only thing they had to think about was hospital accommodation for "30,000 casualties per day" in London alone that the staff concerned could think of nothing else. In these circumstances it is easy to understand how it came about that when "chronic sick" patients were being killed in their beds in large public institutions in London and elsewhere by direct bombing the Ministry adopted the usual "panic measures" and rushed patients of this kind off to hospitals in the less vulnerable areas, where beds had been set aside for the acute sick, casualties, etc.

With regard to (b) I do not agree with Dr. Parsons that auxiliary hospitals are unsuitable for the chronic sick. At least that is not my own experience. I have seen a good many auxiliary hospitals which would be eminently suitable; but I do not suggest that all of them are, for the simple reason that I have not seen them. On the other hand, there are nearly 200 auxiliary hospitals in England and Wales, with a total accommodation of nearly 12,000, and most of them are empty and likely to remain so; if properly used I do not see why there should be any practical difficulty over the staff question. No one with any knowledge of the skill and patience and tact required to nurse the "chronic sick" would for one moment suggest that they should be nursed by V.A.D.s, etc. The obvious course to adopt is to transfer the medical, nursing, and all other staff who have been looking after the "chronic sick" to the new accommodation whenever provided, and I am unable to understand why this course should not be adopted as part of the scheme of transfer. It is quite true that the work could not be undertaken by the Joint War Organization of the B.R.C.S. and Order of St. John. It is obviously unsuitable work for such a voluntary body. What would be required would be simply that the Joint War Organization and the Ministry of Health should agree that certain of the existing auxiliary hospitals should be transferred for the duration of the war to the local public health or local public assistance authority for the special purpose of providing for the "chronic sick." I do not say that such a step would solve the problem, but it would go a long way towards it.—I am, etc.,

Criccieth, July 19.

FREDERICK MENZIES.

Physical Medicine and Orthopaedics

SIR.—Now that all your correspondents seem to have said their say about the practitioners in physical medicine and their art and science, may I, as one of the elder of the genus in this country—save, of course, for the Spa practitioners—wind up with a few notes.

First, let me say how gratifying it has been to watch the interest that your original annotation has evoked. Thirty years ago the correspondence which followed would have been unthinkable, so few would have been the numbers of those with adequate knowledge to write. Even our critics have shown the importance they attach to our activities.

With regard to status, all that need be said is that our art is, or should be, the handmaid of the profession as a whole. Few indeed can be the number of our fellow practitioners who, had they adequate knowledge, could claim that the art of physical therapy could find no useful place in the treatment of their patients during some stage of illness and disability or during convalescence therefrom. Obviously, therefore, the term

"orthopaedic physician" is a poor, inadequate description for us. The orthopaedic surgeon may, it is true, find that—*pace* Böhrer—physical therapy is applicable to the vast majority of his cases with advantage; not infrequently without it his surgery would be useless. This is the reason why most of them study the elements of physical therapy, but mere acquaintance with those elements does not fit them to prescribe all that is best in physical therapy for their patients. We hold, as a standard of efficiency, that we cannot honestly prescribe any treatment which, without aid, we are unable to perform for ourselves at least as efficiently as those to whom the work is entrusted. Otherwise how can we prescribe with accuracy and precision, or judge by results whether progress is the best obtainable? If barely acquainted with the elements, how then can orthopaedic surgeons demonstrate technique to the masseur or masseuse, or judge of the finesse of technique? The physician or surgeon, orthopaedic or otherwise, who relies on his knowledge, or often lack of it, even in regard to what can only be termed by us as the "beggarly elements," cannot expect the best of treatment for his patients, or grumble if they, in despair, seek ultimate relief from adequate physical medicine.

Staff status is another story—no one can expect election to staff rank by his colleagues till he has proved his worth and, perhaps more important, his ability to co-operate with them. It is granted readily enough when this has been done, and what more can we ask or expect? We are getting on. A very few years ago no practitioner of physical medicine had been elected to the Fellowship of the Royal College of Physicians; now there are five at least.

Finally, may I pay tribute to the members of that magnificent body the Chartered Society of Massage and Medical Gymnastics for the part they have played in the advancement of physical therapy? When I first became acquainted with their activities in 1907 there were some 700-odd members; now there are 12,814—surely a striking testimony to their usefulness and efficiency. Without their aid and loyalty to our profession physical therapy could not have known the yearly advance in technique which takes place, nor could the practitioners of physical medicine have advanced in numbers, knowledge, and experience to the extent that has in fact occurred.

There is, however, one outstanding weakness in physical medicine which must be overcome before it finally comes into its own. This is that there is no general standard of knowledge required of us in all the different branches of our art to merit our designation as practitioners of physical medicine. There is as yet no course of training available which fully covers the whole field. Hence some of us are experts in hydrotherapy, others are mainly electrotherapists, while yet others are more skilled in actinotherapy or in manipulative treatment, be it of soft parts or of joints. Expert knowledge of all branches of our art cannot be expected of all of us as yet, and before the art can be attained the science is essential. Some day in the near future this deficiency will be remedied. Even as we are we can be of service; in the future we shall be more so; and meanwhile, if some of our medical colleagues find no use for us, the general public continues to do so and to insist on their advisers co-operating with us.—I am, etc.,

London, N.W.1, July 20.

JAMES MENNELL.

* This correspondence is now closed.—ED. *B.M.J.*

Medical Planning

SIR.—In the *Journal* of June 21 (p. 942) it is reported that the president of the Faculty of Radiologists, Dr. Cochrane Shanks, referring at the annual meeting of the Faculty to his position as the Faculty's delegate to the B.M.A. Planning Commission, promised to send a questionnaire among the members of the Faculty asking them, under seal of anonymity, to give such facts about their work as they felt disposed to divulge; also to give him their views on what alterations and improvements were called for in the radiological services of the district. This step is undoubtedly to be welcomed and recommended to other members of the Planning Commission, particularly if they would couple it with a declaration that no action would be taken until a policy had received sanction of a fully informed medical profession.

Doubtless certain of the apprehension given to the Planning Committee arises from the fact that it is by no means unknown for an inadequately informed public to be committed by virtually self-elected bodies to policies which may produce results entirely different from those desired by the majority. What has happened not once but many times may well happen again. Without intending to criticize any member of the Commission either directly or indirectly in their voluntary acceptance of a task, onerous, difficult, and likely to be thankless, it is permissible to ask for it to be made known to those who are directly concerned how selection of this committee was brought about or what arrangements will be made to secure full representation of every member of the profession.

A large number of doctors to whom I have spoken have a viewpoint best described as "apprehensive" of the outcome of all this planning, but unfortunately almost invariably coupled with it is a feeling of hopeless resignation. They are not prepared to do anything to alter their future, let alone take the time and trouble necessary to seek causes for a state of affairs which they regard as becoming extremely unpleasant. A review of the letters over the past few months in the *Journal* shows that the greater number fluctuate between the Scylla of an "improved" panel system and the Charybdis of undefined State Medical Service. Is this not the unmistakable result of the organized propaganda and subtle distortion of fact which tries to make it appear that the only alternative to-day facing the British peoples is military domination by Nazism or a generation of vicious and intolerable taxation in an impossible attempt to pay a second or a third time or even more for a war which then will have been paid for in "blood, toil, tears, and sweat"?

It is this perfect parallel with world affairs which makes it a certain prediction that no satisfactory outcome can arise from the activities of the Planning Commission unless a revolution in public thought and action causes the complete subjection of those responsible for a policy which over the past fifty years has been gathering control of personal initiative to its own keeping, planning to assign the national and individual sovereignty of this people to a completely centralized and world-dominating economic federation. The facts are beyond all disproving and the conclusions arresting. I venture to predict that a mass of evidence could be placed before the Medical Planning Commission proving the urgent need of the moment is not detailed Utopian planning for the future of medicine but an active awakening of democratic control and a bonding of medical opinion with a policy based on an undistorted conception of realities.

The doctor cannot control the policy of his institutions if they are too large, nor can he direct their successful functioning if they remain dependent on the arbitrary grants by centralized interests of the financial credit necessary for them to carry out their work. Control of policy has been steadily taken from the doctor. Faced with a deliberately produced diminution of private practice and an extending panel system or State service, the real result is a restriction of personal initiative. A policy of such nature does not exist by chance and must be reversed if existence is to be tolerable.

The best work the Planning Commission could do would be to awaken the members of the medical profession to the truth that their future depends on their own efforts to secure in every sphere a policy which unites personal responsibility with power; which everywhere matches physical ability to produce results needed with financial ability to do it—policies which dispense with bureaucracy and "red tape." Then we can build a future worthy of our heritage.—I am, etc.,

Beltas.

DOUGLAS BOYD, M.B., D.M.R.E.

The report for 1940 of the St. John Ophthalmic Hospital, Jerusalem, shows that work, despite war conditions, was heavier than ever. In-patients numbered 926, an increase of 234 over the previous year, and the total attendances in the out-patient department numbered 119,986, which constitutes a record for the hospital, and new out-patients were 21,252. The work on the new south block has been proceeding satisfactorily. The Order of St. John has offered it to the Government of Palestine for the duration of the war to be used as a civilian casualty hospital, and the offer has been gratefully accepted.

Obituary

SIR WILLIAM WILLCOX

Dr. J. D. Rolleston writes:

Beyond the statement that he served on a special committee at headquarters on tests for drunkenness the otherwise excellent obituary of Sir William Willcox in the *Journal* of July 19 (p. 103) contains nothing to indicate the interest which, without being an abstainer, he always took in the alcohol problem. In particular no mention is made of his connexion with the Society for the Study of Inebriety, of which he was president from 1924 to 1927. In 1923 he delivered the Norman Kerr lecture before this society, his subject being drug addiction, and in 1924 his presidential address was devoted to the aims and work of the society. He also always took an active part in the discussions held at the society's meetings. Furthermore he contributed an article on the medical aspects of temperance to a book entitled *Confirming the Facts*, recently published by the Temperance Collegiate Association, and containing articles by Sir Frederick Gowland Hopkins, Prof. Amy M. Fleming, Mr. W. McAdam Eccles, Lord Stamp, Sir Leonard Rogers, and others.

Early this year the liner on which Dr. HILDA CRICHTON BOWSER was returning to India was shelled in mid-ocean by a German surface raider. Most of the lifeboats were thus damaged and fellow passengers have reported that Dr. Bowser was in one which had been seen to sink. The more seaworthy boats were too full to rescue survivors, who had to be left in the water in the hope that they would be picked up by a boat which had been launched from the raider. This hope has proved vain, and the Baptist Missionary Society and a wide circle of friends now mourn the loss of the Society's senior medical missionary in India. Dr. Bowser was the daughter of the late Principal of the Midland Baptist College. She took her B.Sc. degree from Nottingham University College before entering the London School of Medicine for Women, where she qualified M.R.C.S., L.R.C.P. in 1919 and later took the M.B., B.S. of London University. Relinquishing her studies for the degree of M.D. in obstetrics she sailed in 1923 to India, and for eighteen years built up a unique hospital and nurses' training work at the Rahmatpur Women's Hospital at Palwal in the South Punjab. Her reputation and influence were felt in a wider circle in India. She represented the Association of Medical Women on the governing board of the Lady Hardinge Medical College in Delhi, and acted as chairman of the North India Board for Nurses' Examinations. She maintained the highest standards of professional work, and the reports of Government inspectors invariably praised the efficiency of what was considered as a model rural hospital. Physically robust—a college and county hockey captain—and possessing great mental vigour, Dr. Bowser was the embodiment of the ideal of "mens sana in corpore sano." Her gifts and graces were wholly dedicated to a life of service. It is men and women like Hilda Bowser who are responsible for the fact that the phrase "missionary spirit" has found a place in the vernacular of a country which needs and greatly admires the spirit of the Good Physician.

We regret to announce the death after a long illness, on June 13 at the age of 74, of Hofrat Professor JULIUS ZAPPERT of Vienna at Slough, where he had been living in exile for the last two years. His chief work was concerned with the neurology of children, his principal publications being devoted to Heine-Medin's disease (1911), diseases of the nervous system in childhood (1922), convulsions in childhood (1928), and post-vaccinal encephalitis in conjunction with Dr. Marius Kaiser which received notice in this *Journal* (1939, 1, 59).

The following practitioners have died abroad: Dr. LARS WILHELM FAGERLUND, a Finnish anatomist and epidemiologist, author of numerous works, especially on medical jurisprudence, leprosy, and tuberculosis, aged 87; Dr. JOHANNES WILHELM HJELMANN, a Helsingfors dermatologist and syphilologist, aged 79; and Dr. LLOYD VERNON BRIGGS, past president of the New England Society of Psychiatry and former director of the Massachusetts Society of Mental Hygiene, aged 77.

Universities and Colleges

UNIVERSITY OF OXFORD

The first examination in Special and Clinical Pathology begins on September 30, and names must be received at the University Registry by 3 p.m. on Wednesday, September 10. The attention of candidates is drawn to the facts that: (1) Certificates 4 and 10b must be produced. The former is to the effect that the candidate has been instructed in special pathology, including post-mortem examinations, and clinical pathology for a period of not less than eighteen months. The latter is to the effect that the candidate has completed twenty-one months of systematic clinical instruction. (2) They must also offer forensic medicine and public health unless they have already passed in it.

UNIVERSITY OF LONDON

The Principal's Report

The report of the Principal, Mr. H. L. Eason, on the work of the University during the year 1940-1 has now been printed, and much of it is naturally concerned with the war and its effects upon academic life in general, on teaching and research, and on the buildings of the university and its constituent schools. In his introduction Mr. Eason notes that the results of intensive air raids on London have fully justified the policy of dispersal generally adopted in the summer of 1939. The damage to university buildings has been so severe and so widespread that if the schools had still been in London the work of the internal side of the university would have practically come to an end for the time being. University College has suffered very badly, and one of the more recent sufferers is the London School of Hygiene. The hospitals attached to the medical schools of the university have almost without exception been severely damaged, but owing to the decentralization of staffs, students, and patients under the Emergency Medical Service, medical education has been maintained at a high level. The greatest sufferers among the medical schools have been St. Bartholomew's and the London School of Medicine for Women. Notwithstanding all the handicaps under which it has laboured, by reason of war damage, decentralization, and delays and difficulties due to disturbance of communications, the work of the university has been well maintained, and normal examinations have been held, though in some cases in provincial centres. The Principal conveys the grateful thanks of the University of London to all those provincial universities and university colleges which have hospitably entertained staff and students and enabled the examinations to be carried on without material loss of efficiency. Among many miscellaneous items mentioned in this report are the foundation by Dr. T. H. Sanderson-Wells of prizes in the pathology and physiology of food, and funds for an occasional lecture on human ailments with special reference to soil fertility; the appointment of Dr. J. H. Gray to the chair of anatomy at St. Mary's on the retirement of Prof. J. E. S. Fraser; and special work of therapeutic value developed in connexion with the military and E.M.S. hospitals. In conclusion Mr. Eason writes: "This report necessarily deals in a scattered way with a scattered university. While exile has its disadvantages both for staff and students, it has its advantages in stimulating adaptability to circumstances and in providing an education in its methods, habits, and customs of universities other than one's own. Our students and teachers have certainly not sat down by the waters of Babylon and wept."

GUY'S HOSPITAL MEDICAL SCHOOL

The following awards have been made for 1941: Entrance Scholarship in Arts (value £100): E. L. W. Leiser. Entrance Scholarship in Science (value £100): Divided between J. C. Crook and D. D. Hilton.

UNIVERSITY OF EDINBURGH

A graduation ceremony was held on July 16, when the following degrees and diplomas were conferred:

M.D.—³D. S. Fairweather, J. A. Farfor, Captain, R.A.M.C., ¹C. A. Green, ¹D. Harley, A. G. MacGillivray, ²H. Miller, Surgeon Lieutenant, R.N.V.R., A. Paterson, A. I. Ross, ²W. S. Thomson, Lieutenant, R.A.M.C.

Ph.D.—A. E. Sundareson, M.B., B.S.

M.B., Ch.B.—P. A. Adam, R. S. F. Adam, W. J. Aiken, F. G. Alexander, W. G. Alexander, A. Anderson, W. Anderson, Winifred A. Bailey, Helen S. Barrett, C. L. Bikitsha, E. C. B. Bramwell, A. S. Brown, I. G. Brown, J. B. Brown, M. L. Brown, R. Brown, Maud L. Buchanan, G. M. Carstairs, Josephine A. Cartwright,

T. M. Chalmers, Edith M. Churchward E. A. Claireaux, J. R. Clark, L. E. S. Coghlan, O. C. Colt, J. F. Cowan, J. D. Crombie, Rosina G. Dabb, A. B. da Costa, W. J. E. Darling, Esther A. Davidson, F. B. Davidson, J. Davidson, J. R. Deuchars, H. S. Dewar, J. S. Drummond, J. W. Drummond, A. D. Drysdale, E. C. Eadie, Ethel F. Edwards, A. W. G. Elliott, Esther T. Ewing, E. C. Field, D. E. P. Forbes, W. R. Fyvie, T. M. L. Galloway, M. Gandz, J. A. L. Gilbert, I. C. Godfrey, J. M. Gold, I. W. B. Grant, Marie P. S. Grant, A. A. Guild, D. S. Harling, Elizabeth G. Harris, K. W. Horn, H. Hutchison, Katherine I. Izal, D. Jaboor, P. M. Kerr, A. M. Langwell, J. R. Lauckner, J. Lawson, P. B. Lockhart, Philippa M. Ludlam, J. M. McAlpin, J. McClelland, R. N. C. McCurdy, H. MacL. T. MacDonald, J. A. Macfarlane, R. C. McLaren, I. MacC. MacLeod, G. C. Malloch, K. L. Marks, Margaret St. C. Masson, Ellis M. Matthew, F. G. Maxwell-Smith, J. C. G. Mercer, A. M. Merriweather, Grace M. Mitchell, R. C. E. Moffat, A. G. C. Neill, D. F. Nicholson, J. Orr, C. A. Palfrey, R. B. Parker, W. H. Parkinson, J. M. D. Paterson, M. G. Pearson, H. J. Powell, J. W. T. Pretsell, T. Primrose, V. T. Pugh, B. C. E. Richardson, M. R. Rifant, Winifred B. Ritchie, W. G. Robertson, H. E. Robins, H. N. Robson, J. D. Ross, J. Y. W. Russell, A. J. Sangster, Sheila P. V. Sherlock, O. H. Siung, Betty V. Slesser, J. D. A. M. Smart, A. C. Smith, C. J. C. Smith, Margaret Sinclair Smith, Margaret Steele Smith, J. C. W. Somerville, J. J. Stevenson, N. R. Stewart, J. R. Stuart, A. P. Tait, Helena P. M. Taylor, Mildred S. Tie-Ten-Quee, T. Tie-Ten-Quee, J. E. Tinné, W. H. Toms, Janet C. Trotter, Davina M. van Wel, J. W. Walford, Margaret J. P. Walker, Grizel Warnock, Elizabeth M. Watson, W. B. Whiston, J. G. Whitty, J. Wilkinson, Jean C. Willison, J. A. C. Wilson, Sara S. Wood, H. C. Worrall, Kathleen M. F. Worrall (née Whalley), R. K. W. Yang, W. W. Yellowlees.

D.P.H.—Olive B. Burnetson, G. A. R. Brown, W. D. Buchanan, J. Cameron, Monica de S. Craig, W. Giles, Rachel Hunter, R. P. Seymour, Mora A. Smeaton, Mona M. F. Thomson.

DIPLOMA IN MEDICAL RADIOLOGY.—K. Brauer, B. Donnelly, G. H. Illingworth, J. A. Wain.

* Awarded gold medal for thesis. * Highly commended for thesis. * Commended for thesis. * Passed with honours. * In absentia.

The following prizes were presented:

Maclean Prizes in Forensic Medicine: D. Henderson and R. T. S. Louttit. Strids Settlements Gold Medal: W. F. E. Baumann. Entes Scholarship and Leslie Medal, Scottish Association for Medical Education of Women Prize, Moulton Scholarship in the Practice of Physic, Dorothy Gillman Memorial Prize, Beane Prize in Anatomy and Surgery, Keith Memorial Prize in Systemic Surgery, and Murdoch Brown Medal in Clinical Medicine: Sheila P. V. Sherlock. Buchanan Scholarship in Midwifery and Gynaecology and Annandale Medal in Clinical Surgery: Josephine A. Cartwright. James Scott Scholarship in Midwifery and Gynaecology, and Royal Victoria Hospital Tuberculosis Trust Medal: J. Y. W. Russell. Conan Doyle Prize: W. K. Fyvie. Wigham Prize in Clinical Medicine: A. M. Merriweather. Position Prize in Clinical Surgery and Thomson Memorial Medal in Child Life and Health: J. A. L. Gilbert. Sir Humphry Rolleston Prize: J. Orr. Murchison Memorial Scholarship in Clinical Medicine: A. Guild. Ellis Prize in Physiology: A. E. Ritchie. Gunning Victoria Jubilee Prize in Chemistry: G. T. McKelvie. Gunning Victoria Jubilee Prize in Materio Medica: G. A. Levy. Gunning Victoria Jubilee Prize in Medicine: J. Innes. Lewis Cameron Undergraduate Prize in Bacteriology: B. Crickshank. Biggem Medal and Prize in Pathology: H. T. G. Strawbridge. Cunningham Memorial Medal and Prize in Anatomy: P. R. Walbaum. Whiteside Bruce Bursary: A. D. Bethune and Constance C. Forsyth (equal). Vans Dunlop Prize in Botany and Zoology: Constance C. Forsyth and Hilary F. H. Hamilton (equal).

POLISH SCHOOL OF MEDICINE AT EDINBURGH

The degrees of M.B., B.Ch. were conferred on K. Bazarnik, Lieutenant-Pilot, Polish Air Force.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh held on July 21, with Dr. H. M. Traquair, President, in the chair, the following, who had passed the requisite examinations, were admitted Fellows:

F. P. Cameron, Lyra M. de Souza, K. Fraser, J. W. Frost, W. J. F. Guild, Ethna W. Little, G. E. Moloney, D. M. Morrissey, K. D. Rao, E. W. Somerville, B. G. Spiers, W. S. Tulloch.

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the final examinations, have been granted the diploma of L.R.C.P.Ed., L.R.C.S.Ed., and L.R.F.P.&S.Glasg.:

N. V. Appavoo, H. K. Banda, F. H. Batchellor, S. J. Blau, A. H. Brambir, W. Brown, M. Burdman, D. Davidson, W. J. Dempster, H. H. Feldman, W. J. E. Fernandez, J. Fitzsimons, S. Gelband, E. G. Gordon, H. P. Hall, H. V. Hankins, A. S. B. Hebron, M. H. Hurwitz, J. Ireland, L. Kaywin, H. Laret, M. Links, E. Lipschik, M. K. McCabe, A. McCall, T. McMurray, J. C. MacWilliam, I. Markowitz, H. Pearl, J. M. Stewart, L. J. Swirsky.

E. Nobel, a graduate of a recognized foreign university, was also admitted a Licentiate.

The Services

DIRECTOR-GENERAL, ARMY MEDICAL SERVICES

Colonel (Temporary Brigadier) Alexander Hood, C.B.E., has been appointed Director-General, Army Medical Services, in succession to Lieutenant-General Sir William P. Macarthur, K.C.B., D.S.O., O.B.E., who retired on August 1.

The new Director-General graduated in medicine at Edinburgh University in 1910 and took the M.D. degree in 1931. He entered the R.A.M.C. in 1912 after serving as house-surgeon at the Edinburgh Royal Infirmary. He has been D.D.M.S. in France and D.D.G. at the War Office.

HONORARY SURGEONS TO THE KING

Surgeon Rear-Admiral G. F. Syms, R.N., has been appointed an Honorary Surgeon to the King.

Colonels T. C. Boyd, V.H.S., and H. J. M. Cursetjee, D.S.O., V.H.S., I.M.S., have been appointed Honorary Surgeons to the King, vice Colonel J. Taylor, C.I.E., D.S.O., I.M.S. (ret.), and Major-General N. M. Wilson, C.I.E., O.B.E., I.M.S. (ret.), respectively.

ARMY AWARDS

Major F. McL. Richardson, R.A.M.C., has been awarded the D.S.O. and has been mentioned in despatches, and Captains H. S. Ahluwalia and M. C. L. Smith, I.M.S., have been awarded the M.C. in recognition of gallant and distinguished services in the Middle East.

MENTIONS IN DISPATCHES

Surgeon Lieut. John Ffrangcon Roberts, R.N.V.R. (H.M.S. *Rosaura*) has been posthumously mentioned in despatches for gallantry in saving a wounded shipmate.

COMMENDATION

Lieut. Frederick Graham Millar, R.A.M.C., has been commended for brave conduct.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

Lieut. ANTHONY JAMES MOON, who was reported missing in s.s. *Lancastria* in June, 1940, is now presumed killed. He qualified M.R.C.S., L.R.C.P. in 1936, and took the degrees of M.B., B.Chir. of the University of Cambridge in the following year. Before the war he was in practice at Wallington, Surrey.

War Substantive Captain ROBERT MONTGOMERY MAXWELL, who has died of wounds, received his professional education at the University of Glasgow, where he graduated M.B., Ch.B. in 1936. His home was in Glasgow.

Prisoners of War

Captain Alfred Ruff Darlow.

War Substantive Captain Harry Acroyd Barker.

Lieut. James Alexander Savage Mulligan.

DEATHS IN THE SERVICES

Major-General SIR OWEN EDWARD PENNEFATHER LLOYD, V.C., K.C.B., late R.A.M.C., died at St. Leonards-on-Sea on July 5, aged 87. He was born on January 1, 1854, the son of Major M. P. Lloyd of the 58th Foot and of Col. Roscommon, was educated at Fermoyle College, at the Queen's University, Cork, and in the school of the Edinburgh College of Surgeons, taking the L.R.C.P.&S.Ed. in 1877. He entered the Army as surgeon in 1878, became full colonel in 1905, surgeon-general in 1909, and retired in January, 1914, but rejoined as soon as war broke out in August, 1914, and served as D.M.S. of the Southern Command. He won the V.C. in the Kachin Burma expedition of 1892-3, received the C.B. in 1910, and was promoted to K.C.B. in 1919. From 1922 to 1924 he was a colonel commandant of the R.A.M.C. During his first year of service he took part in the Zulu War of 1879-81, and was present at the storm and capture of Sekukuni's stronghold, receiving the medal and clasp. In the first Boer War of 1880-1 he formed one of the garrison of Standerton, which held out against a superior force of Boers till the end of the war. During the Burmese War in 1892-3 he won the V.C. for his share in the defence of the Siva post in the Kachin Hills. The announcement in the *London Gazette* read as follows: "During the attack on the Siva post by Kachins on January 6, 1893, Surgeon-Major Lloyd, on hearing that the C.O., Captain Morton (who

had left the fort to visit a picket about 80 yards distant), was wounded, at once ran out to his assistance under a close and heavy fire, accompanied by Subadar Singh. On reaching the wounded officer, Surgeon-Major Lloyd sent Subadar Singh back for further assistance, and remained with Captain Morton till the Subadar returned with five men of the Magwe Battalion of Military Police, when he assisted in carrying Captain Morton back to the fort, where that officer died a few minutes afterwards. The enemy were within 10 or 15 paces, keeping up a heavy fire, which killed three men of the picket and also Bugler Purna Singh. This man accompanied Captain Morton from the fort, showed great gallantry in supporting him in his arms when wounded, and was shot while helping to carry him back to the fort. The native officer and five sepoys above alluded to have been awarded the [Indian] Order of Merit." After Captain Morton's death Surgeon-Major Lloyd took command of the fort and brought the fight to a successful issue. He served afterwards as medical officer to the Franco-British Boundary Commission on the Mekong River in 1894-5, and in the same capacity on the British-Chinese Boundary Commission on the Burmese frontier in 1898-9, acting for a time as commissioner in the place of Sir George Scott. On his return to England he served as senior medical officer of the Dover Garrison and District. In 1905 he returned to India as principal medical officer of the Bareilly Brigades, when he was appointed Honorary Surgeon to the Viceroy. Subsequently he served for a short time as principal medical officer in South Africa. He had been a member of the British Medical Association for twenty-two years.

Major-General Sir WILLIAM WATSON PIKE, K.C.M.G., D.S.O., R.A.M.C. (ret.), died at Lincoln on June 26, aged 81. He was born in Co. Mayo on March 10, 1860, the son of the late Mr. W. Pike of Glendaray, and was educated at Dublin, taking the L.R.C.P. and S.I. in 1880 and the F.R.C.S.I. in 1888. In his student days he was a famous rugby international, playing at three-quarter back in the Irish team on several occasions. He entered the Army as surgeon in 1882, reached the rank of full colonel in 1911, was specially promoted to surgeon-general for distinguished war services in 1917, and retired in 1920. He served throughout the South African War of 1899-1902, when he took part in the relief of Kimberley; in operations in the Orange Free State, including the actions of Paardeberg, Poplar Grove, and Dreifontein; in the Transvaal, including actions at Pretoria; and in Cape Colony; was twice mentioned in dispatches and received the Queen's medal with five clasps, the King's medal with two clasps, and the D.S.O. In the war of 1914-18 he served first as A.D.M.S. of a division, then as D.D.M.S. of a corps, but in 1917 as D.M.S. of the Fourth Army. He was then sent to East Africa to confer with General Smuts on the medical organization of the troops in that theatre of war. In 1918-19 he was serving in India on special duty and on his return home was made a K.C.M.G. Before receiving this honour he was mentioned in dispatches three times and received the C.M.G. as well as a special promotion. Sir William Pike had been a member of the British Medical Association for thirty-five years. In 1886 he married Sara Louisa, daughter of Mr. E. Wheatley; she died in 1918, leaving a daughter who married Colonel O. Y. Hibbert, and died in 1935.

Lieutenant-Colonel DAVIS HERON, C.I.E., I.M.S. (ret.), died suddenly at Ashridge Hospital on June 24, aged 63. He was born in January, 1878, and was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1900. He took the F.R.C.S.Ed. in 1912. After filling the post of house-surgeon at Scarborough Hospital and Dispensary and serving as a civil surgeon in the R.A.M.C. in 1901-2, entered the I.M.S. in 1903, became lieutenant-colonel in 1922, and retired in 1930. He served during the war of 1914-18, was mentioned in dispatches in 1917, and received the C.I.E. in 1918. He had been a member of the British Medical Association for thirty-five years. He leaves a widow.

On production of a certificate from the doctor or midwife who has been booked to attend a confinement, or, in the case of a woman attending an ante-natal clinic, from the medical officer of health, expectant mothers will be supplied by welfare authorities with fifty coupons to buy materials for garments, which should be made before the baby is born. The certificate, which should be given as soon as the diagnosis is made (usually the sixth month of pregnancy), should state the mother's name and address, her National Registration number, and the approximate date on which the confinement is expected. Double the number of coupons will be issued where a positive diagnosis of twins has been made and confirmed.

Medical Notes in Parliament

In the House of Lords on July 22 the Royal Assent was given to the Finance Act. In the House of Commons on the same day the National Health Insurance, Contributory Pensions, and Workmen's Compensation Bill passed its remaining stages.

Pharmacy and Medicines Bill

The House of Commons in Committee amended the Pharmacy and Medicines Bill on July 15 and 16.

On Clause 3 (Prohibition of advertisements relating to certain diseases) Mr. PETERS moved to add to the list of those to whom prohibited advertisements might be sent persons who, although not registered practitioners, were engaged in medical research. Mr. ERNEST BROWN said the clause was a fundamental one to prevent sufferers and their relatives being imposed on by advertisements of useless remedies. The amendment was too vague. He would be glad to discuss with Mr. Peters any proposal affecting a definable group. The amendment was withdrawn.

Dr. RUSSELL THOMAS criticized the list of diseases cures of which were not to be advertised. He said the number of people suffering from locomotor ataxia was so small that it would not pay to advertise cures for it. There was nothing to prevent the patient taking advertised cures for neuritis and dizziness for years till this disease was diagnosed. Similarly persons suffering from diabetes used all sorts of patent remedies for their weakness until their disease was diagnosed. The clause would have no effect on the advertising campaign for debility and weakness. The inclusion of glaucoma was futile. No vendor of patent medicines would say he had a cure for cataract or glaucoma, but there would be ample scope for the patent medicine vendor to advertise remedies for the symptoms. In the case of Bright's disease there was every field before the disease was diagnosed for the vendors of patent medicines to sell wares for the treatment of slowly developing symptoms. The inclusion of Bright's disease would have no effect on the patent medicine trade. The same thing applied to epilepsy and paralysis.

Miss HORSBROUGH said the clause would make illegal the advertising of specific articles as cures for particular diseases, not the treatment of those diseases. Proceedings would not be taken except with the consent of the Attorney-General or Solicitor-General.

DISCLOSURE OF INGREDIENTS

Mr. JAMES GRIFFITHS moved to provide that the disclosure must be in English. Dr. RUSSELL THOMAS said a famous pill whose composition in Latin would read something like: "Sap. moll., ext. aloin; zingiberis" would probably not flourish so much if on the wrapper in plain English were written: "Soap, aloes, and ginger." Mr. BROWN said disclosure should be made in terms clearest to those who had scientific knowledge and to those who bought. He had an amendment to leave out "composition" and to insert "accepted scientific name or other name descriptive of the true nature." He would go into the matter again before the Report stage. Mr. James Griffiths then withdrew the proposal that disclosure must be in English, and the House accepted Mr. Brown's amendment.

The House negatived an amendment, proposed by Sir THOMAS MOORE on behalf of the Society of Herbalists, which would exempt from detailed disclosure a remedy composed of a non-poisonous plant or plants.

On the motion of Captain ELLISTON the coming into force of the Act was delayed from January, 1942, to July, 1942, to give a sufficient period for disposal of stocks.

On Clause 9 (Repeal of medicine duties) Sir FRANCIS FREMANTLE said his friends agreed to this clause only if other conditions were laid down for complete and effective control of advertisements and the disclosure of ingredients. When the Purchase Tax was removed there would be a case for resuming the taxation of medicines.

ENFORCEMENT OF THE BILL

Mr. BROWN proposed a new clause authorizing food and drugs authorities to enforce the provisions of the Bill relating

to advertisements and to the disclosure of composition of medicines and to institute proceedings against contraventions. Sir FRANCIS FREMANTLE said he understood inspectors of the Pharmaceutical Society would be able to carry out duties which otherwise would fall upon a common informer. The clause was added to the Bill.

Sir ERNEST GRAHAM-LITTLE moved and, after discussion withdrew, a new clause which proposed to prohibit the sale under a fancy proprietary name of any preparation having essentially the same composition as preparations listed in current editions of the *B.P.* or the *B.P.C.*

On the Report stage of the Bill on July 22, Mr. ERNEST BROWN moved a new clause providing that it should be the duty of the Pharmaceutical Society to take all reasonable steps to enforce the provisions of Clauses 3, 4, and 6 of the Bill, and for that purpose the Society might employ the inspectors appointed by them under Section 25 of the principal Act.

Mr. Brown moved a series of amendments to Clause 6 (Disclosure of composition of medicines). He said he had examined very thoroughly disclosure in everyday terms and had decided that wherever a well-known term existed it should be used. He had fallen back on disclosure in terms which would be readily understood by a doctor, chemist, or any other expert. The amendments would require disclosure in one of the following ways: (1) Where a medicine or a constituent was a poison in the Poisons List the name to be used was that required in connexion with the labelling of the poison. (2) Where a medicine or a constituent was not a poison but was described in the *British Pharmacopoeia* or the *British Pharmaceutical Codex*, the description at the head of the relevant monograph must be used. (3) Where it was neither a poison nor described in the *Codex*, the accepted scientific name or other name descriptive of its true nature must be used.

So far as quantitative disclosure was concerned, the amendments required the quantities of the named constituents to be disclosed either by giving the percentages in the medicine or stating the actual amounts. When a medicine was supplied in the form of pills and tablets, disclosure might be made in one of three ways: (1) the percentage of the constituent in the medicine; (2) the quantity in each pill or tablet; or (3) the quantity of the constituent in the whole article. The effect of the amendments together would be to require disclosure in English.

Sir FRANCIS FREMANTLE and Prof. A. V. HILL welcomed the amendments, which were agreed to.

Miss HORSBROUGH, replying to Sir Thomas Moore, reiterated that there was no desire to prevent herbalists carrying on their work. With regard to faith healers, there was nothing in the Bill to stop treatment of any sort or kind, nor to prevent anyone treating anyone else for any illness. Neither a herbalist nor anyone else was stopped from making any mixture under a proprietary name and selling it under a proprietary name so long as there was disclosure as provided in Clause 6.

The Report stage being concluded, the Bill was read the third time. On July 23 it was read a first time in the House of Lords.

Red Cross Brassard

In the House of Commons on July 15 Mr. LAW informed Sir George Jeffreys that the Geneva Convention, 1929, provided that to claim the protection afforded by the convention to military medical services, personnel of voluntary societies such as the British Red Cross Society must be subject to military law. The only members of the British Red Cross Society entitled to wear the Geneva Cross armband were those incorporated with military medical units as determined by the Commander-in-Chief. Instructions were issued on this subject in March, 1940, and the position was subsequently made plain in correspondence with the British Red Cross Society in April of this year.

Women Doctors in the Services

Sir FRANCIS FREMANTLE asked on July 23 why women medical officers recruited to the Royal Air Force were not given the rank, status, and title accorded to male medical officers in the Service. Sir ARCHIBALD SINCLAIR said these women medical officers had the status of officers and the relative ranks pertaining to their duties and were addressed as medical officers. Sir FRANCIS said the title was not given. A woman medical officer was addressed

as "Miss Smith, Medical Officer." Sir ARCHIBALD SINCLAIR said special designations applied in the case of women's Services such as the Women's Auxiliary Air Force and the nursing services.

On the same date Sir VICTOR WARRENDER told Sir Francis Fremantle that only one woman medical officer was employed in the Navy. She held the relative rank of surgeon lieutenant R.N.V.R., received the pay of that rank, and wore the distinguishing stripes of a surgeon lieutenant on her sleeve. If women doctors were supplied to look after the W.R.N.S. personnel that would mean duplicating the medical staff and would lead to inefficiency. Only 2½% of the W.R.N.S. expressed a wish to have women doctors.

Gas and Oxygen by Midwives

Replying on July 24 to Dr. Summerskill, Mr. BROWN said that according to returns made by local supervising authorities up to December 31, 1940, forty-nine of the 188 authorities concerned had made arrangements approved by the Central Midwives Board for instructing midwives in the administration of analgesics. Apparatus for administering analgesics was supplied by thirty-three authorities during 1940 as compared with twenty-one during 1939. Under special arrangements made by the Ministry of Health with the National Birthday Trust, forty-three machines had been supplied to emergency maternity homes in which the staffs were adequately trained in the administration of gas and oxygen.

Examination and Discharge of Unfit Soldiers.—Captain MARGESSON, replying to Mr. Rhys Davies on July 22, said that existing instructions already provided that, as soon as it became doubtful in the opinion of the medical officer in charge of the case whether a soldier in hospital was likely to become fit again for further military service, that soldier was brought before a medical board so that a decision might be given without delay. All soldiers had to be brought before a medical board before the end of five months' continuous absence from duty, or three months in the case of patients in mental hospitals.

Doctors and Appeal to the Courts.—Mr. GROVES on July 22 asked the Lord President of the Council whether, having regard to the right of dentists, pharmacists, and certain other professional persons to appeal to the courts against disciplinary decisions, appropriate steps would be taken to amend the law and give doctors a similar right. Sir JOHN ANDERSON replied in the negative. He said that he was not satisfied that there was any general desire in the medical profession for such legislation at the present time.

Medical Services in Invasion.—Mr. ERNEST BROWN states that, in case of invasion, all local medical and first-aid facilities will be made equally available for both military and civilian casualties in areas which become the scene of actual operations.

Notes in Brief

A further Order under Defence Regulation 32 B is under consideration to include doctors resident in Great Britain who have obtained their degrees in Switzerland, Sweden, and other neutral countries.

Mr. ERNEST BROWN is in communication with Mr. Bevin about the rationing of materials used for occupational therapy in mental hospitals.

Mr. Bevin proposes to arrange that men who have been medically examined for the Armed Forces shall be informed that they should let the Ministry know if subsequently, while their calling-up is deferred, they think that their medical condition has deteriorated. A further medical examination may be held in such cases.

Mr. BROWN has decided that the Nursing Division of the Ministry of Health, the establishment of which was announced on April 3, shall deal with midwifery as well as nursing. The Division will be known as the Division of Nursing and Midwifery.

Asked when he proposed to publish a summary report covering the work of the Ministry of Health, Mr. ERNEST BROWN said on July 3 that the material was being collated as rapidly as more urgent work permits. There would be no avoidable delay in the publication of the Summary for the two years 1939-40 and 1940-1. Mr. ERNEST BEVIN was unable to state what action would be possible to ensure the issue in an abbreviated form of the report for 1940 of the Chief Inspector of Factories.

The number of nurses employed in factories has largely increased of late. Three special short courses, at which trained nurses can receive supplementary instruction in industrial nursing, have so far been arranged by the Ministry of Labour.

A draft report has been revised, for publication at an early date, of the medical part of the investigation by the Medical Research Council of silicosis among coal miners. Environmental studies form the subject of a second report which is being prepared.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 5.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash—denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	201	15	51	2	5	178	14	32	1	5
Deaths										
Diphtheria	794	36	168	16	27	718	20	268	45	32
Deaths	25	1	5	—	1	23	—	4	1	3
Dysentery	61	4	34	—	—	34	1	41	—	—
Deaths										
Encephalitis lethargica, acute	1	—	—	1	—	3	—	1	—	—
Deaths										
Enteric (typhoid and paratyphoid) fever	186	4	43	3	2	108	19	11	6	2
Deaths	3	—	—	1	—	—	—	—	—	1
Erysipelas	—	—	33	7	3	—	14	51	6	2
Deaths										
Infective enteritis or diarrhoea under 2 years	32	2	13	11	2	36	8	4	2	11
Deaths										
Measles	6,524	187	62	90	—	9,166	24	1,130	—	22
Deaths	5	1	2	—	—	5	—	9	—	—
Ophthalmia neonatorum	73	2	28	2	—	96	9	15	—	—
Deaths										
Pneumonia, influenzal*	680	23	4	—	5	441	20	3	—	8
Deaths (from influenza)	6	22	1	1	—	11	—	—	—	—
Pneumonia, primary	—	—	156	14	—	—	20	157	7	—
Deaths				4	3				9	7
Polio-encephalitis, acute	2	—	—	—	—	1	—	—	—	—
Deaths										
Polio-myelitis, acute	12	—	5	2	—	18	—	2	—	—
Deaths										
Puerperal fever	1	1	14	3	—	6	6	9	1	2
Deaths										
Puerperal pyrexia	158	9	18	—	1	130	14	6	—	—
Deaths										
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths										
Scarlet fever	787	23	112	42	17	1,128	34	150	46	53
Deaths	—	—	—	—	—	2	—	—	1	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths										
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths										
Whooping-cough	5,316	246	101	50	10	807	7	39	—	12
Deaths	28	3	4	1	—	4	—	2	—	1
Deaths (0-1 year)	273	21	66	33	11	288	38	47	17	25
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,898	460	584	168	99†	4,205	667	546	165	140
Annual death rate (per 1,000 persons living)			12.7	11.2	—			11.0	11.0	12.3
Live births	4,978	328	887	375	178†	6,038	929	840	394	256
Annual rate per 1,000 persons living			18.0	24.9	—			17.0	26.3	22.4
Stillbirths	208	18	41	—	—	214	23	38	—	—
Rate per 1,000 total births (including stillborn)			44	—	—			43	—	—

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Cerebrospinal and enteric fevers and pneumonia (primary and influenzal) increased in England and Wales during the week. In Scotland only enteric fever and diphtheria showed an increase, the former considerable, the latter very slight. In both countries acute poliomyelitis was more prevalent than last week, but the incidence remains low compared with last year and the year before.

Cerebrospinal Fever

During the six weeks ended July 5 notifications in England and Wales numbered 254, 244, 236, 211, 192, and 196 respectively. The disease is widespread, involving thirty-seven of the sixty-one administrative health areas in the country, but only in six were more than 10 cases notified during the week—namely: Lancaster 30 (Blackburn, Bolton, Bury, Crosby M.B., Droylsden, Fulwood, Kirkham, Litherland, and Warrington R.D. 1 each, Liverpool 4, Manchester 13, Salford 2, Clitheroe M.B. 2); York, West Riding, 27 (Bradford 2, Doncaster 1, Rotherham 4, Sheffield 8, Keighley M.B. and Kiveton Park R.D. 2 each, and York C.B., Castleford, Cudworth, Normanton, Otley, Shipley U.D., Hemsworth R.D., and Rotherham R.D. 1 each); London 15 (Fulham 3, Lambeth and St. Pancras 2 each, Bethnal Green, Camberwell, Poplar, Shoreditch, Stepney, Wandsworth, Westminster, and Woolwich 1 each); Warwick 12 (Birmingham 8, Coventry 3, Meriden R.D. 1); Glamorgan 12 (Cardiff 4, Merthyr Tydfil 1, Swansea 2, Bridgend U.D., Gelligaer U.D., Llanwr U.D., Neath R.D., and Pontardawe 1 each); Durham 11 (Gateshead 1, South Shields 2, Sunderland 4, Hetton, Ryton, Washington, Durham R.D. 1 each). In Scotland 300 cases were notified in the last six weeks, and in the first six months of the year 1,661, compared with 1,966 in the corresponding period of 1940. Eleven counties and eight burghs are at present involved, notably the counties of Ayr 6, Aberdeen 3, Fife 3, Lanark 3, and the burghs of Glasgow 15 and Edinburgh 4.

Enteric Fever

Of the total notified in England and Wales during the week, 46 more cases are of typhoid fever and the remainder of paratyphoid B fever. Nearly one-half of the total occurred in two areas, not more than 10 being notified in the other twenty-two areas for which notifications were received. The Birmingham and district outbreak of paratyphoid fever is declining, but cases continue to be notified in Stafford 47 (Stoke-on-Trent 40, Smethwick 1, Newcastle-under-Lyme M.B. 3, Tamworth M.B., Wednesbury M.B., Cheadle R.D. 1 each); Warwick 14 (Birmingham 10, Coventry 1, Solihull U.D. 2, Sutton Coldfield M.B. 1); Worcester 1 (in Kidderminster R.D.). Another area affected is Lancaster 35 (Blackpool 2, Bootle 7, Liverpool 21, Manchester 1, Southport 2, Morecambe and Heysham M.B. and Newton-le-Willows U.D. 1 each). In Scotland 6 cases of typhoid fever were reported (4 in Glasgow and 1 each in Ayr County and Arbroath burgh), and 37 cases of paratyphoid fever—namely: the counties of Angus 1, Fife 1, Lanark 5, Moray and Nairn 2, Roxburgh 2, and the burghs of Aberdeen 2, Dundee 17, Dunfermline 1, Glasgow 5, Edinburgh 1.

Diphtheria in Scotland

The unfavourable position in respect of diphtheria morbidity and mortality has led to a campaign which, it is hoped, will extend the benefits of immunization to children of pre-school age, even in rural districts. In two districts the medical officers of the clinic go round with a van to the remoter parts and have met with considerable success. During 1940 there were 15,711 cases and 676 deaths from diphtheria, compared with an average of approximately 10,000 cases and 410 deaths in the preceding four years; 50% of the deaths were in children between 1 and 5 years, and 83% between 1 and 10 years. So far 529,679 out of a child population of 1,124,500, or approximately 47%, (65% in school children and 30% in pre-school children), have been immunized; lower figures were recorded in urban areas.

Dr. Arnulfo Aras, a well-known practitioner in Panama, who had formerly been Minister of Health as well as Ambassador to Italy, has been elected President of the Republic of Panama.

Medical News

Letters, Notes, and Answers

Not least among the pleasures we have to forgo in wartime are the anniversaries of learned and scientific societies. But for the war there would have been fitting celebrations last week of the centenary of the Reading Pathological Society, which was founded on July 13, 1841, and is thus the oldest pathological society in the country. The meetings of the society during these 100 years have been held without a break at the Royal Berkshire Hospital, with which the society has always been closely associated. In 1900 the Reading Medico-Chirurgical Society, which dated from 1824, was merged in the Pathological Society, and its library transferred to the rapidly growing one at the Royal Berkshire Hospital. For the last fifty years each new session of the society has been opened with an oration by a prominent member of the profession, and the list of orators contains many distinguished names. The centenary was marked by a commemorative service in the chapel of the hospital, the presentation to the society of the considerable reference library which had hitherto been the property of the hospital, and a centenary oration, "One Hundred Years in Retrospect," by Dr. G. O. Lambert, senior honorary physician to that institution.

Lieutenant-Colonel Henry Guest, M.P., presiding at the annual meeting of the London Chest Hospital, Victoria Park, E., said that despite very severe damage in recent air raids such good progress had been made in first-aid repairs that the hospital had now been reopened for in-patients and all departments had resumed working. A start had been made with the building of a new pathological department to replace the one that was completely destroyed, burying records and specimens representing ninety years of research on chest affections.

It is reported in the *Journal of the American Medical Association* that a blood donor centre has been organized in the Augusta-Victoria Hospital in Berlin.

The Trustees of the Dr. Jessie Macgregor Prize in Medical Science announce the award of the prize for the present triennial period to Miss Agnes Rose Macgregor, M.D., F.R.C.P.Ed., for her work on pneumonia in the newborn. The prize is open to medical women who are graduates in medicine of the University of Edinburgh or who have taken the triple qualification of the Scottish Medical Corporations. It is awarded to the applicant who presents the best record of original work in the science of medicine during the past three years, and is of the value of £75.

A certificate presented to Parliament by the Prime Minister enables Prof. A. V. Hill, Sc.D., F.R.S., who has become an Associate Member of the Ordnance Board, to retain his seat in the House of Commons as one of the Members for Cambridge University.

The names of Mr. Charles Alfred Keogh, F.R.C.S., surgeon, London, and Dr. Alexander Hendry MacKie, medical practitioner, Birmingham, have been brought to notice for brave conduct in civil defence.

Dr. Kenneth R. Hay and Mr. H. S. Souttar have been elected Managers and Dr. Russell J. Reynolds a Visitor of the Royal Institution.

Sir John Boyd Orr, M.D., F.R.S., Director of the Rowett Research Institute, has been re-elected president of the Aberdeen branch of the Children's Nutrition Council.

A Pan-American League against Cancer has been founded in New York under the presidency of Professor Angel H. Roffo, director of the Institute for Experimental Medicine in Buenos Aires.

At Baltimore the Public Health Service maintains a tumour clinic which serves as a demonstration of the life-saving possibilities of adequate cancer treatment. In the first eight months of its existence 226 patients were treated.

Switzerland will celebrate the 400th anniversary of the death of Paracelsus at Einsiedeln from September 27 to 29.

Professorships of industrial hygiene have been established at Turin, Sienna, and Padua, so that with those at Milan and Naples Italy now possesses five such chairs.

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Income Tax

Change from Employment to General Practice

"J. G. M." was employed as an assistant up to the end of April, 1941, earned £28 as a locumtenent in May, and has since started in general practice. He is still being asked to pay tax on his employment earnings.

* The tax payable on the salary as assistant for the year to April 5, 1941, would normally be deducted in equal monthly amounts over the period November 1, 1940, to October 31, 1941. Presumably when "J. G. M." left his employment at the end of April there would be some tax not then due for deduction, and therefore not paid. He is liable to account directly to the Revenue for that balance of his liability for 1940-1. In addition, of course, he will ultimately have to account for the liability (if any) on his earnings of April, 1941, as part of his income for 1941-2.

Appointment: Car Allowance

"F." holds a full-time appointment as M.O.H. and receives a car allowance of £100. This amount is inadequate in war conditions, but the inspector of taxes refuses to make a deduction for the excess expenditure.

* The rule applicable to Schedule E is strict—expenses to be allowable must be "incurred wholly, exclusively, and necessarily in the performance of the duties of the office." The inspector presumably takes his stand on the assumption that whatever amount "F." in fact expends, the appointing authority have made an allowance on the basis that £100 covers necessary expenditure, and we think that in the absence of other evidence that is likely to be the view taken on appeal to the local commissioners. Possibly "F." could obtain a statement from his authority that while they are unable to increase the allowance they no longer regard it as adequate to cover necessary expenditure. That would be very helpful evidence in support of his claims.

Reduction in Practice Income

"HARD HIT" has a partnership in a practice which has suffered severely owing to the war, with the result that the previous year's basis works harshly.

* If—as is apparently the case—"Hard Hit's" earned income calculated on the basis of the actual year is not more than four-fifths of the earned income as assessed he can claim to have his liability adjusted to the actual year's basis. An application should be made to the Inspector of Taxes accordingly, and should be made by each individual partner and not by the firm as such. As regards the current financial year, tax will not be payable until January, 1942, and if the necessary accounts are not then available no doubt some arrangement can be made for the acceptance of a payment on account.

Dominion Income Tax Relief

"A. T." has income from a Dominion on which £10 10s. income tax is paid there. He has been refunded £7 by the British Government, but this £7 is being taxed as income.

* Prior to the introduction of this relief the tax paid in the Dominion was regarded as deductible in calculating the liability to British income tax—i.e., "A. T." would have been assessed on, say, £100—£10=£90 in full. The present position is that relief can be claimed in respect of the Dominion tax up to a maximum determined by half the "appropriate rate" of British tax payable by the claimant. In so far as this relief reduces the amount suffered by payment of Dominion tax, that tax ceases to be

deductible in calculating the amount of the income for assessment to British tax. The relief as suggested above does not extend in many cases to the whole of the Dominion tax; if it did there would be no inducement for reciprocal action on the part of the Dominion concerned.

Reduction in Civil Earnings

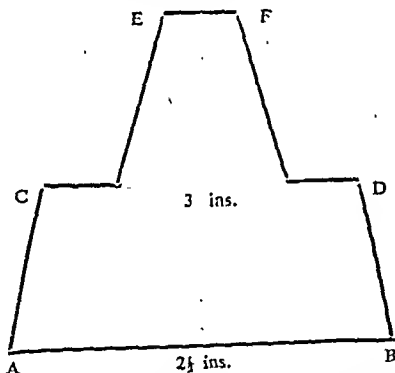
"MILES" is serving in the Forces, his practice being run by a locumtenent. Can he claim to deduct the whole of such expenses as maid's wages and upkeep, gas, light, and telephone?

* In the circumstances it seems reasonable that a higher proportion than formerly should be claimed and allowed, but so long as a part of the premises is not being used for professional purposes—the rooms occupied by the locumtenent being regarded, however, as used professionally—"Miles" will be unable to enforce a claim to allowance of the whole of such costs. If the actual total income of "Miles" for 1940-1 is not more than four-fifths of his earned income for that year he can claim to have the assessments adjusted to the actual basis.

LETTERS, NOTES, ETC.

Treatment of Cracked Finger-tips

Dr. M. R. SONI (Manchester) writes: Cracked finger-tips are very common in winter. Persons with soft skins who have not done any manual work and who are new to war work suffer especially from this painful condition. As a preventive and curative measure elastoplast should be applied in the following manner after cleansing the hand thoroughly with grease-solvent soap and paring the edges of the crack with a safety-razor blade. Cut the plaster in the manner illustrated below:



Place the tip of the finger (beyond the distal joint) along the side AB in its centre. Bring down EF over the finger-tip and the nail and stick it to the dorsal surface. Pull on the sides AC and BD and press their adhesive surfaces together in the middle line. Cut off all redundant plaster and mould the dressing to the form of a thimble. In this manner elastoplast makes a neat little dressing for the finger-tip which need not be disturbed for a few days. I have known patients to do work of a delicate nature wearing "thimbles" on all the finger-tips. The dressings stand wear and tear, and are to some extent waterproof. If the surface of the skin is broken a little plain zinc ointment should be applied to the wound on a small piece of lint before covering it up with plaster. As a corrective measure a little "HEB" (protective) should be rubbed into the hands night and morning. This preparation is manufactured by J. Halden and Co., Ltd., of 37, Brazenose Street, Manchester, according to the formula of Dr. P. B. Mumford (see *British Medical Journal*, February 11, 1939, p. 266.).

Attending a Colleague

"SCOTIA" writes: In a recent issue of the *Journal* a suggestion was made as to how medical practitioners could repay specialists for their attendance on them. I would suggest that every doctor voluntarily should pay £1 ls. annual subscription for himself and an additional £1 ls. for his wife and children into a general fund, which would amount to many thousands a year. From this specialists should be paid a standard but not reduced amount, and this would make it easier for the general practitioner to approach the already too willing specialists. Each hospital could provide a room for the use of the patient; the hospital would be paid the usual private room fees from the fund. The medical profession as a whole are not often patients and not for longer than is necessary, so that eventually from the same subscription a sickness insurance might be possible. This insurance should be entirely in the hands of the profession to avoid unnecessary expenses.

Minerals and Vitamins in a "Health Dinner"

In a bulletin issued by Vitamins Ltd. (which can be obtained on application to the firm at 26, Upper Mall, London, W.6) the following food values are given for a modified "Oslo breakfast" recently given to a group of London school children as a "health dinner."

	Vit. A Units	Vit. B, Units	Vit. C Units	Vit. D Units	Available Iron mg.	Calor. mg.
Salad: lettuce 1 oz. ...	934	6	62	—	0.10	70
tomato 1 oz. ...	844	7	138	—	0.03	10
cucumber 1 oz. ...	—	5	40	—	0.09	63
carrot 1 oz. ...	534	5	11	—	0.16	150
Cheese 1 1/2 oz. ...	937	2	—	5	0.24	340
Butter 1 oz. ...	738	—	—	10	—	30
Milk 1 pint ...	812	50	—	7	0.30	440
Wholemeal bread 3 oz. ...	170	93	—	—	1.74	330
Fresh fruit 3 oz. (approx.)	84	23	750	—	0.30	190
Totals ..	5053	191	1001	22	2.96	8663
Daily requirement for health ..	6000	600	1500	400	10-12	1000

Roughage in Food

Dr. JOSIAH OLDFIELD writes: I think the medical profession should set their faces against the word "roughage," which has been introduced of late years by writers on dietary. It gives a wholly unscientific view of the processes of digestion, assimilation, and defecation. "Roughage" gives the idea that the alimentary canal works by a process of irritation, and anyone who uses the word thinks of it as something which scrapes along. This fallacy has made the fortunes of patent medicine vendors, because owing to the conditions of modern life constipation is one of the commonest ailments of humanity. The majority of patented medicines, and even of prescriptions given by the medical profession, are based upon the use of either vegetable or mineral irritants. Study of digestion teaches that this is an entirely fallacious method of looking at the physiological processes which accompany the intake of food and the excretion of waste matters. In a cow (which is one of the best illustrations I know of an animal that never suffers from constipation), the contents of the second stomach after the chewing of the cud could never, by any stretch of language, be called "roughage," and yet those who have ever kept cows would admit that there is no animal they know in which the digestion is so easy and certain. The alimentary canal works on the harmonious relation between the muscular structure of the intestinal walls and the contents of the intestine. This relation is not one of irritation but entirely the reverse. The human animal should always be in a state where the contents of the alimentary canal afford the soothing stimulus and the necessary mass for the musculature of the walls to function upon. We find as an experience that when men live upon "the kindly fruits of the earth" constipation is unknown. It is not the coarse corn and the modern foods made of bran which are the harmonious foods, but the admixture of vegetables of the garden, fruits of the orchard, grains of the harvest field, and oils and fats of the nut tribes which will always provide a suitable bulk, a suitable stimulant, and a suitable mass for muscular action. To these foods may be added products of the dairy, such as milk and cheese, and eggs, though these are all comparatively constipating; but no constipation can ever persist where the food consists largely of the products of the earth.

Skin and Mind

Dr. E. SAKOSCHANSKY (Southampton) writes: I have read your annotation on skin and mind (July 12, p. 55). In my opinion there is no need for such apologies as "apt to begin with confusion and end with incredulity" or "avoid the role of obstructionist," etc. After all, the brain is derived from the skin: it is no more than an invagination of an especially sensitive part of the skin. Both the brain and the skin are rich in cholesterol; therefore both probably react in a similar way to certain metabolites and ions. Hence it follows that the "frequent association of certain allergic phenomena with a particular type of personality" may be due to a similar make-up in the skin and in the brain.

Accommodation for Doctor's Child

Dr. X. Y., who practises in a small country town in the Cotswolds, offers accommodation to a doctor's child, preferably a girl between 3 and 5 years of age, from a "blitzed" area. Dr. X. Y. has two children, a girl of 4 and a boy of 2. Accommodation is offered, in return for actual expenses only, either for the summer or for the duration of the war. Letters addressed to Dr. X. Y., c/o the Editor, will be forwarded.

THE MENTAL DEFECTIVE IN THE ARMY*

BY

F. J. S. ESHER, M.B., Ch.B., M.R.C.S., L.R.C.P., D.P.M.

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It is vital to success in military operations that commanding officers should know the limitations and weaknesses of the units they employ no less than their numerical and physical strength. Mental defectives constitute such a point of weakness, a matter which is the more important because it is often not recognized till too late. This paper discusses the evidence that mental defectives are a hindrance to a modern army, easy and quick methods of detecting them, and recommendations for removing the more serious cases of defect at an early stage.

The Defective a Hindrance to the Unit

The mental defective differs from the normal person in that he is less able to meet new situations, is backward in learning, has less foresight and therefore does not appreciate the risks he is bringing on himself and others, has less initiative, and is slower in thought and action. In the Army of to-day, in which complicated machines are increasingly used, speed in action is essential both to success in battle and to the safety of the unit; the soldier must have more initiative and a better understanding of technical apparatus than were needed in former wars. The bow-and-arrow was simpler than the flintlock, which is a toy beside the machine-gun. The mental defective who can only master the rifle is at a disadvantage compared with those who can handle, clean, and maintain more complicated weapons, and he cannot in an emergency give them enough support.

Mental defectives are slow learners, and therefore hold back the training of normal men. The lower the mental age the more difficult they are to train. In my experience all those of a mental age of up to 7 years 11 months are untrainable; 86% of those with a mental age of 8 years, 58% of 9 years, 33% of 10 years, 28% of 11 years (see Chart).

Case A.—This man was notified by the National Service Recruiting Board to be "slow mentally and illiterate"; on account of this he was placed in Grade II. As he was untrainable he was sent to me for examination six months after joining up. His mental age was 5½ years. He told me he had been a sentry for five months. When asked about this, he said that he couldn't fire a gun and was generally terrified of being left alone in the dark. He had been put to guarding a gun site. In peacetime he could practically get no work. He had held two jobs in seventeen and a half years, and had been out of employment for fifteen years of this time.

Case B.—A man in the Royal Engineers was frequently crimed for petty offences, such as changing his billet without permission, arriving late on duty, etc. He seemed unable to realize that he had broken regulations, though he had been in the Forces for eighteen months; it was apparently impossible to train him as a soldier. His mental age was 6 years.

Case C.—This man wept copiously as soon as we began to talk. His medical officer said he was asocial and was shunned by

his comrades. He was untrainable after five months in the Army and was useless even for fatigues. He was very worried about leaving his six children, as his wife was going to have another soon. He was illiterate, and his mental age was 4½. He did not know whom the war was against—in fact, he was not aware that there was a war on.

It would not have been difficult to discern that these men would never make soldiers if those responsible for their acceptance had been aware that mental deficiency was a definite hindrance to military efficiency.

The mental defective unable to cope with his new environment is more prone to report sick for small and varied ailments. In a series of 100 cases sent to me for examination for mental deficiency 42% were chronically sick. Most were not seriously or even moderately ill.

Case D.—A man aged 23, six months in the Royal Artillery, complained of pains in the feet and of inability to march on drill. He had been to an orthopaedic specialist, who could find no reason for the pains, but reported that he had double pes cavus; spectacles, which he said did not suit him, had been provided, and he had been to a dermatologist for ichthyosis. He had had his appendix removed in a general hospital, and later it was found that there was sugar in his urine. He had attended an open-air school and was physically frail. The N.S.R.B. placed him in Grade II. During performance tests he was described as a "lethargic twiddler," and on the Terman test he had a mental age of 9½ years. His physical and mental conditions were degenerate and under-developed. Most of his six months of Army life had been "under the doctor."

R.M.O.s commonly report that it is the dull, inefficient soldiers who turn up most regularly at sick parades, that many of their ailments are quite trivial, and that "the defectives use their illness to get out of their difficulties." It would perhaps throw a broader light on the problem to say that when the defective is bewildered in his new environment his attention turns to his own bodily sensations, rather hypochondriacally, in the hope that the M.O. will supply a comforting bottle of medicine and suspend him from perplexing duty. If at the same time he is ordered to the sick bay then so much the better: for many defectives, when children, needed and received more parental care than normal youngsters. Being nursed is something they both know and enjoy. Such behaviour, however, lowers the morale of the unit and rouses resentment among those who are also struggling to adapt themselves to their new environment and to hold back their personal claims and troubles in the common struggle of war.

To frequent illness we may add clumsiness. A sergeant-instructor told me that it was the 20% whom he found most difficult to teach to drive who had the most accidents. Allowing for a few "accident-prone" (who are not always hard to teach), many of these slow learners and clumsy drivers were probably defectives.

* Based on a paper read to a meeting of the British Psychological Society at Nottingham, April 19, 1941.

Sample of Military Defectives

In a series of 100 mentally defective soldiers seen consecutively, 80% had mental ages of from 9 to 11, and 14% of from 5 to 8 years (see Chart). This distribution is not typical of the scatter of mental defectives in the population. It would be satisfactory to believe that the low- and medium-grade feeble-minded had been kept out by the recruiting boards; but that they are kept out is more probably due to the working of the Mental Deficiency Acts, 1913-38, for the majority of those whose mental age is 8 or less cannot support themselves at all and are in institutions, on licence, under guardianship, or notified to the local mental deficiency authority, and are therefore exempt under the National Service (Armed Forces) Act, 1939, Section 11 (f).

It will be noted that while more men with mental ages of 9 and 10 were useless to the Army than those with mental ages of 11 and 12, yet there are fewer of them in the general population. These men of 11 and 12 mental age are "military defectives" even more than they are "civilian defectives," since they cannot adapt themselves to such new and complicated duties as a modern army requires them to perform. In civilian life they could choose their occupations; if unable to do their allotted tasks they did not thereby endanger the lives of their companions and would change to work which was more congenial, and which gave them a sense of achievement rather than of frustration.

The above-mentioned 100 men were asked to furnish particulars of their various employments and the time they worked on them. From these times was compiled the following table, to which unemployment time has been added.

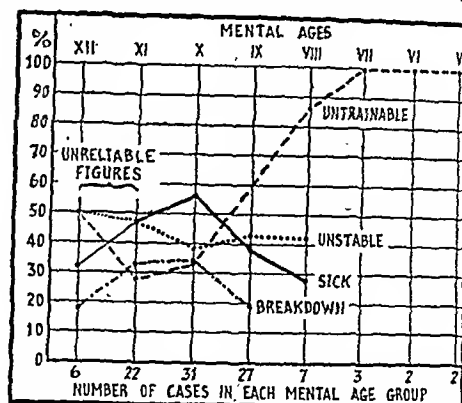
	Years		Years
Out of work	241	Shop assistants	46
General labouring	193	Delivery (mainly coal and milk roundsmen)	30
Coal-mining	153	Army and Navy Regulars	24
Machine feeding	104	Hand-truck pushers	23
Pedlar; hawk	74	Window-cleaning	17
Painter	73	Other occupations	91
Farm-hand	71		
Odd jobs (unemployed about 50% of time)	60		
Totals: Employment 959 years; Unemployment, 241 years.			

Counting their potential working time as 1,200 years, these 100 men had been out of work about 20% of this—i.e., 241 years. It might engage the curiosity of M.O.s of units to find out whether their mental defectives do not spend a like proportion of their time in the Army on the sick list. The above list does not indicate the character of the work actually done—in the coal-mines, for instance, the men are mainly employed on the less skilled jobs—but it does show how they are occupied in a free market. In the Army, where duties are allotted and have to be carried out without much time for instruction, the defectives break down on the job. Men who are of so little use to the community in time of peace should not be allowed to hinder an army during wartime.

Analysing the reasons why these 100 men were sent for a psychiatric opinion, it was found that 50% were regarded by their M.O. or C.O. as untrainable; 25% were apparently stable before enlistment but broke down and were sent to hospital suffering from a psychiatric complaint which manifested itself after enlistment, the commonest symptoms being those of conversion hysteria and anxiety; 43% were unstable before enlistment; and their discharge was recommended on grounds of continued temperamental instability; 42% were regularly reporting sick or had some psychoneurotic ailment—i.e., over a half of them had more than one of these reasons for being sent for investigation.

In the light of the above figures it will not be a surprise that in an investigation of 904 consecutive cases admitted

to a special centre for neurosis and measured by the progressive matrices 33% came from the lowest 10% taken into the Army. This would suggest that one way of re-



Graph showing proportion of mentally defective soldiers breaking down, sick, unstable, or untrainable at various mental ages (100 cases).

ducing the incidence of neurosis in the Army is to keep out the mental defectives, who, though in a minority numerically, constitute a major problem.

Duration of Service before Mental Defect is Detected

When we remember that mental defectives by their slow-wittedness hinder the training of normal men and break down easily themselves, we become curious regarding the time that elapses before their defect is detected or it is realized that, in spite of painstaking endeavour, they may be untrainable. It may therefore be instructive to examine the following table showing the length of Army service of 100 mentally defective soldiers sent for examination.

Under 1 week	1	9-12 months	7
1-2 weeks	6	12-15	5
2-4	4	15-18	3
1-3 months	19	18-24	4
3-6	26	Over 2 years	4
6-9	22	(3, 4, 4½, 5½ years)	

These figures should be examined in relation to the stages of training. Though the work is relatively easy in the first three months, 30% showed clearly that they could not stay the course. During the next six months the soldier has to learn to handle more complicated weapons and to carry out military exercises which call for a greater amount of self-reliance in the face of complexity and uncertainty. It is therefore not surprising that 78% of the defectives examined had failed before they were ready for active service.

Aids in Spotting the Defective

The defective has, on the whole, a different school and work history from that of the normal soldier. Though no one would diagnose a defective on that history alone, the following points will help those who are uncertain whether to send a given case for an opinion to the psychiatrist attached to the recruiting boards or, if already enlisted, to the Command or E.M.S. psychiatrist.

There is generally one standard (form, class) for each year of the child's elementary-school life (7 to 13 years), corresponding with Standards I to VII. In the past, and therefore affecting the older soldiers, boys went up to a higher standard only if they passed the necessary test. Therefore when we find that a soldier did not reach one of the top three standards we may suspect mental defect.

In more recent years there has been a general tendency to avoid the inclusion in the same form of larger or older children among those who are less mature; the aim was to prevent deterioration of character and development

through the temptation to bully the younger ones. This was accomplished in two ways. In one the child was promoted yearly, and therefore left the school in the top standard. Defective soldiers educated on this principle will often admit that they were unable to keep up with their fellows and were therefore at the bottom of the class, or that their promotion was due to their age or size and not to their abilities. In the second way the schools were organized along the lines suggested by the Hadow Report—Standards V, VI, and VII being called Forms I, II, and III. These forms were subdivided into "streams" A, B, and C (also D in larger schools, only A and B in smaller). These "streams" generally represent ability: the dull children go in the C stream (and D in the larger schools) and the cleverer in the A stream. Exceptionally, the forms are subdivided according to the type of work done—e.g., A: commercial; B: technical (trades), etc.; so that dull and clever "commercials" would be in Form IIIA, and the B stream would include boys with, say, high mechanical ability.

Illiterate soldiers, and those very nearly so, are almost invariably mentally defective, unless there is clear reason for illiteracy—e.g., lack of schooling; those who attended special schools are generally defective from a military standpoint, and many who went to open-air schools are dull and defective (or, if not, should have special investigation on grounds of doubtful physical health). Soldiers from secondary or technical schools and colleges are unlikely to be mentally defective unless they were fee-paying scholars in a school without an entrance examination, when they may be defective.

The following table shows the standards from which 100 mentally defective soldiers left school compared with those from which 100 psychoneurotic soldiers left. It shows that of those who left in Standard IV or lower 5.3 : 1 (32 : 6) and of those from Standard V or lower 3.4 : 1 (54 : 16) were mentally defective.

	100 Mental Defectives	100 Psychoneurotics
Standard II	3	7
III	12	10
IV	22	5
V (or Form I)	19	27
VI (or Form II)	12	29
VII (or Form III)	5	18
VIII (or Ex-VIII)	5	7
No schooling	3	2
Didn't know	3	7
Schools with unorthodox class numbering	3	2
College	1	1

Work Histories

Mental defectives often show characteristic features in their work histories.

(a) *Employability*.—The more defective a man the less likely is it that he can be employed usefully; therefore among those with long periods of unemployment will be found large numbers of mental defectives. Unless the nature of his work or local or other conditions are the cause, a period of unemployment of over three years at any time in a fit man's career should lead to a suspicion of mental deficiency or other mental trouble. If his unemployed time exceeds his employed time the same suspicion should be held.

(b) *Unrequerative Work*.—Defectives will often work for a wage that a normal man would regard as too low a one on which to live. Wages of £1 a week or less in the country or £1 10s. or less in town, or keep and 10s. or less in town, or 5s. or less in the country, would come into this category.

(c) *Types of Occupation*.—Certain types are favoured by defectives; they include such as: Ice-cream vendor, sandwich-man, handing round bills, odd-job man, newspaper vendor (street-corner), rag-and-bone man, door minder, scrap metal collector, tea masher, errand man, street sweeper or sweep-up in works, cinema attendant (outside). The holding of any one of these jobs

does not in itself constitute a pointer to mental deficiency or to mental disorder, but if a man holds a succession of them and does not rise above them though employment is available, or if he sinks to these levels after holding better posts for brief periods, then mental defect should be suspected.

Since these pointers are not aids to diagnosis, it is immaterial at this stage whether they indicate mental defect, severe neurosis, or mental degeneration: the differential diagnosis introduces other factors which need not be discussed here. It may also be noted that the pointers may be used by physicians who have not had special experience in mental deficiency, or even by their clerks.

American Experience

The problem of mental deficiency among soldiers is not new to military medicine, though it is sometimes neglected. During the war of 1914-18 the American Army introduced intelligence tests at the registration of recruits. The standard for rejection was "a mentality not exceeding that of a child aged 8 years"; for it was considered that below this level the "degree of incompetency was so profound that the individual, whatever his race or surroundings, could not be counted on to take care of himself." In spite of so low a standard, 1.2% of all men registered were prevented from joining that Army on grounds of mental defect. As a result of these tests only 0.2% of men admitted into the Army had to be discharged later as defectives because of their inability to train into useful soldiers. If the distribution of intelligence in America is comparable to ours in Great Britain the rejection of 1.4% for mental deficiency suggests that the Army in fact considered as defective men with a higher level of intelligence than 8 mental age years—perhaps 9 years. The increased use of mechanized units, and the necessity for speed of action and co-operation between scattered formations, leads me to conclude that in the majority of cases a mental age of 11 or less makes a man unfit to play a useful part in a fighting unit.

It would certainly, in the long run, prove an economy of effort to institute tests for intelligence during the recruiting examination of all persons. As such are not yet provided, the hints given above may prove of assistance.

Where the Defective is Useful

Much has been said about the defective's hindrance to efficiency; about his constituting a risk, his waste of Army time and equipment, and his clumsiness; and about turning or keeping him out: all this, while true, should not obscure the fact that, of 1,200 years which the 100 men might have worked, they did, in fact, between them put in 959 of gainful if fitful toil. Because they are mentally defective they cannot adapt themselves to new situations or acquire skill in fresh directions, but they can often do simple repetitive work and fill "blind-alley" jobs without hurt to their pride, and without boredom or injury to their ambition. It would therefore seem prudent in the national interest to put these men to such tasks as they can fulfil in civil life, where their defect will prove less of a hindrance.

According to the wording of the Registration for Employment Order, 1941, those exempted from the need to register for military service under the National Service (Armed Forces) Act, Section 11 (f)—such as notified mental defectives—are also exempt from registering under that Order. This arrangement makes it difficult for such men as are notified to the local mental deficiency authority to do work of national importance that may well be within their capabilities. If this Order were amended men unfit to be soldiers yet fit to do labouring or machine-feeding in a munition works could make their contribution to the national effort.

Recommendations

1. Those with a mental age of less than 10 years should be prevented at the recruiting boards from joining the Army or, if already enlisted, should be discharged.

2. Since those with mental ages between 10 and 12 are often unstable, break down more than the normal under active service conditions, and frequently report sick, they should be sent to a labour corps and receive special consideration at the end of three months' service. Due allowance for a fall in intelligence due to age should be made in the case of older soldiers (I allow a drop of 1 year of mental age for each decade after 25 years in computing the mean score for average older men).

3. To arrive at a rough assessment of the mental age the progressive matrices tests could be used; but the method of assessment is not so important, though there are several reasonably reliable methods. What is really important is that some systematic attempt should be made to eliminate the defectives.

4. Since some people will raise an objection to the idea of "weeding out" defectives it should always be stressed that the task is to keep certain less gifted members of the population at jobs in which they are stable and in which they can be of most use to the national effort.

Summary

The mental defective in the Army—slow to learn, prone to breakdown, a misfit and potential danger—is discussed. Aids in spotting the defective are given. It is pointed out that, though a hindrance in the Army, he may be put to useful work in civil life in wartime. Recommendations are made for handling the problem.

I wish to express my thanks to Dr. John Rickman for advice in the preparation of this paper.

HYPOPROTHROMBINAEMIA AND AVITAMINOSIS-K IN MAN

BY

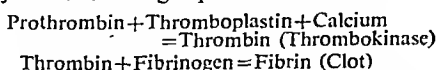
ROBERT KARK, B.A., M.R.C.P.

AND

ALEXANDER W. SOUTER, M.B., Ch.B.

(From the Thorndike Memorial Laboratory Second and Fourth Medical Services (Harvard) of the Boston City Hospital, and the Department of Medicine, Harvard Medical School)

The control of haemorrhage in man is dependent on the "protective" reaction of the vascular tree to trauma and on the ability of the blood to coagulate normally. Although the former defence mechanism is not at all clearly understood, recent studies have demonstrated the validity of the so-called classical theory of blood coagulation (Eagle, 1939), and the majority of workers in this field now subscribe to Schmidt's (1895) original hypothesis, concisely expressed by the following equations:



Despite the fact that very little is known of the chemical nature of any of the organic constituents of the plasma, which react together to form a blood clot, clinical and experimental studies by chemists, biologists, and physicians during the past five years have provided a sound basis for the diagnosis and treatment of previously obscure haemorrhagic diseases. This advance in knowledge is in the first place due to the recent development of methods for the estimation of blood-prothrombin levels (Quick and others, 1935; Brinkhous and others, 1938; Dam and Glavind,

1938), which are more specific than those previously used (Howell, 1914); and, secondly, because Dam and his co-workers in Copenhagen were able to demonstrate that a fat-soluble substance, vitamin K, could restore the marked hyperprothrombinaemia and control the haemorrhagic tendency of experimental dietary "haemophilia" in chickens (Dam and others, 1936).

It is the purpose of this communication to discuss some of the clinical aspects of hypoprothrombinaemia and avitaminosis-K in man in the light of recent knowledge and as a result of personal observation of 178 patients in the Boston City Hospital during the past two years. The majority of these patients suffered from haemorrhagic manifestations and all were suspected of having a diminished blood-prothrombin concentration. Consequently their blood-prothrombin concentration levels were measured by

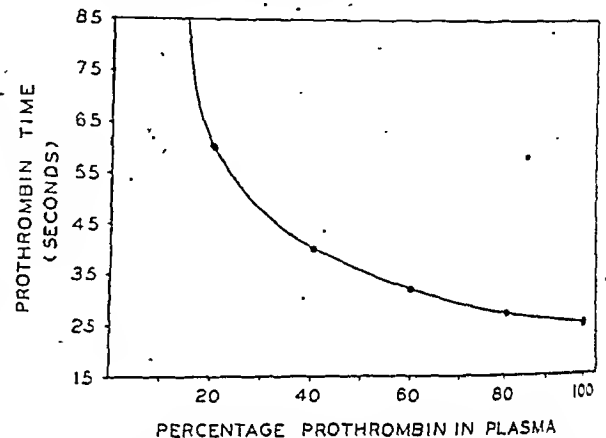


FIG. 1.—The relation between the prothrombin percentage of human plasma and the Quick prothrombin time in the presence of excess tissue thromboplastin, giving a Quick prothrombin time of 25 seconds for normal control plasma.

Quick's method. The test measures the time taken for a sample of citrated plasma to coagulate, after recalcification, in the presence of an excess of tissue thromboplastin, as compared with the time taken for a sample of normal citrated plasma to clot when treated in the same way. Conversion of these "times" to blood-prothrombin concentration are made by reference to a curve (Fig. 1) constructed according to the method of Kark and Lozner (1939).

The Quick test is extremely simple, and the recent introduction of a stable thromboplastin (Souter and Kark, 1940), requiring only the addition of distilled water before use, would seem to remove the one serious obstacle to the performance of the test in the physician's office, and also enables it to be performed with greater ease elsewhere. The Quick test is performed as follows:

4.5 c.cm. of blood is taken into a saline-washed syringe by means of a clean venepuncture, and mixed with 0.5 c.cm. of 2.5% solution of sodium citrate in a centrifuge tube. The blood is spun at 1,500 r.p.m. for five minutes and the plasma drawn off. The test must be performed on this plasma within the next six hours.

Thromboplastin is prepared by stripping the brain of a freshly killed rabbit of blood vessels and meninges and washing it in tap-water. The brain is then macerated, spread thinly on plate-glass, and dried in an oven at 37° C. for twenty-four to forty-eight hours. To each 0.5 gramme of this dried material 5 c.cm. of a 0.85% solution of sodium chloride is slowly added and thoroughly mixed into a thin paste. The paste is incubated for fifteen minutes in a water-bath at 56° C. and then centrifuged at 2,000 r.p.m. for five minutes. The upper layer of opalescent fluid in the centrifuge tube is used as a source of thromboplastin and retains its activity for from two to four days when kept in the ice-box.

To perform the test, 0.1 c.cm. of thromboplastin solution is pipetted into a 75 by 19 mm. tube, together with 0.1 c.cm. of plasma; such a clot forms within twenty to twenty-five seconds. Chloride solution, containing 0.277 gramme of calcium chloride per 100 c.cm. distilled water, is then added. The stop-watch is started and the tube is agitated for fifteen seconds in the water-bath. The tube is then removed from the water-bath and tilted gently up and down once or twice a second. The end-point is sharp, and occurs when the mixture suddenly ceases to flow smoothly and a clot is formed. In normal plasma such a clot forms within twenty to twenty-five seconds, depending on the batch of thromboplastin used.

It is extremely important to check each new thromboplastin solution against a normal control plasma before making observations on the plasma of patients suspected of having hypoprothrombinaemia.

Clinical Manifestations of Hypoprothrombinaemia in Man

A haemorrhagic state consequent on a reduction of active prothrombin in the circulating blood does not arise unless the blood-prothrombin level has dropped considerably. Although there is a wide margin of safety, personal observations indicate that the critical level for bleeding is somewhat higher than the 15 to 20% of normal which Quick (1938) originally postulated.

Of the 178 patients studied 53 had a haemorrhagic condition which was directly consequent on a marked hypoprothrombinaemia and which, in most instances, was controlled by vitamin K therapy. This condition, which we have termed haemorrhagic hyperprothrombinaemia (Kark and others, 1940), may be divided into two classes—latent haemorrhagic hypoprothrombinaemia and spontaneous haemorrhagic hypoprothrombinaemia.

Latent Haemorrhagic Hypoprothrombinaemia

When the patient's blood-prothrombin level has fallen to about 35% of normal, haemorrhagic manifestations occur at the sites of obvious trauma; bleeding starts from recent operation wounds or where the gums have been damaged by too vigorous brushing of the teeth. Below this level, too, dangerous haemorrhage occurs from intestinal ulcerations, if they are present. One physical sign especially gives evidence of the marked reduction in the blood prothrombin. In all patients in whom the prothrombin level had dropped to below 35% of normal, haematomata became evident at the site of venepuncture or where the skin had been punctured for bleeding-time estimations. These "needle-puncture haematomata" were often the only outward clinical evidence of a dangerous tendency to bleed.

Spontaneous Haemorrhagic Hypoprothrombinaemia

A spontaneous haemorrhagic diathesis becomes apparent when the blood-prothrombin level has fallen to from 15 to 20% of normal. This condition is seen especially in newborn infants and occasionally in patients suffering from idiopathic steatorrhea (Kark and others, 1940), obstructive jaundice, or severe parenchymatous hepatic disease.

The condition may manifest itself by the spontaneous appearance of large haematomata on the back, thighs, or other sites of pressure. Dramatically, haemarthrosis, severe haematemesis, epistaxis, haematuria, or melaena may be the presenting symptom. Menorrhagia and intracranial and retinal haemorrhages have been noted. Intractable haemorrhage may occur from trivial skin wounds or, in infants, from the umbilical cord. Although the gums may bleed they do not show the purple sponginess characteristic of scurvy, and perifollicular haemorrhages of the skin are not a feature of this condition. Laboratory studies are striking. The blood-coagulation time is prolonged, but not to the same extent as it may be in haemophilia. No abnormalities are noted in clot retraction either in clotted whole blood or in recalcified plasma. The bleeding time, though usually

normal, is occasionally prolonged.* The capillary fragility is unaltered, as is the blood-platelet count. Marked prolongation of Quick's prothrombin time is present, and is the crucial finding.

The main features of haemorrhagic hypoprothrombinaemia are as follows:

"Needle-puncture" haematomata; continued and prolonged wound haemorrhage; subcutaneous haematomata, especially at pressure points; haemarthroses, epistaxis, haematemesis, melaena, haematuria, retinal haemorrhages, menorrhagia. No gum changes; no perifollicular haemorrhages.

Laboratory Data.—Blood-prothrombin concentration markedly reduced; prolonged coagulation time; occasionally increased bleeding time; normal capillary fragility; clot retraction normal; platelets normal.

Clinical Causes of Hypoprothrombinaemia in Man

The development of hypoprothrombinaemia in man is usually associated with evidence of florid pathological disturbances of the bile ducts, intestine, or liver. Although the precise interrelationship between these organs, vitamin K, and prothrombin is not understood, the broad outlines of the physiological processes which maintain an adequate concentration of prothrombin in the blood have been clearly drawn. Experimental evidence has shown that prothrombin is formed by the liver (Smith and others, 1937; Warren and Rhoads, 1939) if an adequate supply of vitamin K is maintained. Furthermore, the presence of bile salts in the intestinal canal is necessary for the proper absorption of the naturally occurring vitamin, which is an oily substance (Greaves and Schmidt, 1937; Greaves, 1939). Prothrombin is destroyed in the body by passage through the lung (Andrus and others, 1940) and perhaps by a sustained rise in temperature (Wilson, 1939). Thus it is clear that hypoprothrombinaemia may develop as a result of a nutritional deficiency of vitamin K or following a disturbance in the formation or metabolism of prothrombin.

With this in mind the following classification of diseases in which hypoprothrombinaemia is known to occur is suggested:

NUTRITIONAL DEFICIENCY OF VITAMIN K

Restricted or Unbalanced Diet.—Scurvy; pellagra; rickets; idiopathic steatorrhea; haemorrhagic disease of the newborn.

Defective Absorption from the Intestine.—(1) In the absence of bile salts: Obstructive jaundice; biliary fistula. (2) In the presence of intestinal disease: Regional ileitis; ulcerative colitis; intestinal obstruction; polyposis coli; idiopathic steatorrhea; neoplasm of the intestine.

METABOLIC DISTURBANCES OF PROTHROMBIN ANABOLISM AND KATABOLISM

Failure of Production of Prothrombin by the Liver.—(1) Degenerative or infective parenchymatous processes: Acute yellow atrophy; infective hepatitis. (2) Infiltrative parenchymatous processes. Generalized carcinomatosis; leukaemia.

Diminished Production of Prothrombin by the Liver.—Chronic hepatoses (Banti's syndrome, alcoholic cirrhosis); catarrhal jaundice; leukaemia; neoplasm of the liver.

Increased Destruction of Prothrombin.—Artificial fever therapy: prolonged fever.

In many conditions hypoprothrombinaemia results from a combination of pathological disturbances. This is especially true in intestinal diseases. Here, besides absorptive difficulties, there may be loss of vitamin K, and possibly of prothrombin, by excessive vomiting, diarrhoea, or the removal of succus entericus by a Wangensteen drainage tube. To this loss may be added the restricted dietary intake

* Preliminary investigations would suggest that when this latter finding is present it may be due to coexisting scurvy.

common in these patients and destruction of prothrombin by long-continued fever. Case 1, below, illustrates such a combination of circumstances.

When ulcerative conditions of the bowel are present and hypoprothrombinaemia develops, continuous haemorrhage from the lesion will occur when the prothrombin level has decreased to about 35% of normal. This is true of ulcerative colitis and regional ileitis, and possibly explains the intestinal haemorrhage seen in enteric fever. When the mucosa is intact, however, no melaena or haematemesis will become evident until the blood-prothrombin level has dropped to the spontaneous haemorrhagic level of from 15 to 20%. Such a condition is especially common in haemorrhagic disease of the newborn and is sometimes found associated with idiopathic steatorrhoea.

Dietary deficiency *per se* rarely causes a haemorrhagic hypoprothrombinaemia (Kark and Lozner, 1939). We have, however, observed an infant with rickets of dietary origin who developed a spontaneous subarachnoid haemorrhage; the blood-prothrombin level was extremely low, being 20% of normal. The prothrombin level was rapidly restored to normal by therapy with synthetic vitamin K parenterally, and the child made an uneventful recovery following craniotomy and evacuation of the blood clot.

In idiopathic steatorrhoea, although a hypoprothrombinaemia does occur as a result of failure of intestinal absorption while a mixed diet is being taken, a haemorrhagic level is not reached unless the patient is on a low-fat diet (Kark and others, 1940). As a result of such a regime fat-soluble vitamins are markedly restricted, and within six months to two years features of spontaneous haemorrhagic hypoprothrombinaemia may appear.

Metabolic Disturbances of Prothrombin Anabolism and Katabolism

The manner in which the production and destruction of prothrombin in the body take place is not clearly understood, and for this reason any classification on the basis of metabolic disturbances of prothrombin formation or breakdown must of necessity be tentative. It has long been known that prothrombin is sensitive to heat and is readily destroyed by a temperature of 40° C. in a water-bath. Prothrombin studies were therefore made on patients undergoing artificial fever therapy. The results obtained were inconclusive. However, Wilson (1939) reported observations on a series of patients undergoing artificial fever therapy who developed a severe haemorrhagic diathesis and pronounced hypoprothrombinaemia. As yet it is not clear whether high pyrexia during the course of a disease is in itself capable of hastening the destruction of prothrombin in the blood, but it would appear that in patients with hypoprothrombinaemia a sudden high fever may accelerate the rate of destruction of prothrombin.

In newborn infants a physiological drop in prothrombin occurs after birth and, reaching a low level four or five days later, gradually returns to normal (Brinkhous and others, 1937; Waddell and Guerry, 1939). When this physiological drop becomes marked, haemorrhagic disease of the newborn develops. Castle (1939) has suggested that this condition is a nutritional disease dependent perhaps on a maternal deficiency or on the deficient synthesis of vitamin K in the newborn before the intestinal bacterial flora becomes established. While this may be true it would seem that other factors may also play a part in the production of haemorrhagic disease of the newborn through over-activity of normal physiological processes which occur after birth. Although Kugelmass and Tritsch (1929) reported low prothrombin concentrations in the blood of a mother whose infant developed haemorrhagic disease of the new-

born, the test they used was not specific for prothrombin. Since the introduction of more specific tests and the consequent revival of interest in blood prothrombin concentration in the newborn no reports have been published of a diminished prothrombin level in mothers of infants suffering with haemorrhagic disease of the newborn, nor have we been able to find any reduction of the prothrombin in the mothers of babies with prothrombin deficiency whom we have studied. It is known that in premature infants the physiological reduction in the prothrombin concentration level is greater, and haemorrhagic disease of the newborn is more common, than in infants born at full term (Sheiites and others, 1939; Kato and Poncher, 1940). In a premature infant the general body metabolism is much increased, and it may then perhaps be true that a severe fall in blood prothrombin in a newborn infant is an index of an abnormally raised metabolism, with a consequent increase in the normal physiological process of blood-prothrombin reduction.

Hypoprothrombinaemia and the Prognosis of Patients with Liver Disease

Since Quick and others (1935) first reported the association of hypoprothrombinaemia with various types of jaundice numerous authors (Quick, 1938; Butt and others, 1939; Scanlon and others, 1939) have noted that patients with parenchymatous disease of the liver may have a low blood prothrombin which does not respond to therapy with vitamin K and bile salts. This failure of response is due to total or partial failure of the mechanism by which prothrombin is formed. Preliminary observations (Kark and Souter, 1940) on this phenomenon have shown that patients with liver disease and hypoprothrombinaemia may be divided into two main classes: those whose liver disease is so severe and widespread that they are *totally unable* to manufacture prothrombin; and those with more chronic and less widespread liver damage who are able to manufacture *some* prothrombin. In such patients it was not possible to correct the hypoprothrombinaemia by therapy with natural and/or synthetic vitamin K, supplemented in some cases by transfusion or therapy with large amounts of liver. The first group, with severe liver disease, always developed a haemorrhagic hypoprothrombinaemia; and all the patients in this group died within a short time of their admission to hospital. The second group, who also did not respond to therapy, never developed a haemorrhagic tendency (i.e., the blood-prothrombin concentration always remained above 35%), and were eventually discharged from hospital. Further studies have confirmed these observations, and it is now believed that if a patient with liver disease develops a severe hypoprothrombinaemia (below 35%) which is *resistant* to vigorous treatment with parenteral vitamin K in large doses, then the immediate prognosis is very grave. The immediate prognosis of the second group is good, but since they have been studied only during the nine months before writing this paper it has not been possible to assess their prognosis correctly on the basis of the prothrombin level of their blood. It is likely, however, that the Quick test, used in conjunction with vitamin K therapy, may become a useful liver-function test. The following case is illustrative:

A young boy suffering from acute rheumatic fever and severe congestive failure developed an acute parenchymatous hepatitis during his illness. He was extremely ill with cholaemia, and a severe haemorrhagic tendency became evident. On clinical and laboratory evidence he was given a bad immediate prognosis. His prothrombin level at the height of his illness was found to be 24% of normal. Following injection of synthetic vitamin K the prothrombin concentration rapidly and unexpectedly increased to well above the level for haemorrhage, but

remained between 45 and 50% of normal, despite further treatment. On this basis it was felt that his immediate prognosis, notwithstanding the other observations, was good. At present, six months after the acute episode, he has a chronic hepatitis with ascites, and his prothrombin level has not yet returned to normal.

In this patient it is probable that a moderate metabolic disturbance in the manufacture of prothrombin was accompanied by a failure of absorption of vitamin K from the gut because of obstructive jaundice due to hepatic cell swelling, with subsequent pressure on the intrahepatic ducts.

Hypoprothrombinaemia and the Diagnosis of Obstructive Jaundice.—When the patient with intense jaundice and acholic stools presents a problem in differential diagnosis the rapid return of a lowered prothrombin concentration to a normal figure following the administration of adequate doses of parenteral vitamin K is strongly suggestive of obstructive jaundice.

Haemorrhagic Conditions unassociated with Hypoprothrombinaemia.—In patients with haemophilia, purpura haemorrhagica, thrombocytopenia, "idiopathic" menorrhagia, polycythaemia, and other blood dyscrasias the blood-prothrombin levels were within normal limits. When vitamin K was given to some of these patients it was, as anticipated, without effect on their haemorrhagic diatheses. In patients who had bled from peptic ulcers the blood-prothrombin level was but little reduced even when haemorrhage had been severe. This reduction in blood-prothrombin concentration paralleled the amount of prothrombin lost with the blood from the lesion, and was never severe enough to perpetuate the haemorrhage by reason of prothrombin depletion.

Treatment of Hypoprothrombinaemia

The development of synthetic analogues of vitamin K has rendered the use of natural vitamin K, together with bile salts, unnecessary. The synthetic substances are more effective, their dosage is more easily standardized, and they are less expensive to manufacture. Of the numerous known synthetic compounds with vitamin K activity, 2-methyl-1:4-naphthoquinone, described in detail by Ansbacher and Fernholz (1939a), is most active, and it is at least three times as potent as natural vitamin K (Ansbacher and Fernholz, 1939b). This yellow crystalline substance is only slightly water-soluble and is not easily adaptable for parenteral use.

Recently Moore and Kirchmeyer (personal communication) have synthesized a water-soluble compound, 2-methyl-1:4-naphthohydroquinone-3-sodium-sulphonate,* which is made up so that 1 c.cm. of an isotonic solution containing it is equivalent in vitamin K activity to 2 mg. of 2-methyl-1:4-naphthoquinone. This material is potent and easily administered parenterally; no toxic symptoms have been noted referable to its use in the dosage given (Kark and Souter, 1940).

Since the experience in this laboratory has been limited to the use of these two compounds and natural vitamin K no mention will be made of any of the many other synthetic analogues of vitamin K.

Parenteral Therapy

In the treatment of haemorrhage resulting from hypoprothrombinaemia the parenteral compound is most useful, and intravenous administration of the drug is most effective in checking active bleeding: a haemorrhage is controlled within one and a half to three hours after injection, while the blood-prothrombin level rises rapidly and reaches a

normal level within twenty-four to forty-eight hours. A single intravenous injection, however, will not maintain a normal concentration, and the prothrombin level will fall within the succeeding twenty-four hours and may rapidly return to a level at which there is danger of haemorrhage.

A single intramuscular injection, while not so effective in the rapid control of haemorrhage, will, however, maintain a normal level of prothrombin in the blood for some days. It is therefore advisable, in a patient presenting active haemorrhage, to give both intravenous and intramuscular injections of the water-soluble compound in order that the maximum advantage of each route of administration may be utilized in raising the prothrombin concentration of the blood rapidly and in maintaining it at a high level.

When given parenterally, 1 to 3 c.cm. of the water-soluble compound (equivalent to 2 to 6 mg. of 2-methyl-1:4-naphthoquinone) has been found sufficient to control haemorrhagic hypoprothrombinaemia in the presence of a normal liver (see case records and Fig. 3).

In patients with hypoprothrombinaemia who are vomiting actively, or in those patients suffering from gross intestinal absorptive difficulties, one intramuscular injection of 3 c.cm. of the water-soluble compound will usually restore the prothrombin level to normal and maintain it at a high level for from four to six days.

Oral Therapy

The first clinical application of therapy with vitamin K was to treat patients suffering with disease of the biliary passage and hypoprothrombinaemia by the administration of natural or synthetic vitamin K orally in an oily vehicle together with bile salts or bile given by duodenal tube. Many of these patients developed nausea, vomiting, or diarrhoea as a result of taking the bile preparations. Preliminary investigations, however, on a few patients who had complete biliary obstruction (as evidenced by the absence of urobilinogen from their stools) and hypoprothrombinaemia have shown that 2-methyl-1:4-naphthoquinone when made up in tablet form is absorbed from the alimentary canal in the absence of bile salts. In these patients 2 mg. of the material given three times a day will control the hypoprothrombinaemia (see case records and Fig. 4). Smith and Owen (Moore and Kirchmeyer, personal communication) have successfully treated similar cases by administration of a water-soluble naphthol without bile salts.

In patients with nutritional deficiency or in patients with idiopathic steatorrhoea 1 mg. of 2-methyl-1:4-naphthoquinone given daily will usually suffice to control hypoprothrombinaemia or prevent its appearance (Kark and others, 1940).

Prophylaxis

There is good evidence to show that the prothrombin level of babies born of mothers treated with vitamin K before labour is higher than that found in babies of mothers who have not been so treated (Shettles and others, 1939). Ideally, it might be advisable to give pregnant women at least 2 mg. of 2-methyl-1:4-naphthoquinone daily during the last week of their pregnancy, and to feed or inject a similar dose to the baby soon after birth. If the latter therapeutic measure alone were to be adopted as a routine procedure haemorrhagic disease of the newborn would become an extremely rare condition.

It is probable that in the future vitamin K or one of its analogues will be given as a routine pre-operative measure to patients suspected of having hypoprothrombinaemia. It is proper to emphasize at this point that the administration of therapeutic doses of vitamin K or its analogues, before operation is not in itself a guarantee that the blood-

* Now known as hykinone, and produced by Abbott Laboratories, N. Chicago, Ill.

prothrombin concentration will be raised to within normal limits. Indeed, in certain patients with liver disease this effect is not accomplished. For this reason it is always necessary to determine the blood-prothrombin concentration immediately before operation, even when vitamin K or one of its analogues has been given in amounts considered adequate. When the prothrombin level is found to be low in spite of such treatment, transfusion of fresh blood or plasma is the only known therapeutic measure which can increase the prothrombin concentration of the blood. The indiscriminate administration of vitamin K to patients showing a bleeding tendency without establishing that the condition is one of haemorrhagic hypoprothrombinaemia is to be deplored. Therapeutic failure in such cases may unjustly throw discredit on a valuable and specific remedy.

Illustrative Cases

Case 1 (Fig. 2).—A poorly nourished young girl aged 18 suffering with regional ileitis developed an intraperitoneal abscess

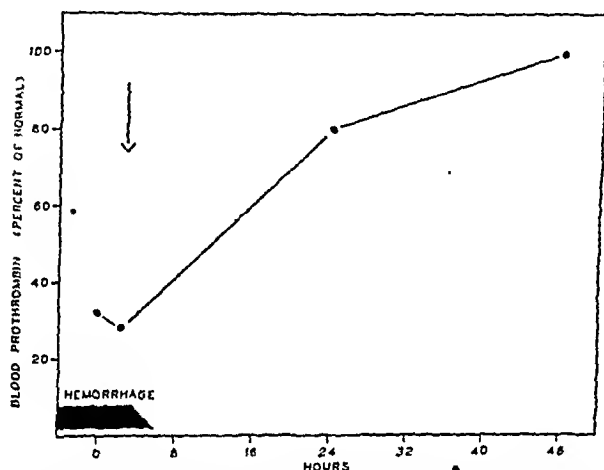


FIG. 2.—Case 1. The effect of intramuscular natural vitamin K (6,000 Dann units) on the blood-prothrombin percentage and haemorrhagic tendency of a patient with regional ileitis.

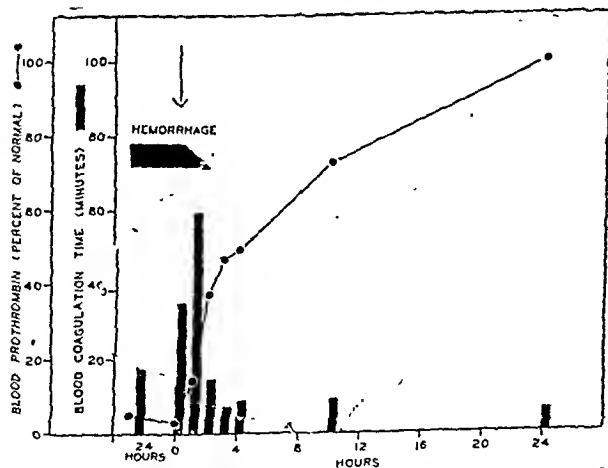


FIG. 3.—Case 2. The effect of 3 c.cm. of water-soluble vitamin K on the blood-prothrombin percentage, coagulation time, and haemorrhagic tendency of a patient with stenosis of the common bile duct. (Each cubic centimetre of water-soluble vitamin K is equivalent to 3.2 mg. of 2-methyl-1:4-naphthohydroquinone-3-sodium-sulphonate.)

after a laparotomy. Her post-operative course was extremely stormy. She had hectic fever, diarrhoea, vomiting, and mild dementia. Haemorrhage occurred from the bowel and from the abdominal wound. The blood-prothrombin concentration was markedly reduced, but treatment with 4 c.cm. of intramuscular natural vitamin K (6,000 Dann units) controlled the haemorrhage and restored the blood-prothrombin level to normal.

Case 2 (Fig. 3).—A woman aged 42 suffering from traumatic stricture of the common bile duct had had recurrent attacks of obstructive jaundice for ten years. During this time she had on many occasions developed a haemorrhagic diathesis, which was uncontrolled by therapy. On her admission to hospital her blood-prothrombin concentration was less than 5% of normal and she was bleeding from her nose and gums. Intramuscular injection of 3 c.cm. of water-soluble synthetic vitamin K (equivalent to 6 mg. of 2-methyl-1:4-naphthoquinone) controlled the bleeding within one and a half hours, and the blood-prothrombin concentration returned to normal by the next day. Since this time the patient's blood-prothrombin concentration has been maintained at a high level by treatment with injections of the water-soluble compound or by the oral administration of 2-methyl-1:4-naphthoquinone.

Case 3 (Fig. 4).—A woman aged 73, with carcinoma of the pancreas, developed a painless obstructive jaundice which was complete. Marked bruising appeared at the site of a venepuncture and her blood-prothrombin concentration was found to be severely reduced. Oral administration of 2-methyl-1:4-naphthoquinone without the bile salts restored the prothrombin

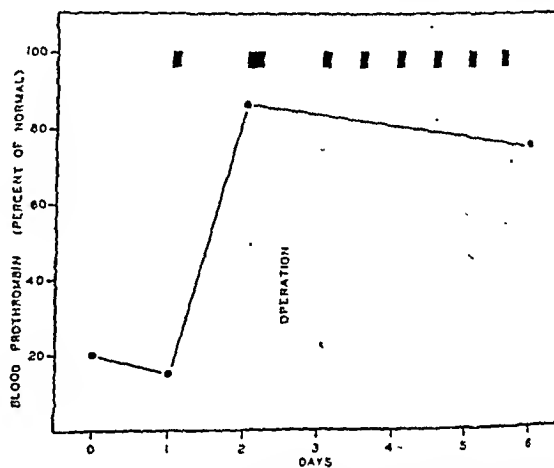


FIG. 4.—Case 3. The effect of oral administration of 2-methyl-1:4-naphthoquinone without bile salts on the blood-prothrombin percentage of a patient with carcinoma of the pancreas and obstructive jaundice. (Each small block represents 2 mg. of 2-methyl-1:4-naphthoquinone.)

level to normal, and surgical intervention was successfully accomplished without abnormal haemorrhage. While she remained in hospital she was given 4 mg. 2-methyl-1:4-naphthoquinone each day to maintain her blood-prothrombin concentration at a high level.

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RUPTURE OF THE DRUMHEAD AS A WARTIME INJURY

BY

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Rupture of the drumhead is a common peacetime injury; and when the present emergency has become a matter for clinical-statistical investigation rather than for clinical action, and more complete statistical figures are available, it might well prove the most common of all types of injury due to aerial bombardment. The frequency of rupture of the tympanic membrane under air-raid conditions is no surprise. Reports from Barcelona had suggested it, and in a recent discussion Miss J. Collier (1940) quoted R. Trueta's Barcelona figures, indicating that from 30 to 60% of the Barcelona air-raid casualties had sustained damage to the drumhead.

Rupture of the tympanic membrane in peacetime is a slight injury. But it only remains a slight injury when it is followed by an uncomplicated course, free from infection of the tympanic cavity; and there is evidence to believe that this uncomplicated course, which is the rule in peacetime injuries, is less frequent when the injury is due to the blast of high-explosive bombs. Once infection establishes itself inside the tympanic cavity the whole chain of aural afflictions and otogenic complications, ranging from slight persistent deafness to death from meningitis, is a possible outcome of the injury.

Apart from those ruptures of the tympanic membrane which are caused by the extension of a fracture of the cranial bones to the membrane, it is customary to differentiate between direct and indirect traumatic ruptures. The direct ruptures are caused by a great variety of foreign bodies and by over-powerful syringing of the meatus for the removal of wax. The indirect ruptures are due to sudden changes in the density of the air in the meatus, aided by complete blockage of the air in the meatus at the moment of the influence of the force. The most common causes of such indirect ruptures are blows on the ear, particularly the slap with the open palm occluding the meatus, and inadequate head-first dives into the water. Most textbooks include the rupture of the membrane due to explosions among the indirect ruptures, but this is wrong. The rupture is a direct one caused by the extremely powerful concussion of the air by the explosive—the "wave of pressure" (Zuckerman, 1941). All these differentiations, however, are only of theoretical interest.

From the practical point of view it is best to distinguish between ruptures which leave the tympanic cavity most probably sterile (slap on the ear), and ruptures in which the sterility of the tympanic cavity has been interfered with (syringing, diving). These two clinical types of rupture are often followed by a different clinical course. Ruptures of the drumhead caused by blast must be regarded as belonging to the second group, as it is always likely that foreign matter, carried by the blast, has entered and possibly infected the tympanic cavity.

Symptoms

Indirect ruptures of the drumhead can remain symptom-free, particularly in cases of previously reduced hearing or diminished resistance of the membrane. In air-raid casualties the symptoms are often masked by the presence of more severe injuries and, lacking routine otoscopy, such cases are in danger of being overlooked until suppuration occurs.

In most cases, however, at the moment of the rupture a short stabbing pain is felt, frequently accompanied by

tinnitus or the hearing of a high-pitched sound. Initial vertigo is very common. Some pain persists for a few hours or even days. Hearing is moderately reduced. In many cases a trying feeling of fullness in the ear, occasional giddiness and sickness, headaches, and a certain amount of deafness persist for considerable periods. The vertigo, particularly that immediately following the injury, deserves a few words of explanation. It is not, as commonly suggested, caused by some "concussion of the labyrinth," but is simply explained as being the effect of cold caloric irritation, caused by cold air. The air normally contained in the tympanic cavity is warmed by its passage through the nose and Eustachian tube. Following the injury, cold air suddenly gains access to the middle ear and irritates the labyrinth. I have found in such cases that vertigo and nystagmus can be re-elicited, and the direction of the latter characteristically changed, by alternately placing a bottle filled with ice and a hot-water bottle in front of the external canal. The irritation of the labyrinth by cool air is one of the reasons for keeping the meatus closed following such an injury.

Signs

In fresh cases the most common finding on the drumhead is that of a roundish, irregular, or slit-shaped perforation, the latter usually in a radial position. The margin of the perforation is often frayed and irregular, and sometimes a flap, exposing an angular-shaped perforation, is folded towards the skin of the meatus. These "everted edges" of the perforation are not, as recently suggested, due to the "wave of suction" that follows the pressure-wave of the blast, but are quite common peacetime findings, and are described in old textbooks. A small zone around the margin of the perforation is discoloured and stained by the extravasation of blood. The remaining part of the drumhead is unchanged, but may show small interstitial haemorrhages; the latter findings are particularly common in blast injuries, in which also minute blackish spots sometimes occur, due to the impregnation into the membrane of small solid matter contained in the blast. A certain amount of blood, or coagula, in the meatus is a very common picture; and in air-raid casualties the whole of the meatus may be blackened by soot. In fresh cases the yellow colour of the normal mucous membrane of the medial tympanic wall is easily distinguished through the perforation, its yellow ("bone-yellow") colour forming a distinct contrast to the blood-stained margin of the perforation.

The perforation is more often situated in the anterior than in the posterior quadrants. Any anatomical detail of the contents of the middle-ear cavity, such as stapes, chorda tympani, or round window, can on occasion be seen through the perforation, should it happen to lie within the line of sight; and such structures will show a typical parallax phenomenon on movements of the observer's head. In cases in which there is no suspicion of a fracture to the base of the skull it might be permissible to remove carefully blood crusts, coagula, or wax by means of a sterile probe or aural forceps, should such structures render inspection of the drumhead impossible. The use of the syringe, however, is always and most strictly contraindicated.

It is usually easy, but quite unnecessary, to demonstrate the presence of the perforation by certain tests such as the Valsalva experiment, Kugel's test, or "reversed politizerization." The hearing is moderately reduced, the tuning-forks revealing a deafness of the conductive (middle-ear) type. It is advisable to test for a reduction in the perception of high sounds, and for nystagmus (other than that produced by cold caloric influence from the air), which in complicated cases reveal damage to the labyrinth.

The diagnosis presents no difficulties in a fresh case. The blood-tinged irregular margin of the perforation is quite characteristic. In cases of longer standing, however, the shape of the perforation might have already become round and regular, and the extravasated blood be resorbed. In such cases diagnosis from a pathological perforation might become exceedingly difficult unless the history helps to clear the case.

Clinical Course

Traumatic rupture of the drumhead will lead to one of the following three types of clinical course.

1. *Uncomplicated Cases.*—The perforation gradually diminishes in size, while normal drumhead tissue regenerates. Complete healing ensues, and after the regeneration of the drumhead is complete it is quite impossible to recognize any trace of the site of the previous perforation. Drumhead and hearing regain perfect normality. The average duration of the healing process of such cases is twenty-five days.

2. *Infection of the Tympanic Cavity of Low Virulence.*—Minor inflammatory reactions appear within one to three days after the trauma. There is sero-purulent discharge, lasting from a few days to several weeks. Such cases often heal with the formation of atrophic scars followed by chalk deposits in the membrane, with chronic adhesive changes (synechia) in the middle ear, or with a persistent perforation. According to these changes, the hearing capacity is permanently somewhat reduced (middle-ear deafness).

3. *Infection of the Tympanic Cavity of High Virulence.*—Major inflammatory reactions, constituting the suppurative otitis media of post-traumatic origin, appear usually not later than twelve to twenty-four hours after the injury.

There are few indications in the literature regarding the relative frequency of these different types. It is obvious that ruptures which leave the tympanic cavity sterile stand a far better chance of an uncomplicated course than those in which the sterility has been interfered with. Water is the most common source of infection in peacetime, and therefore rupture due to diving or syringing is often followed by inflammatory reactions. It is a complete fallacy to think that the routine use of sterilized water for syringing could prevent infection in cases of accidental rupture, since the meatus, with which the water has always been in contact, is never sterile. However, taking into consideration both the uninfected and the possibly infected type of rupture, a survey of a large number of cases at the Neumann Clinic several years ago left me with the impression that at least some 80% of all peacetime ruptures follow an uncomplicated course to normality of drumhead and hearing. This proportion seems to be quite different in blast injuries, as over 50% of the cases caused by air raids which I have seen showed some infection of the tympanic cavity. Admittedly I am judging from a small number of cases, but the experience of a few colleagues with whom I have discussed the matter points in the same direction. It is therefore of great importance that in all cases of rupture of the drumhead caused by blast the tympanic cavity should be regarded as presumably infected, and treated accordingly.

Treatment

The object of treatment is best expressed in T. B. Layton's words—"to get well every single case under one's care. And by 'well' I mean a dry ear, a normal drumhead, and perfect hearing." This is achieved simply enough when the tympanic cavity has remained free from infection. In such cases the treatment should be restricted to the protection of the tympanic cavity from external influences that may cause further damage. No unnecessary manipulations in the meatus should be undertaken. Syringing as well as all types of ear-drops, whether contain-

ing water, peroxide, spirit, glycerin, or any other fluid, are strictly contraindicated. It is sufficient to plug the meatus tightly with sterile ribbon gauze or cotton-wool, and to inspect once or twice a week. The patient must be advised to take great care while washing his face or taking a bath—or, in the case of a woman patient, while having her hair washed or "set"—lest water should enter the meatus. The taking of violent forms of exercise should be avoided, as sweat might accumulate in the meatus and infect the middle ear.

It is the other type of rupture, in which foreign matter has entered the tympanic cavity, that presents the problem, and, as stated above, all ruptures of the drumhead caused by blast belong to this group. Complete healing and perfect hearing are guaranteed only when the tympanic cavity remains free from inflammatory reaction. Even minor inflammatory reactions might lead to some degree of permanent deafness with all its implications, and poor results obtained during the present emergency might increase the rate of deafness among the post-war population to a very considerable degree owing to the frequency of this injury. Perfect results depend on the prevention of the trauma leading to infection. But how can a tympanic cavity contaminated by blast be protected against the occurrence of such infection?

Insufflation of Sulphanilamide.—Impressed by the frequency with which suppuration follows rupture caused by air raids, I have recently started to treat all such cases as early as possible with a preventive insufflation of powdered sulphanilamide into the tympanic cavity. My results have so far been highly satisfactory, and although fully realizing that the results of all preventive methods are particularly liable to misinterpretation, and that the experimental data at present available on the topical use of sulphonamides are not convincing, I feel satisfied that early insufflation of sulphanilamide powder into a possibly or presumably infected tympanic cavity will reduce to a minimum the number of cases of subsequent suppuration in the middle ear.

I have also tried the insufflation in cases already infected, but have failed to observe any benefit, the powder just being swept away by the discharge. And cases of acute otitis of traumatic origin should be treated by the oral administration of a sulphonamide in the same way as it is used in otitis not of traumatic origin.

Technique of Insufflation.—This is very simple so long as the ordinary forehead-mirror and not an electric auri-scope is employed. The site of the perforation is focused, and a few puffs from a straight powder-insufflator, administered through the speculum under guidance of the otoscopying eye, are quite sufficient. It is necessary to look into the ear in order to make sure that the powder not only coats the walls of the meatus but actually reaches the tympanic cavity through the perforation. Afterwards the meatus is lightly plugged and the patient advised as to the protection of his external canal.

The insufflation of powder into the middle ear is so simple, the results are so promising, and the aim of preventing infection is so important that I have no hesitation in recommending it as a routine treatment for rupture of the drumhead in the present emergency. It can cause no harm whatsoever, and if tried on a large scale and found successful it will also serve as a further argument in the demand for the routine otoscopy of all air-raid casualties.

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RECOVERY FROM URAEMIA FOLLOWING CRUSH INJURY

BY

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As pointed out by Surgeon Lieut.-Commander Maitland (1941), isotonic sodium sulphate solution has been advocated as a potent diuretic from time to time. In view of the original oliguria and raised blood pressure in the case reported below it was considered unwise to give more than a pint at a time; it seems now that a larger initial dose, given slowly, might have produced more rapid results.

I have no original suggestions to make on the pathogenesis of the condition, but it is obvious from a consideration of this case and of the one reported by Mayon-White and Solandt (1941) that the syndrome is not produced by transfusion of incompatible blood and that it is not a nephritis of an ordinary type. It seems that the syndrome is the result of prolonged compression of a limb, or limbs, with subsequent release of pent-up katabolites of a toxic nature having a characteristic action on renal epithelium. While the renal lesion may be progressive up to a point, the first (fatal) case reported by Bywaters and Beall (1941), in which the affected limb was amputated on the second day, suggests that renal damage may be gross at an early stage; while the present case, together with R. V. Christie's case (quoted by Bywaters and Beall), proves that the lesion is not necessarily a fatal one. Furthermore, on superficial examination it seems that many air-raid casualties, and presumably civil accident cases, that have not been subjected to prolonged or severe crushing exhibit granular casts in their urine and have mild degrees of oliguria for variable periods. Research on these points seems to be indicated.

Case Record

A man aged 32 was admitted to hospital as an air-raid casualty on May 7, 1941. From about 1 to 9 a.m. on May 6 he had been pinned down by heavy debris across his left shoulder and

were present on it. Movement at all the joints of the limb was very restricted, and there was anaesthesia from the mid-arm distally. The circulation was intact and the radial pulse palpable. The possibility of renal failure developing was considered at this point, but no prophylactic measures were taken other than to administer fluids by mouth. The arm was wrapped in cotton-wool and elevated.

On May 10 he suffered from hiccup for a short while. This became more persistent in the next forty-eight hours. The tongue was dry, for the first time, on the morning of the 12th and despite a liberal intake of fluid the output of urine for the preceding twenty-four hours had been only 30 oz. The blood urea was 390 mg. per 100 c.cm. Active treatment was begun immediately, 40 c.cm. of 25% glucose being given intravenously, followed by 540 c.cm. of isotonic sodium sulphate solution. During the next few days the output of urine and, later, of urea was measured: the blood urea was estimated daily while intravenous sodium sulphate solution in 540-c.cm. doses was given. The clinical course is shown on the chart.

During May 12-16 the tongue remained dry and coated and the patient was restless and rather childish, though otherwise rational. On the 17th his local and general condition began to improve and thereafter continued to do so. At the beginning of June there was still some loss of power in the whole limb, but no swelling and no anaesthesia; and some hyaline and a few granular casts were present in the urine. (At the beginning of the illness there were very numerous granular casts, no hyaline casts, a few red blood cells, but no blood casts and no reaction to the guaiac test.)

The patient had never suffered from nephritis or any disease likely to predispose to it.

Summary

A case of limb-crush injury with subsequent uraemic manifestations and recovery is briefly described. A short discussion on the production of the lesion in the light of previously recorded cases is given. It is suggested that mild cases may have previously passed unnoticed and that they may result from injuries of different types.

I am grateful to Dr. W. I. Richard and Mr. A. M. Clark for permission to publish this case. I wish also to thank Dr. T. C. Ritchie for much helpful advice, and Mr. A. W. Mollison for the preparation of the various solutions used and the numerous blood and urine analyses.

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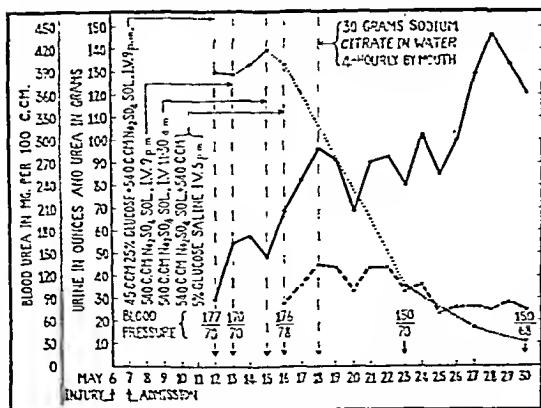


Chart of Case. Continuous line=output of urine in oz. per day. Thick broken line=output of urea in gm. per day. Fine dotted line=blood urea in mg. per 100 c.cm.

upper arm; he had suffered no other serious injury. He had received first-aid treatment in the neighbourhood of the air raid and had been in bed in a damaged hospital for about thirty-two hours before being transferred. No transfusions had been given.

On admission his general condition was very satisfactory. The left arm was grossly swollen and reddened, and numerous wheals

MEDICAL RESEARCH COUNCIL OF IRELAND

The Medical Research Council of Ireland has made the following awards during the half-year ended June 30, 1941. Training grants: Miss D. A. Kilbride for one year from August 1, 1941, to carry out an investigation of iodine absorption by means of Balance experiments; and Miss E. O'Donovan for one year from June 1, 1941, to assist in the investigation of the goitre problem by studying the retention of iodine under varying conditions of diet, the work in both instances to be done in the department of chemistry, University College, Cork, under the direction of Prof. J. Reilly and Dr. E. M. Mason. Whole-time grant: Dr. Cecil Mushait for four months from March 1, 1941, to enable him to continue his research work at the Johns Hopkins Hospital, Baltimore, Maryland, U.S.A. Grants-in-aid: Dr. James Deeny for six months from July 1, 1941, to investigate the relationship of vitamin C to the formation of complement and the relationship of both to immunity; Dr. D. K. Malley to investigate the effects of the cortical hormone on a case of pre-adolescent type of adrenocortical syndrome; and Dr. J. G. Waugh towards the expenses of his research work on sulphonamide therapy in the School of Physic, Trinity College, Dublin.

The following grants have been renewed for one year: Dr. T. E. T. Bradshaw (from March 1, 1941) and Prof. Hans Sachs (from May 1, 1941). Prof. I. B. Gatenby and Dr. R. G. Cross have relinquished their grants.

ALLERGIC SHOCK FOLLOWING A SCHULTZ-CHARLTON TEST

by

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Surgeon Lieutenant, R.N.V.R.

The following case was considered worth reporting in view of the severity of the reaction induced by a Schultz-Charlton test. A brief survey of the literature has not revealed a similar case.

Clinical History

The patient, a youth aged 18, was admitted to hospital on October 2, 1940, as a possible case of scarlet fever. His illness had begun during the previous night with generalized itching of the skin and mild nasal catarrh. On rising he had discovered a rash on his body and limbs. Slight sore throat was also complained of, but he did not feel really ill. There had been some epistaxis that morning. On examination he was found to be thin but healthy-looking; he was afebrile and his pulse was 80. Over the trunk and upper parts of the limbs, but most intense over the front of the chest, there was a rash consisting of a diffuse erythema with a suggestion of urticaria in places. The face and neck were unaffected. His tongue was clean and his throat appeared normal.

The diagnosis at this stage seemed to be urticaria rather than scarlet fever; and on inquiry the patient stated that he had eaten tinned salmon for supper the previous evening and that six weeks previously he had had a similar rash, which had cleared up in a few days. The appearance of the rash on the front of the chest did, however, suggest scarlet fever, and to exclude this a Schultz-Charlton test was done, 0.2 c.cm. of anti-scarlatinal serum being injected intradermally over the lower ribs on the left side at a point where the rash was most intense. Fifteen minutes later the patient was seized with sudden severe headache and vomiting, accompanied by a feeling of hotness and intense itching of the skin. Oedema of the face developed rapidly, so that soon his eyes were completely closed by swelling of the eyelids; simultaneously general massive urticaria appeared all over the trunk and limbs, affecting an area larger than and including the original rash. The skin was cold and clammy, the pulse rapid and thready, and the blood pressure 80/45. 5 minims of 1 in 1,000 adrenaline was injected slowly intravenously, and his blood pressure rose to 95/55, while the facial oedema diminished slightly. The urticaria subsided more slowly, and he felt weak and sleepy for some hours after the attack.

Inquiry was now made about his family and previous history. His mother, two brothers, and one sister all suffered from hay-fever. The patient himself had lived in America till the age of 12, and while there had had hay-fever every summer; after coming to this country he had no further attacks. When a child he had also suffered from sensitivity to poison ivy; he stated that contact with the plant was not necessary—urticaria resulted even at a distance of one foot. He had received inoculations for this when 13, with apparent benefit. At the age of 12 he had been inoculated against diphtheria in New York. So far as he knew these were the only occasions on which he had received injections.

October 3.—The giant urticaria had disappeared, leaving the rash much as it was on admission, although he still had some swelling of the eyelids. The site of the Schultz-Charlton test was surrounded by an intense ring of erythema, superimposed on the original rash. Generally he felt well and was afebrile, but his appetite was poor.

October 4.—The original rash was now fading and the facial oedema had disappeared. Scratch tests were performed on the left forearm as follows: pollen control, 0; pollen toxin, + after twenty-four hours. Saline control, 0; salmon protein,* slightly + in twenty-four hours, + in forty-eight hours.

October 6.—The rash had completely faded and he felt very well. Serum sensitivity tests were performed by intradermal injection on the right forearm: human serum (1:10) 0.2 c.cm., 0;

* An extract prepared from the brand of salmon consumed by the patient.

horse serum (1:10) 0.2 c.cm. +++ in five seconds. The instant local reaction to horse serum was striking; within thirty seconds there was a ring of erythema about 5 cm. in diameter and a lymphangitis in the upper arm which could actually be seen moving up towards the axilla as a thin red line, advancing about 1 cm. per second. After ten minutes the local reaction was more marked and a broad band of lymphangitis extended right up to the axilla, where the glands were tender and slightly enlarged. Blood pressure 110. The patient's face was rather flushed, but his only symptom was a mild headache. After twenty minutes the face was very flushed, and quite rapidly oedema was seen to appear round the eyes and then over the face generally, exactly as it did on the previous occasion. He complained of a pricking pain behind the eyes and his nose felt blocked. The submaxillary salivary glands were noted to be enlarged and tender. On this occasion no vomiting occurred, but he had nausea and profuse sweating. There was also a brisk epistaxis. At this point the reaction was considered unduly severe, so a tourniquet was applied above the site of injection and adrenaline was injected subcutaneously into the other arm.

October 7.—There was still severe oedema round the eyes, and the site of injection was red and swollen. He complained of some pain at this point and also across the chest, but he had slept well and felt fairly fit. Later in the day he collapsed suddenly and was unconscious for a few minutes, and his skin was cold and clammy. Recovery was rapid.

Further Progress.—During the next few days the swelling of the arm gradually subsided and was followed by the appearance of bruising at the site of injection. He had no further general symptoms, and was discharged from hospital quite fit nineteen days after admission. A notation was made on his medical history sheet of his extreme sensitivity to horse serum, in view of the probable danger of a therapeutic dose of serum.

Discussion

This patient provided an interesting example of the "allergic diathesis." He had a family history of hay-fever and was himself sensitive to the following substances: (1) Poison ivy. (2) Pollen—confirmed by skin test. (3) Salmon protein. This was probably the cause of his original rash. The onset, with itchiness of the skin, a few hours after eating a brand of salmon to which he gave a positive skin test is very suggestive. (4) Horse serum. The dramatic result which followed the intradermal injection of 0.2 c.cm. of anti-scarlatinal serum was proved to be a true sensitivity to horse serum by the exactly similar response to normal horse serum—of which 0.2 c.cm. of a 1 in 10 dilution or 0.02 c.cm. of pure horse serum induced a severe reaction. Such a high degree of sensitivity is uncommon; indeed, a similar dose of serum has been recommended as a test of sensitivity before the intravenous injection of much larger quantities.

In the human being delayed reactions to serum (e.g., serum sickness) are much commoner than immediate reactions, to which the term "allergic shock" has been applied. This term is perhaps preferable to "acute anaphylaxis," since the latter implies that the sensitivity has been induced by a previous dose of serum (Lamson, 1929). In the present case it is possible that the diphtheria prophylactic at the age of 12 was the sensitizing dose. Various estimates of the frequency of serum sensitivity after diphtheria prophylactics have been made (Hooker, 1924; Gordon and Creswell, 1929). Tuft (1932) noted that sensitivity was more common in people with a family history of allergic disease, which was certainly positive in the present case.

Cases of allergic shock after the subcutaneous or intravenous administration of serum have often been reported; but only two references have been found to general reactions to serum given intradermally. Freedman (1935) recorded the case of a boy of 6 who died after the intradermal injection of 0.05 c.cm. of horse serum given nine

lays after a dose of diphtheria toxin-antitoxin. Vaughan and Pipes (1936) described a case very similar to the present one in which a severe reaction was caused by 0.1 c.cm. of anti-tetanic serum given intradermally.

An interesting feature of our case was the rapidly spreading inflammation of lymphatic vessels and glands draining the site of injection. It is obvious that such a reaction must be due to the presence of some substance flowing along the lymphatic which causes dilatation of the surrounding capillaries as it travels. Whether this substance is the actual serum injected or some tissue product is unknown, but it is interesting to realize that 0.02 c.cm. of serum intradermally can produce such an intense and prolonged lymphangitis as was observed.

Summary

A case of allergic shock after the intradermal injection of horse serum is described in a youth aged 18, who was also sensitive to poison ivy, pollen, and salmon protein.

A severe systemic reaction was induced by as little as 0.02 c.cm. of serum given intradermally.

The case emphasizes the importance of skin-testing before the therapeutic use of serum, particularly in patients with a family or personal history of allergic disease.

I have to thank Surgeon Vice-Admiral S. F. Dudley for permission to publish this case.

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Medical Memoranda

Treatment of Bacillary Dysentery (Flexner) with Sulphapyridine

In view of the increased incidence of bacillary dysentery (Flexner and Sonne) in this country during the past few months, the following note appears to be worthy of record. The results achieved are so striking that it is hoped that others who are faced with a similar epidemic may be induced to give this form of treatment a trial.

It was decided to employ sulphapyridine when bacillary dysentery showed itself at this hospital, owing to the results obtained by Drs. Reitter and Marberg published in the *British Medical Journal* of February 22 last. The opportunity occurred on April 26, when an epidemic of Flexner dysentery began. Sixteen male patients were treated, their ages varying from 22 to 67 years. They included patients suffering from various forms of chronic psychosis, and their general state of health was by no means uniformly good. Three of them had suffered from bacillary dysentery on a previous occasion.

In this hospital, unfortunately, dysentery epidemics have occurred in the past, usually in the spring and autumn, and in consequence the experience of both the medical and nursing staff in the treatment of this unpleasant illness, at least so far as it affects mental patients, is considerable. Treatment previously has been determined by symptoms and according to the current belief of the medical officer concerned. It is all the more striking therefore when experienced nurses declare spontaneously that the course of the disease has been shortened with sulphapyridine by at least seven days.

Clinically the cases were of moderate severity, with temperatures as high as 104° F. and loose stools with the usual blood and mucus. Bacteriological examination in each case uncovered Flexner XYZ. With sulphapyridine the temperature fell to normal in most cases in twenty-four hours, and in all within forty-eight. The character of the stools improved more gradually, showing diminished blood and mucus and being formed

about the fifth day. In every case but one the stools were reduced to a maximum of two a day from the third day. The tongue, from being furred and dry at the outset, was clean and moist by the third or fourth day. The general condition improved in the same striking manner, the toxic appearance, characteristic of dysentery, rapidly disappearing. The drug was administered by the mouth as early as possible; that is, immediately upon the case being clinically diagnosed. A routine dose was adopted, namely:

1.0 gramme (two tablets)	4-hourly for the 1st day
0.5 " (one tablet)	4 " " 2nd "
0.5 " " "	6 " " 3rd "
0.5 " " "	thrice during the 4th "
0.5 " " "	twice " " 5th "

Bicarbonate of soda was added wherever there was any tendency to nausea.

Diet	1st and 2nd days	Milk and water only
	3rd and 4th days	add arrowroot
	4th and 5th days	" " and mashed potatoes
	5th or 6th day	" " and pounded fish.

Bacteriologically all patients were Flexner-free (as determined by rectal swabs and plating) by the fifth day. Four consecutive negative swabs were considered to establish freedom from Flexner, and these were obtained in all the cases.

A most striking feature is the excellent general condition of the patients when they are allowed up, usually about seven days from the onset. In previous epidemics the patients have lost much weight and required several weeks of convalescence before they could be regarded as approaching normal health.

I am much indebted to Dr. Morris Robb for his careful treatment in this series of cases.

Brentwood, Essex.

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Amidopyrine and Pernicious Anaemia

We are accustomed to associate amidopyrine with the development of agranulocytosis, but Rhoads and Miller (1937) have shown that amidopyrine will depress the production of red cells in animals on a defective diet. Their work suggests that we should be very careful about the prescription of amidopyrine, and of drugs such as the sulphonamides and the organic arsenicals, to patients with pernicious anaemia, but the following is the first case in which I have seen amidopyrine depress erythropoiesis in man.

CASE RECORD

A married woman doctor came under treatment in 1934. She was 32 years old and had suffered from symptoms of pernicious anaemia for two years. The diagnosis was confirmed by the presence of achlorhydria, increase in serum bilirubin, and a characteristic Price-Jones curve. She was in a nursing home for three months, responded well to liver injections, and became fit enough to have a baby. A week after the baby was born she began to get corneal ulcers, and eventually in 1940 she stopped the injections of liver because it seemed possible that the corneal ulcers were a symptom of sensitization to liver. In January, 1941, she lost heavily at her period and in February she resumed the liver injections. On March 20, after weekly injections, her haemoglobin was 70%, but on March 26 it had fallen to 58%. Injections of liver were given on alternate days till April 1, and then daily, but although there was a moderate reticulocytosis the haemoglobin fell to 46% on March 31 and to a minimum of 44% on April 4. The white cells were normal. Naturally some serious complication was feared, but no evidence of any could be found. Inquiry then revealed that she was taking the hypnotic drug alional, which contains amidopyrine. On omitting this, and without making any other change in the treatment, she showed a reticulocytosis of 31% and a rapid improvement. By the end of June her haemoglobin had risen to 92% and the colour index and red cell volume had returned to normal. The tendency to corneal ulceration has unfortunately persisted.

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Reviews

ALCOHOL AND SOCIETY

Confirming the Facts: A Manual of Scientific Temperance Teaching for the Use of Teachers and Students. With a foreword by Sir George Newman. (Pp. 128. 1s. 6d.) Bedford: Rush and Warwick (Bedford), Ltd.

Confirming the Facts is a small book described on the title-page as "A comprehensive and authoritative statement concerning alcohol, its nature and effects." It has been prepared by the Temperance Collegiate Association, and is intended as a manual of scientific temperance for the use of teachers and students. Here are articles by twelve authors, each of whom is a well-known authority on the aspect of the problem with which he or she deals. For example, Sir Gowland Hopkins has written on the relation of alcoholic beverages to nutrition, the late Lord Stamp on the economic aspects of temperance, and Sir Leonard Rogers on alcohol in the Tropics. As these names indicate, the general standard of the volume is remarkably high, and the variety of the contributors results in reliable information being provided on special features of the subject.

Mr. Liverseege, former public analyst to the City of Birmingham, gives a very clear account of the composition of alcoholic drinks, and in particular explains the mysteries of calculations in terms of proof spirit. The difficulty of such estimations is indicated by the fact that the author notes a serious error in tables given in the Medical Research Council Handbook, *Alcohol: its Action on the Human Organism*. This error was due to the use of American calculations, and unfortunately the U.S.A. proof spirit differs from the British proof spirit in respect of alcohol content. Special attention is paid to the economic aspects of expenditure on alcohol. This is very wise because, while drunkenness is diminishing, the under-nutrition caused by disproportionate outlay on alcohol is a problem that has become of increasing importance. Lord Stamp concluded that the working classes spent 15% of their income on alcoholic drinks, and that this consumption reduced industrial efficiency between 5 and 10%. It is usually assumed that most of the expenditure on alcohol returns to the Exchequer, but at the 1934 level of taxation the tax constituted only two-fifths of the sale price of beer. The barley and hops accounted for about 8% of the cost, while the labour cost was estimated to be about one-eighth of that created by the same expenditure in industry in general. The margin represented by cost of sale and profits is therefore substantial and explains the ability of the trade to sustain intense propaganda. Several of the contributors criticize the standards of accuracy of beer advertisements. Mr. Heath, who is secretary of the United Kingdom Alliance, makes some interesting points regarding the political activities of "the trade." The lack of enthusiasm of the Labour Party for temperance reform has been somewhat striking, and he notes that the working men's clubs have become a tremendous bulwark to protect the liquor trade. He points out the remarkable contrast between the care with which licensed premises are regulated and the lack of control of clubs.

It will be gathered that a wide variety of aspects of the alcohol problem is dealt with in this collection of papers. The more purely medical aspects are discussed by Sir Leonard Rogers, Sir William Willcox, Dr. Cove Smith, Mr. McAdam Eccles, and Prof. Amy Fleming. The Bishop of Worcester contributes an article on the Christian Ethics of Temperance. In price and size the volume resembles the

Medical Research Council book on alcohol, but the scope of the two is different. The M.R.C. book deals with the action of alcohol on the human organism, whereas the book under review is more concerned with the influence of alcohol on society. Most of the propaganda for and against "the universal solvent" is so biased and inaccurate as to be distasteful to the medical profession; hence this work is of special interest because it provides a short but objective survey of different facets of an important social problem.

PSYCHOTHERAPY

Psychotherapy. By Lewellys F. Barker, M.D. (Pp. 218. 8s. 6d. net.) New York and London: D. Appleton-Century Company. 1940.

Amidst the welter of psychological and psychiatric literature which pours from the presses on both sides of the Atlantic it is refreshing to find a small book written by an experienced physician who knows how to marshal his facts and enunciate his theories with a minimum of verbiage. Dr. Barker represents the psychobiological school of Adolf Meyer, which by its breadth of outlook and catholicity of therapeutic method is wielding much influence in psychiatry and is likely to wield more and more.

There can be no set rules for the treatment of disease, and if it is of paramount importance that we should not confine ourselves to the treatment of the body only, it is equally important that we should not limit our vision to one sort of psychotherapy or to one type of mind.

The psychiatrist requires a broad basis of knowledge of all types of mental reaction and of all methods of dealing with them, but the successful practitioner will be he who knows intuitively or by experience how to choose the method which will best suit not only the patient but his own reactions in dealing with the patient. All this Dr. Barker sets out in the present essay, and if he is not impressed by the claims of the psycho-analysts, he admits that in some few cases their methods may be serviceable at least in some psychoneuroses. For the psychoses he prefers general management and occupational therapy, but points out the value to psychotherapy in many cases of irreversible "organic" disease. At the end he calls attention to the effect of various poisons in reproducing certain psychotic reactions, and suggests that the future may provide other channels to reverse these processes, but he will admit that we do not yet know whether such poisons really cause these reactions or only unmask a psychic pattern already there, nor what that pattern owes to heredity, constitution, or environment.

If this book discloses how far we are from a full psychiatric knowledge which neither this generation nor the next may achieve, it shows how steadily we are marching towards the goal, and it should be read by all who have any claim to be considered up-to-date physicians.

MIXED MEDICAL FARE

The Practitioner's Library of Medicine and Surgery. 1940 Supplement. Supervising Editor, George Blumer, M.A., M.D. (Pp. 772; illustrated. 42s. net.) New York and London: D. Appleton-Century Company.

In reviewing this book it would be unfair not to make it plain that it is a Supplement designed to bring up to date a *Practitioner's Library* which is already in existence. It must be confessed, however, that it is a large and expensive volume which provides a curiously assorted fare. Much of it will appeal to the ordinary intelligent practitioner. There is a good and detailed description of the place of the sulphonamide drugs in therapeutics. Here it is noteworthy

that the indiscriminate use of sulphanilamide in pharyngitis and tonsillitis is condemned, and it is recommended that sulphanilamide be used in pharyngitis and tonsillitis only if the infection is severe and is one that is known to respond to chemotherapy. There is also a straightforward account of recent advances in knowledge of vitamin K and the vitamin B complex. The section on infectious diseases, on the other hand, is extremely recondite. Few general readers will be particularly interested in such subjects as epulis granulomatosa, or bejel—the syphilis of Bedouin children—or toxoplasmic encephalomyelitis, and few specialists would look for information on these subjects in a volume of this kind. Among blood diseases we note very elementary articles on leukaemoid reactions and haemophilia and a fully documented article on the rare condition Letterer-Siwe's disease. The cardiologist articles on the venous blood pressure and the circulation time, on the relation between thoracic deformities and cardiac disease, and on cardiac confusion are appropriate and well written, but that on granulomatous myocarditis cannot be said to be practical, topical, or informative.

Our criticisms, therefore, are directed not so much against the range of subject matter, which might be expected to be diverse owing to the unpredictable directions which the growth of knowledge takes, as against its variable depth and quality. If we are to believe the advertisements, American practitioners have a voracious appetite for medical textbooks, and the most highly specialized books are sometimes described as essential additions to their bookshelves. Nevertheless, a hook addressed to practitioners should not attempt too much, and the editors must keep a tight rein on their contributors to ensure that the whole team pulls in the same direction.

HOSPITALS UNDER FIRE

Hospitals Under Fire. But the Lamp Still Burns. Edited by George C. Curmuck. (Pp. 148. 7s. 6d. net.) London: George Allen and Unwin Ltd. 1941.

In this volume—a very human document of very inhuman events—the editor has collected accounts by victims and eye-witnesses of the bombing of a number of British hospitals. If the descriptions in their manner are colloquial or journalistic they also bear the stamp of authenticity. The tales have not been adorned, because they need no adornment. They are tales of nights of terror and of simple courage on the part of men and women subjected to tests of a kind for which their ordinary lives had provided no training but for which an urgent necessity, created by the worst in man, discovered in his best an adequate response. Although the descriptions are concerned mostly with the experiences of the London hospitals (the Westminster, St. Thomas's, the London, Guy's, Great Ormond Street, and the Royal Chest Hospital all receive mention), the editor is particular to explain that it was not his purpose to select, and that at the time the book was compiled many more hospitals in London and the other great cities had been or were being similarly attacked. Neither space, time, nor the censor allowed inclusion of them all. In some cases, where a decoration has led to the disclosure of a name, the accounts of personal heroism are accompanied by a personal interview and a photograph. Other actors in the drama remain anonymous. All seem to have accepted inclusion only because it might help the hospitals and the cause. Many of the facts revealed are intensely moving, and if any further evidence against totalitarian war were needed it will be found in plenty both in the letter-press and in the very fine photographic illustrations which accompany each chapter.

Notes on Books

RITCHIE CALDER'S *Carry on, London!* (English Universities Press, 5s. net) is a tribute to the ordinary people, not only in London but in all the bombed cities, who worked on through the horrors of last autumn and winter with courage that nobody would have dared to foretell. It is also to some extent a condemnation of the official mind—not so much in its direct criticisms, which are few and moderate, but in the accumulated details that show the inevitable fault of officialdom—in sufficient sympathy and kindness. It might be well for the medical profession, when it is considering reorganization, to bear in mind this lesson of how easily the human touch gets lost in regulations and in the intricacies of mass planning. In this war it is essential to keep the individual in mind, because it is so often the individual, and not a trained, disciplined soldier, who is fighting. When the war is over people will want the consideration they deserve, and Ritchie Calder's book will have served a purpose if it reminds us of this fact. At present the half-trained defence workers—the auxiliary firemen and roof spotters, the shelter marshals and wardens, first-aid parties, welfare workers—and the trained doctors and nurses too, have simply ignored red tape and done what was necessary with magnificent courage and initiative. It may be more difficult for them when the war is over, and the planners will need to be more careful not to lose sight of the people for whom they are planning. The book should be read for this reason, and also because few people will have had Ritchie Calder's opportunity for seeing so much of the picture as a whole.

The Board of Registration of Medical Auxiliaries has issued a third edition, dated May, 1941, of the Chiroprodists' section of the *National Register of Medical Auxiliary Services*. It is published from B.M.A. House, Tavistock Square, W.C.1. We have also received a second edition of the much smaller Orthoptists' section of the *Register*. It will be remembered that "orthoptics" (the practice and principles of the development of binocular vision in the case of squint) was recognized by the Board on the recommendation of the Council of the British Medical Association.

A ninth edition of *Macleod's Physiology in Modern Medicine* has been published by Henry Kimpton (50s. net). The eighth edition, of which a notice appeared in our issue of April 8, 1938, was largely rewritten by a group of authors each of whom contributed a section devoted to one of the major fields of physiology. That arrangement has been continued, and the general plan and purposes of the book remain unaltered. The same contributors have co-operated in bringing out this ninth edition; they have been joined by Howard J. Curtis, who has rewritten the chapters on electrical excitation and conduction of the nerve impulse; and Walter S. Root has contributed a chapter on the urinary bladder. Although several new chapters have been added others have been combined, and the total number has not been increased.

Preparations and Appliances

ROTENONE LOTION FOR SCABIES

Rotenone lotion (British Drug Houses, Ltd.) is described as a non-oily mucilaginous preparation containing 2% of rotenone. This is the active principle of derris; it is a powerful insecticide which was used extensively in agriculture and has in recent years been tried for scabies. The vendors supply a pamphlet which gives details of the method of application of the emulsion.

The advantages claimed for rotenone are that it is not expensive, is cleaner than sulphur ointment, and is quicker to apply than benzyl benzoate. The effective treatment of scabies is a problem that unfortunately is rapidly increasing in urgency. The methods in general use are not completely satisfactory, and hence rotenone deserves a careful trial.

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THE HUMAN SEX-CHROMOSOMES

Owing to the striking peculiarities of sex-linked inheritance this mode of transmission of hereditary traits has long been known empirically in man. Thus Nasse's law described the transmission of such diseases as haemophilia, though many years had to pass before the underlying histological basis was discovered. Later still the proved existence of an X-Y human sex-chromosome pair, together with genetic and histological work on other forms, raised the possibility that the classical type of sex-linked inheritance might not be the only one. Y-borne abnormal genes, rare it is true, have been recognized in man. More recently J. B. S. Haldane,¹ deducing from observations on mammalian chromosomes the possibility of partial sex-linkage, gave a brilliant demonstration of its existence in the human subject. All types of sex-linked inheritance depend upon the simple behaviour of the sex-chromosome pair. It will be recalled that the human male and female differ in respect of this one pair out of the twenty-four. Whereas in the nucleus of the female somatic cell the two members of the pair are equal, being termed X-chromosomes, within the male nucleus is found one X-chromosome only, together with an unequal partner, termed the Y, a third the size of the X. After the reduction division, gametes are formed containing one member only of each chromosome pair. Thus all ova contain one X-chromosome, while half the spermatozoa contain an X-chromosome and half contain a Y. Should an ovum happen to be fertilized by an X-bearing sperm the result is an XX individual—that is, a female; should it happen to be fertilized by a Y-bearing sperm the result is an XY individual—that is, a male. This is the simple basis of the determination of the sex of the new individual.

Like the other chromosomes the sex-chromosomes carry genes affecting various bodily structures and functions. In classical sex-linkage—for example, in the case of haemophilia—the gene responsible for the abnormality is exclusive to the X-chromosome. Should it be recessive, another feature of the classical case, a female bearing the abnormal gene upon one X-chromosome is outwardly normal. Half her ova will, however, contain an X-chromosome bearing the abnormal gene. Should such an ovum be fertilized by an X-bearing sperm the result will be another outwardly normal carrier female. But should that ovum be fertilized by a Y-bearing sperm the result will be an affected son, for the Y-chromosome has no corresponding normal gene to oppose the action of the single gene borne upon the X. It is equally easy to see that a haemophilic man married to a normal woman will have children who are all outwardly normal, though all

daughters will in fact be carriers. This follows because to the normal X-chromosome contributed by the mother is added either a normal Y-chromosome, giving a normal son, or an X-chromosome bearing the gene for haemophilia, thus giving a carrier daughter. The female haemophilic could appear only if a haemophilic man happened to marry a carrier woman, and this is an extremely unlikely contingency. Thus haemophiliacs are males who have received the gene from their mothers; should they marry they transmit it in turn to their daughters, who are outwardly normal though in fact carriers.

Does the Y-chromosome carry abnormal genes? Instances have been found in other animals of genes exclusive to that chromosome and not found upon the X-chromosome. Hereditary transmission of a trait determined by such a gene is of a very simple description. The trait is exclusive to males and is never exhibited or transmitted by females. It is transmitted by an affected man to all his sons. A few rare examples of this kind of sex-linked inheritance have been discovered in the human subject. Easily the most remarkable is the "porcupine" family described by Cockayne.² This truly astonishing mutation has apparently been recorded once only in the history of the human race. In ordinary chromosome pairs an interchange of segments takes place before the reduction division. This has the effect of transferring a gene from the paternal chromosome to the maternal or vice versa; the observed results are the genetic phenomena of linkage and crossing-over, which make possible the location of genes upon the chromosomes and the construction of chromosome maps. Should crossing-over take place between part of the Y-chromosome and part of the X, there should exist genes which may be located upon either chromosome and the genetic result would be partial sex-linkage, a trait so determined displaying an incomplete association with sex in contrast to the complete association characteristic of genes exclusive either to the X or to the Y chromosome. Koller and Darlington³ having observed crossing-over between portions of the X and Y chromosomes of the rat, Haldane⁴ made a search for partial sex-linkage in human records, for far more genes are known in man than in any other mammal. His search was rapidly rewarded. A fortnight's work revealed very strong evidence of partial sex-linkage in the case of three abnormalities: xeroderma pigmentosum, complete colour-blindness, and recessive retinitis pigmentosa unassociated with deafness. In three other instances there was good evidence for this mode of transmission—namely, some dominant pedigrees of retinitis pigmentosa, Oguchi's disease (a form of night-blindness), and recessive dystrophic epidermolysis bullosa.

The genetic results of partial sex-linkage can be detected only in the transmission of genes by males. The partially sex-linked gene must be situated upon an X-chromosome in the female, and crossing-over merely transfers it from one to the other without altering any ratios. A male bearing such a gene, however, carries it on his X-chromosome if he received it from his mother and on his Y-chromosome if he received it from his father. Crossing-over transfers the gene to the other chromosome, but will commonly occur in a minority of

¹ *Inherited Abnormalities of the Skin and its Appendages*. London: Oxford University Press, 1933 (p. 382).

² *J. Genetics*, 1934, 29, 159.

³ *Ann. Eugenics*, 1936, 7, 28.

⁴ *Ann. Eugenics*, 1936, 7, 28.

ases only. Consequently a male who receives such a gene from his mother passes it on to more than 50% of his daughters and to less than 50% of his sons; this is reversed if he receives it from his father. It will be noticed that the relation to sex is not a very obvious one, and it is not surprising that the peculiarity of the genetic ratios was not observed until Haldane made his deliberate search. Since the announcement of the discovery of partial sex-linkage various workers have tested other human records, though until recently with negative results. Two more instances have now been discovered: one by Haldane¹ himself, one by other workers. Haldane has shown that recessive spastic paraplegia is transmitted in this way, and Mather and Philip² have found it to be true also for certain records of the transmission of hare-lip and cleft palate. Haldane in his original paper was cautious. Although he regarded the evidence as extremely strong, he stated that he "would be the last to regard incomplete sex-linkage as an established fact." No other explanation of the findings has been put forward, however, and in view also of the further supporting evidence the existence of partial sex-linkage in the human subject must be regarded as reasonably certain. Haldane has thus made the first attempt to map part of a human chromosome, though naturally, in view of the imperfections of existing records, the actual cross-over values are somewhat tentative. The unpaired portion of the X-chromosome, too, lends itself to mapping. Genes situated upon it must be linked to one another. Usually this could not be discovered, because seldom indeed would two rare genes be found in the same family group. Red-green colour-blindness is, however, a relatively common sex-linked trait and can be used as a marker. Bell and Haldane³ have shown that the genes for colour-blindness and haemophilia are situated very close together on the X-chromosome, crossing-over between them being very rare. White⁴ has shown that sex-linked night-blindness with myopia is due to a gene widely separated from that for colour-blindness. So here, too, a beginning has been made.

Apart from man, only one instance of sex-linkage has, so far as we are aware, been described in a mammal. This is the well-known black and yellow gene pair in the cat. Only a female can carry both, so, apart from a very few exceptions probably due to chromosome abnormalities, tortoiseshell cats are always females. In man, however, it would not be difficult to compile a list of forty or fifty ordinary X-borne, sex-linked genes. It may be that man differs in this respect from the laboratory and farm mammals so far studied. On the other hand it may simply be that the number of genes observed in man enormously exceeds those observed in any other mammal. It is also well known that what is apparently the same condition may not uncommonly be due to the action of any one of a number of genes, so greatly increasing the actual number likely to be observed in the human subject. It has been pointed out that the striking nature of ordinary sex-linked transmission makes it especially likely that the pedigrees will be placed on record, so magnifying the apparent proportion of such cases. There is nothing striking or unusual, however,

about the pedigrees of partial sex-linkage. Do seven or eight examples discovered in a period of four years indicate that the sex-chromosomes of man are particularly rich in genes as compared with those of other mammals?—probably not, though it is clear that future work will have this and other interesting queries to answer. Undoubtedly the story of the genes of the human sex-chromosomes indicates very clearly that human genetics is far from being an unpromising field. Human material may present many difficulties, but in some respects, and particularly if records are carefully made and appropriate statistical methods employed, the human subject offers advantages shared by few other forms. In years to come the consequences, both theoretical and practical, may well be of great importance.

MENTAL DEFECTIVES IN THE ARMY

The advent of machines in modern war has not made the human factor less important. It is important in new ways as well as in the old. Courage alone is not enough. Even courage and machines together may not be enough unless care is taken to ensure that the man in the machine has the necessary aptitude for its manipulation. It is not an easy task to devise laboratory tests which will enable us to detect specific aptitudes and specific disabilities, although in peacetime much has been done, in this country mainly by the National Institute of Industrial Psychology, in the devising of vocational tests and their application to the vocational selection of employees for industrial plants. Admittedly the higher the task and the more it concerns executive action the harder it is to find appropriate tests, partly no doubt because temperamental factors, which are so much more elusive than intellectual ones, occupy a foremost place in the equipment of the successful executive. It will be remembered that in his lectures on the qualities necessary for good generalship Sir Archibald Wavell emphasized the need for "toughness." This is an example of the type of quality that is difficult to assess in the laboratory or consulting-room.

At the other end of the scale, however, the problem is notably less difficult. The last war showed well enough the danger of enlistment at random of the mentally defective. A considerable proportion of those who returned as mental casualties from their units at an early stage in their military career were found to be mentally defective persons, who at best were a danger in a negative way from their slowness of comprehension, and at worst were a positive danger from their tendency to panic. It is not difficult to eliminate the majority of such defectives, and indeed nearly all of them, by appropriate recruiting examination. Those who escape elimination at this stage can usually be detected by expert observers in the early stages of training. The saving is not only in the time spent in training such men, who learn more slowly than others and retard the training of the whole of the group to which they belong; they can also figure disproportionately on sick parade. Moreover, general mental instability often accompanies intellectual backwardness, so that disciplinary offences are disproportionately common among

¹ *J. Genetics*, 1941, 41, 141; see also *British Medical Journal*, 1941, 1, 562.

² *Ann. Eugenics*, 1940, 10, 403; see also *British Medical Journal*, 1941, 2, 165.

³ *Proc. roy. Soc. B*, 1937, 123, 119.

⁴ *J. Genetics*, 1940, 40, 403.

defectives. An intelligence test on recruitment, by excluding the defectives, will also exclude a number of defectives and unstable people who might without it pass as normal, especially as they exhibit a glibness of speech which deceives the inexperienced.

Dr. Esher's valuable paper in the current issue of the *Journal* (p. 187) demonstrates the liabilities incurred by enlisting mental defectives, and brings out clearly the effects on the sickness rate of a unit of the inclusion of defectives. As he points out, illness is a natural refuge for them to seek. Fortunately, as Dr. Esher observes, the problem of their early detection is not solely a matter of the application of intelligence tests. The fundamental value of a good history is well shown here as in all clinical work. Inquiry into the school and work record will often reveal a state of affairs which indicates the desirability of referring such individuals for expert examination. The employment of psychiatrists at this stage of medical organization of the Services should prove a real economy in the long run, but in the absence of sufficient numbers of such specialists the question arises whether a group intelligence test should not be used as a routine in all recruits. There is good reason to suppose that a considerable proportion of defectives could be discovered in this way. Such group tests do not require for their administration the services of a highly trained specialist; intelligent personnel with some appropriate training could administer them, the assessment being left to the psychiatrists and trained psychologists. In this way not only could the militarily useless and the unstable types of defective be excluded, but the stable types of higher grade will be allocated from the beginning to the kind of work for which they are fitted. Clearly we should be as exact as we can in the employment of human material, even if our methods may seem to fall short in exactitude of the engineer's technique when he chooses material for his machines.

THE OXFORD ANAESTHETIC VAPORIZERS

For some time past the Nuffield Department of Anaesthetics has been investigating means whereby liquid anaesthetics may be administered without complicated or bulky apparatus and in known concentrations of anaesthetic vapour. The result of this work is published in four articles in the *Lancet* of July 19. In the first (Macintosh and Mendelssohn) are discussed the physical problems involved in administering the vapour of a liquid anaesthetic in any desired concentration. For example, 90 calories of energy must be furnished for every gramme of ether vaporized. In order to maintain a constant temperature of the liquid ether, heat must be supplied from an outside source at exactly the rate at which it is used in transforming the anaesthetic liquid to vapour. This is achieved by surrounding the ether container with two other containers: the intermediate one holds crystals (or "reservoir substance") which melt at a suitable temperature, and as a source of energy hot water is poured into the outside one. The heat absorbed in transforming the reservoir substance from the crystalline to the liquid state (i.e., the latent heat of fusion) provides a source of heat supply at a constant temperature—that of the melting-point of the crystals. The reservoir substance acts as a thermal buffer, taking up heat

at any higher temperature but releasing it only at the temperature of its melting-point. A thermometer is placed in the intermediate container, and a sudden fall in temperature shows that the molten reservoir substance has all recrystallized; this is a sign that hot water must again be poured into the outside container.

The second paper (Epstein, Macintosh, and Mendelssohn) describes the Oxford Vaporizer No. 1, which incorporates so many striking advantages that Lord Nuffield has decided to present a thousand for distribution to the Services. Here the reservoir substance is calcium chloride, which melts at 30° C. The liquid ether is maintained at this temperature, so that there is always a constant and high concentration of ether vapour available in the container. When the patient breathes, air is drawn in through a valve. By means of a mixing tap the air can now be diverted wholly or in part over the surface of the ether or be by-passed directly to the patient, who thus receives air only. The apparatus includes a lightly spring-loaded spirometer bag which is easily worked by hand. The air thus drawn in can be used instead of the bulky cylinders of gases in common use as a *vis a tergo* to carry the anaesthetic vapour to the patient. The economy in the transport of cylinders is one of the outstanding features of this apparatus. In the third paper Cowan, Scott, and Suffolk describe the Oxford Vaporizer No. 2, in which a cylinder of liquid ether is maintained at a constant temperature above the boiling-point of ether. By means of a pin valve ether vapour is released at any desired rate. The vapour passes through and is measured by a meter which is surrounded by a reservoir substance at a temperature high enough to prevent condensation. In a mixing chamber the ether vapour mixes with oxygen and, if required, with nitrous oxide, so that any desired strength of ether vapour is delivered to the patient. In the fourth paper Pask and Epstein discuss the performance of the vaporizers. They point out that the definite smooth control which the Oxford Vaporizer No. 1 affords gives the anaesthetist confidence in supervising less experienced helpers in the administration of anaesthesia to several patients in an emergency. It also seems to make the administration of light ether narcosis easier than with any other method known. It can be used, too, for analgesia. Warm ether vapour appears to be less irritating than cold, and experiments are being continued to see whether a humidifier should be incorporated. It is pointed out that the vaporizer should be useful in the physiological laboratory, where workers will be able to correlate their clinical findings with percentages of anaesthetic vapour being administered.

FOETAL ERYTHROPOIESIS

The discovery of the liver principle by Whipple and by Minot, besides producing a cure for pernicious anaemia, served as a stimulus to the study of erythropoiesis in the adult marrow. One of the cells to which attention was directed was the megaloblast. The term served for two different types of cell. Ehrlich¹ in 1909 applied it to a cell he had seen in the blood and bone marrow in pernicious anaemia and also in the human embryo. Sabin² in 1921 used it for a cell in the chick embryo. Ehrlich's cell was 15 to 20 μ in size, haemoglobinated, and with an eccentrically placed finely differentiated nucleus; Sabin's had no haemoglobin but was basophilic. Turnbull³ confined the term to the cell in the human embryo under 10 mm. long. This cell, he said, was large—about three times the size of a red cell—and was polychromatic or orthochromatic.

¹ *Die Anaemie*, by Ehrlich, P., and Lazarus, A. Part I, 2nd edition, 1909. Vienna and Leipzig.

² *Johns Hopk. Hosp. Bull.*, 1921, 32, 314.

³ Turnbull, H. M., in *The Anaemias*, by J. Vaughan, p. 20, 1936. London.

Israel¹ described the megaloblast series in human marrow from non-haemoglobinated forms to haemoglobinated types dependent upon the degree of maturity. Peabody² referred to a non-haemoglobinated basophilic type of cell in Addison's anaemia which was similar to the Sabin cell but pyknotic. It is unfortunate that American workers tend to apply "megaloblast" to the Sabin type of cell, whereas in Europe the Ehrlich type is meant. This confusion is due to some extent to the comparison of adult marrow types with embryonic types and not to differences between haematopoiesis in the human and haematopoiesis in the non-human. There have been few detailed studies of human foetal haematopoiesis. Knoll³ published some work on a number of human embryos in 1929, and Gilmour⁴ has recently given a full description of the development of the embryo, including many early types. For this purpose he has had access to Prof. J. E. S. Frazer's collection of embryos, including one about sixteen days old, probably slightly younger than the Peter's ovum, their lengths being up to 3 mm., 3 mm. to 12 mm., and over 12 mm. He describes the development of the cells before and after the development of the circulation and their appearance in the various foetal tissues. He finds that the haemocytoblast—first formed from yolk-sac vascular epithelium—could form all types of cell, though the particular type depended on the site. For example, in marrow every red and white cell type could come from the haemocytoblast. Erythropoiesis was never present in thymic tissue, and in embryos over 48 mm. long both erythropoiesis and leucopoiesis were entirely extravascular.

Gilmour describes two types of megaloblast—the primitive and the definitive. In embryos under 10 mm. long the haemoglobinated cell corresponded to the megaloblast of Turnbull, but after the 10 mm. stage the haemocytoblasts appearing in the liver produced a smaller type of cell. These he calls the definitive cells or family. The earlier ones, which are non-haemoglobinated and basophilic, he calls primary erythroblasts. These primary erythroblasts either may form normoblasts with pyknotic nuclei (the normoblasts acquiring haemoglobin and developing into erythrocytes), or may acquire haemoglobin very early while they still have large detailed nuclei—the cell so formed he calls a definitive megaloblast. These cells may reduce in size, the nuclei become pyknotic, and they develop into erythrocytes in due course. The definitive megaloblast is smaller than the primitive megaloblast, and has a smaller and darker staining nucleus. The two types of megaloblast seen, one after the 10 mm. stage and one before, are so different that it is a pity the term should be used in the description of both. Erythropoiesis in the foetus is more complicated than that in the adult marrow: the latter is related to the everyday work of clinical haematology. Two things seem to be indicated: first, there should be agreement between haematologists on nomenclature, and, secondly, further work is needed on foetal erythropoiesis by some method which utilizes living tissues (of the tissue culture type), so that the change from stage to stage may actually be seen taking place.

GARGOYLISM

The clinical picture in the bizarre combination of skeletal defects, cranial deformity, mental deficiency, spleno-hepatomegaly, and corneal opacification which goes under the name of gargoylism has become fairly clear from the large number of cases reported in recent years. That there is still much confusion, however, on a number of essential

features is reflected in the multiplicity of names for this condition. American writers speak of Hurler's syndrome, after Gertrud Hurler, who published an account of two cases in 1919. Priority has been claimed for Hunter, who reported the condition in 1917, and a more recent claim⁵ suggests that John Thomson of Edinburgh recognized it as early as 1908. Apart from eponymic designations, with their inevitable and rather futile controversies, the affection is also widely known on the Continent and in the U.S.A. under the name of dysostosis multiplex. None of the names is very happy, but more significant than the confusion in names is the confusion that prevails in the differential diagnosis from Morquio's disease. The two affections have dwarfing and a characteristic chondrodystrophy in common, and there are instances in the literature of fairly definite examples of both affections being reported under the wrong designation. In clear-cut cases the differential diagnosis presents no difficulty, for in Morquio's disease the head is normal and there is no mental deficiency. Ocular changes of an indefinite type have been reported in this disorder,⁶ but the characteristic cloudiness of the cornea appears to be absent. It is also said that the skeletal anomaly is more severe in Morquio's disease than in gargoylism. But the confusion may perhaps reflect not error but a fundamental unity between the two syndromes. In the elucidation of a recently recognized syndrome only the extreme cases are studied, and it may well be that what are now regarded as two distinct affections may represent two extreme limits of a continuous one. Such a view, which appeals because of its simplicity, does, however, require evidence which is not yet forthcoming. In none of the familial groups so far reported has there been enough dissimilarity in the different members of the family to warrant anything but one diagnosis (though this may be due to the "familial stamp" so characteristic of hereditary affections). Moreover, there is pathological evidence that gargoylism is a lipid dystrophy of the Tay-Sachs type, and there is no such evidence for Morquio's disease. It would be well if future studies on the subject were to take this possibility into account.

PSYCHOLOGY AND THE "HARD CORE"

One of the most difficult tasks of voluntary mental health work is to place discharged patients in suitable employment. Some of these patients, from their inability either to find work or to appreciate which work suits them, relapse and sink into depression, and return again and again for treatment. Early in 1939 the Mental After Care Association started an employment department under Miss Kathleen Laurie, a trained psychiatric social worker with knowledge of the various problems of employment, and the report⁷ for the first eighteen months reflects considerable success for the experiment. Although much of the work was done during the war, 482 persons out of 666 were found employment, and some of the remainder obtained posts for themselves. Domestic service absorbed the largest number: next came clerical work and then engineering. Some good openings were found in sales departments, in needlework, and on the land, but Miss Laurie and her co-workers received more requests for workers in hospital linen rooms and on the land than they could find. Engineering was a good outlet, and the department was in close touch with a number of staff managers who were sympathetic with its aims. Of patients placed for the first time only twenty women and seven men failed—eight

¹ *J. Path. Bact.*, 1939, 43, 299.

² *Amer. J. Path.*, 1926, 2, 437.

³ *Z. mikr. Anat.*, 1929, 18, 193.

⁴ *J. Path. Bact.*, 1941, 52, 25.

⁵ *Arch. Dis. Child.*, 1940, 15, 201.

⁶ *Arch. Ophthalmol.*, Chicago, 1941, 25, 557.

⁷ *Employable or Unemployable?* 1941, Mental After Care Association.

of the women with relapses; and of the total number for whom employment was found one-quarter were "very successful." Twenty-eight patients were given training in various kinds of new work. Co-operation between such a department, the patient, and the employer is, of course, essential in work of this kind, and depends largely on the head of the department: the more help she can command the more successful she is likely to be. Miss Laurie sought the help of clubs, churches, and private friends in protecting the patients from loneliness and encouraging their special interests, and the co-operation of hostel wardens in finding homes offering some social life, or the necessary control for the unpunctual or the alcoholic. At times she persuaded insurance societies to pay health benefits to patients who had been unable to notify their illness at the proper time. She was on friendly terms with innumerable employment agencies. Much of her work was the tactful education of all kinds and conditions of people about the facts and effects of mental disorder and the capacity of patients to recover. It was especially difficult to bring home to them the need for speed, and official delays caused hardship. She concludes that the "hard core" of unemployment could be considerably reduced by a service of this kind on a larger scale, and that the work should be put into the hands of trained workers attached to a Government Department, the Unemployment Assistance Board, or a voluntary association subsidized and given facilities. One of the most surprising things in the report is in the foreword by Miss E. D. Vickers (until recently secretary of the Mental After Care Association), which states that this work has had to be abandoned owing to war conditions and financial stress. If any activity ought to be continued it is, surely, this successful work among one of the most expensive and useless classes of society. These persons cost millions of pounds in health and unemployment insurance and in unemployment assistance, in accommodation in mental hospitals, poor-law institutions, and prisons. Let us hope that Miss Laurie's work will be resumed and expanded at the earliest possible moment.

LANATOSIDE C (DIGILANID C)

The glucosides of *Digitalis lanata* were first used medically in this country a few years ago, digoxin becoming rapidly established as a valuable new drug. The chemistry of these glucosides was worked out by Stoll, and lanatoside C was found to differ considerably from the other glucosides of *Digitalis lanata* and *purpurea*. Fahr and LaDue¹ tested the therapeutic action of lanatoside C (or digilanid C) upon 256 patients with heart disease, and found that it had a rapid and efficient clinical action. Intravenous administration of 1.6 mg. reduced the heart rate to 85 or lower in fifty-two cases, the response being achieved in under two hours in thirty-eight cases. Oral administration, first of 3.75 mg., then of 2.5 mg., within twelve to twenty-four hours reduced the heart rate to less than 85 in all cases within forty-eight hours. The rate of clearance of lanatoside C, which was estimated by stopping the administration and measuring the time until the pulse rate rose above 90, varied from seven to twenty-one days, with a mean of twelve days. This approximates to the results reported by Robinson for *Digitalis purpurea*. The authors found that the drug was efficacious in the treatment of congestive heart failure with normal sinus rhythm, and would often restore rhythm in cases of supraventricular flutter. They concluded that lanatoside C was less toxic than preparations of *Digitalis purpurea*. Nausea and vomiting were rare.

and when these occurred they were usually transient. This report confirms the general opinion that the clinical value of the glucosides of *Digitalis lanata* is high.

CHEMISTRY OF DIARRHOEA AND VOMITING

It is increasingly recognized that the syndrome of gastro-enteritis in infants is something more than a local lesion of the alimentary tract, and that treatment to be effective must take note of the profound changes produced in the whole of the infant's tissues. Broadly speaking such changes may be summarized by the word "dehydration." In a series of fifty-one infants A. G. V. Aldridge studied the indications for giving fluid by routes other than the mouth, the best form of fluid to use, the route by which it should be given, and the value of haematological and biochemical examination in forming a decision as to the most suitable fluid to use. His paper¹ is concerned with the last but one of these. The majority of the infants were suffering from gastro-enteritis and a few from pyloric stenosis. The investigations carried out on the blood comprised red cell counts, haemoglobin estimations, haematocrit readings, and the estimation of plasma chloride and plasma protein concentrations. For these purposes very small amounts of heparinized blood (less than one-third of a cubic centimetre) were collected in specially designed tubes from the subject's heel or leg. The characteristic features of dehydration are described under three headings: clinical, haematological, and chemical. Discussing the blood findings, Aldridge notes an increased red cell count, haemoglobin concentration, and haematocrit readings indicating haemoconcentration. But there are certain special features of infancy which make the interpretation of blood investigations particularly difficult. For example, the red cell count normally alters so much during the first six months of life that reference to a special series of normals is essential. Thus a red cell count of 5.5 millions per c.mm. is normal in an infant of 4 weeks of age, but represents a fair amount of dehydration in an infant aged 3 months. With haemoglobin estimations a similar difficulty arises; some degree of hypochromic anaemia may be present, and in actual practice estimations of haemoglobin alone (so useful in adults with dehydration) gave an inadequate indication of haemoconcentration. Aldridge likewise finds that with haematocrit readings the age of the infant, and hence the normal for age, have to be taken into consideration. With this sort of special standard he found a noteworthy increase above the normal in dehydrated infants as shown by this test. For the chemical features of dehydration he studied the plasma chloride and plasma protein. For the former he found figures considerably higher than normal in infants with gastro-enteritis, but the height of the plasma chloride did not necessarily vary with the degree of dehydration or with the clinical condition of the patient. This is because there are various factors concerned with the chloride content of the blood such as loss of sodium chloride in the stools in diarrhoea and renal insufficiency leading to an accumulation of chloride radicles. In pyloric stenosis the chlorides show an almost distinctive variation owing to the loss of hydrochloric acid and sodium chloride in the vomit, so that in infants with this complaint dehydration and haemoconcentration are actually associated with a low blood chloride. Plasma chloride in gastro-enteritis was on the average a little higher than in a series of normal infants, but such a rise could not be used as an index of the state of hydration in the circulating blood. Aldridge is applying these results to the solution of other parts of his investigations—namely, what fluid to use, how to give it, and when.

¹ Amer. Heart J., 1941, 21, 133.

¹ Arch. Dis. Childh., 1941, 16, 81.

DEATHS ON THE TABLE IN GENERAL PRACTICE

BY

JOHN ELAM, M.R.C.S., L.R.C.P.

The harrowing experience of a death on the operating table comes sooner or later to every anaesthetist, and it is to be regretted that the subject is not more freely and frankly discussed in medical literature and at medical meetings.

We must admit, I suppose, that anaesthetic deaths are avoidable and should be avoided. In the *British Journal of Anaesthesia* (1937, 14, 55) Dr. H. Grant-White discusses how some deaths may be avoided, and he stresses particularly the need for modification in the method of inquiry into anaesthetic deaths, which would result in the collection of valuable information. The same journal in an editorial (1938, 15, 86) suggests that the cure for anaesthetic fatalities is education and more education. We cannot, however, obtain this education unless anaesthetists will tell us about their own cases.

The following cases occurred in my own practice, and their publication will, I hope, lead to the recording of similar fatalities by others.

Illustrative Cases

Case 1.—A woman aged 32, admitted to hospital with a diagnosis of ruptured ectopic gestation. This patient was extremely ill and almost pulseless. Premedication: atropine, grain 1/100. Induction: gas-oxygen-ether; a nasal tube was then introduced into the trachea and the anaesthetic was continued with gas-and-oxygen. When the patient was being got ready for operation there was some little trouble in adjusting the table, and I assisted in getting it put right. Just at this moment the patient stopped breathing, and although oxygen was administered through the endotracheal tube and cardiac massage was adopted she died.

Case 2.—A man aged 75. Operation: removal of prostate. No premedication. I was not present in the theatre at first, because the surgeon intended to give a spinal anaesthetic himself. The patient, however, had a very marked osteo-arthritis of the spine and the needle could not be introduced. I was sent for in a hurry to administer an inhalation anaesthetic. Gas-oxygen-ether was the anaesthetic used, and all went well until the surgeon had almost removed the prostate, when the patient stopped breathing. An attempt was made to give artificial respiration, but the chest wall was absolutely rigid and artificial respiration had no effect. An endotracheal tube was introduced and oxygen given under pressure. The patient's colour did not improve, and as no pulse rate could be found cardiac massage was undertaken. After the second "squeeze" of the heart this started to beat again, and the patient's condition improved and respiration was re-established. The patient died twenty-four hours later without having regained consciousness. Post-mortem examination showed minute haemorrhages on the surface of the brain.

Case 3.—Child aged 10 with a badly crushed foot, in which gas gangrene had developed. The child was terribly ill, but at the parents' urgent request it was decided to amputate. Premedication: morphine and atropine. Anaesthetic: gas-and-oxygen. During the operation the patient's condition became worse and worse, and just as it was completed the child died.

Case 4.—Child aged 6. Intestinal obstruction—general peritonitis and appendicitis. Premedication: atropine. Anaesthetic: gas-oxygen-vinesthene. All went well until the surgeon started to stitch up the peritoneum, when the patient developed violent ether convulsions. Oxygen was administered and the patient's condition gradually improved, the convulsions passing off in about ten minutes. After the operation was completed oxygen was administered for some little time, as I feared that the convulsions might start again when the patient returned to the ward. After half an hour, as the patient's colour was good and

the general condition fair, I told the porter to fetch the trolley to take the child back to the ward. Just as the trolley was brought alongside the table the patient died.

Case 5.—Child aged 4. Acute peritonitis and appendicitis. Anaesthetic: gas-oxygen-vinesthene. All went well until the surgeon introduced his hand into the abdomen. Immediately there was a violent regurgitant vomiting of the stomach contents: it was just like pouring water out of a jug. I tried to mop out the mouth and introduce an endotracheal tube, but failed completely. The patient died in a few minutes.

Case 6.—Man aged 85. Acute retention of urine. An emergency operation for the introduction of a suprapubic tube. The patient's condition was not good and I was asked to give only gas-and-oxygen. He had, however, received no premedication and the operation presented unexpected difficulties. I pushed the gas a little too far; the patient became anoxaemic and stopped breathing. An endotracheal tube was quickly introduced and oxygen given under pressure. The patient started to breathe again and the operation was completed, but he died six hours later.

Case 7.—Girl aged 15. Acute appendicitis, first seen at 3 p.m. She was the child of most difficult parents, who insisted that she must not be removed to the nursing home until the surgeon arrived. The nursing home was next door. It was impressed on the parents that no food of any kind must be given. About five o'clock, however, the girl felt better and demanded a meal. She was given a large feed of sausages, of which we were not informed. The operation took place at seven o'clock and proved to be one of exceptional difficulty. Endotracheal gas-oxygen-ether was the anaesthetic administered. Just as the surgeon was about to stitch up the peritoneum ether convulsions developed. These, however, passed off in about ten minutes, and the patient's condition improved. The endotracheal tube was withdrawn and the patient was returned to bed. She died early the next morning without recovering consciousness.

Case 8.—Boy aged 15. Multiple injuries from road accident. Anaesthetic: gas-oxygen-vinesthene. It took a long time to repair the many injuries, and the boy's condition became worse and worse. When the operation was completed he was almost pulseless, and died twenty minutes afterwards.

Discussion

Now, I think something may be learned from this series of cases. Some of these deaths might have been avoided.

In Case 1 I should never for a moment have taken my eyes off the patient. In Case 2 I think I hurried the induction too much and should have passed the endotracheal tube immediately breathing stopped instead of trying to do artificial respiration on an impossible subject. Cases 3, 4, and 8 were beyond my powers to save. In Case 5 death should have been avoided. I should have been ready for the vomiting and should have passed the endotracheal tube and washed out the stomach in the ante-room before the patient went on to the table.

Case 6 was an example of how dangerous it is to try to do too much with gas-and-oxygen. Had a little ether or vinesthene been added to these gases a successful result to the operation might have been expected. The cause of death in Case 7 was really, I think, the sausages, and is an example of what may happen when a patient is left in the care of untrained people for some hours before operation.

To ensure the proper after-care of children who have received in-patient treatment for injuries due to enemy action, the Ministry of Health is arranging for E.M.S. hospitals to notify the Medical Branch of the Board of Education (at Branksome Dene Hotel, Bournemouth) whenever it is proposed to discharge a child casualty. The Board of Education will then get in touch with the local or welfare authorities in the area to which the child is to be sent. Circular 2427 of the Ministry of Health prescribes the form of notification, and asks hospital authorities to bring these arrangements to the notice of medical superintendents and other medical officers concerned.

INCIDENCE OF VENEREAL DISEASES

Since the outbreak of war the incidence of venereal diseases has not increased to anything like the extent that was feared. At a discussion on this subject arranged by the Medical Society for the Study of Venereal Diseases on July 26 the unanimous view was that while there had been some increase it was very slight as compared with the experience of previous wars.

The figures given showed some rise in the number of early cases of syphilis; the figures for gonorrhoea are more difficult to assess. Statistics given by the medical officer of one clinic, while they showed an increase in syphilis, showed a decrease in gonorrhoea, but the latter he attributed to the fact that many more cases of gonorrhoea are now treated outside the clinic by general practitioners. With regard to the Army, of course, it would be fallacious to compare pre-war ratios with those obtaining to-day. The pre-war Army was a professional one, consisting almost entirely of young unmarried men, whereas we have now a citizen Army which includes large numbers of men of middle age and married men, and the outlook would be depressing indeed if the incidence in the Army to-day were not much lower than in peacetime. One Army medical officer said that he thought the more favourable position was due, first, to the lower incidence of venereal diseases in the civil population, thanks to the work of the clinics; secondly, to the greater effectiveness of modern remedies; and, thirdly, to the fact that the present-day soldier is less promiscuous than his predecessors—not that he is more continent but that he distributes his favours less widely. This officer said that a very small proportion of Army infections—6%—were due to professional prostitutes, 80% to amateurs, and that the rather surprising proportion of 14% were marital in origin. A naval medical officer stated that naval ratings were now well instructed in venereal diseases, and the sailor who exposed himself recklessly under the influence of alcohol was rare. In most cases the pros and cons had been carefully thought out, and any subsequent venereal infection came as a surprise; it was due to misplaced confidence in the female partner. This officer said that over 90% of the naval cases were traceable to amateurs; in one port only 3% were traced to professional prostitutes.

Women's Services and Reception Areas

The ratio of gonorrhoea to syphilis in the Army was given as round about 8 to 1; one officer of the Royal Air Force mentioned a figure of 13 to 1. All the speakers agreed that in the women's Services the incidence of venereal diseases was negligible. A medical officer of the W.R.N.S. said that only half a dozen infections had been discovered in a personnel of 16,000. A woman medical officer of a clinic in Hertfordshire said that during the eighteen months that the clinic had been opened there had been only three women Service patients. This officer went on to say that it had been anticipated that among the evacuees from London invading Hertfordshire there might be a good deal of infection, but in fact such cases among the evacuees had been very rare, and the infections which had to be dealt with were among the native population, where there were a good many cases of old neglected syphilis, either acquired or congenital, with a few recent infections. A number of wives of Service men also came to the clinic—unsophisticated women in great distress—because their husbands, on the instruction of the regimental medical officers, had written to them saying that they (the husbands) had been discovered to be infected, and advising the wives to undergo examination. This woman officer strongly protested against leave being given to Service men while they were under treatment or observation for acute gonorrhoea. On the other hand, an R.A.F. officer urged that curtailment of leave after venereal disease had been contracted would lead to concealment, and that, having regard to the efficacy of modern treatment, the case which was in an infectious stage when it left the Service clinic was so rare that it might for practical purposes be discounted.

Control of Prostitution

Colonel L. W. Harrison, who presided over the discussion and opened it, said that a suggestion had been made that owing

to the largely urban distribution of clinics many rural cases must go untreated. If that had been so, however, syphilis would have become common in rural areas, but although those areas had now been infiltrated with Service personnel and evacuated people there was no indication whatever that they had been found to be rife with venereal disease. He gave some figures showing the incidence in England and Wales which indicated that although there had been some wartime increase the incidence was lower than it was seven years ago, and there was nothing like the position, present or prospective, which obtained in 1920.

The chief point of controversy at the meeting concerned the advisability of compulsory measures against the recalcitrant contact. A woman medical officer said that some low-class amateur prostitutes still seemed to flourish, and she urged that in wartime the activities of such antisocial persons should be forcibly restricted. It appeared, indeed, to be the majority feeling at the meeting that some measure of control was called for, but the meeting was reminded of the unfortunate experience of the last war in this respect, of the probable public outcry if there was discrimination against the female partner, and of the dangers of malicious accusation and the like, and there was not a near enough approach to unanimity to make it seem advisable to send a resolution to the Government.

AWARDS FOR GALLANTRY IN CIVIL DEFENCE

The award of the M.B.E. (Civil Division) to Dr. ISOBEL ORD MACALISTER, Civil Defence Medical Service, Wallasey, and the George Medal to Dr. PERCY GILBERT HORSBURGH, First Aid Area Commandant, A.R.P. Casualty Service, Nuneaton, is announced in a *Supplement* to the *London Gazette* dated July 25. The announcements read as follows:

Dr. MACALISTER: "During an air raid high-explosive bombs were dropped close to a first-aid post to which a large number of casualties had been brought in for treatment. Severe damage was caused, and the supplies of electricity, gas, and water were cut off. Dr. MacAlister was flung bodily across the ward by blast from the explosion. Broken glass and debris littered the floor and the building was in darkness. Dr. MacAlister, although herself injured, was not deterred from her work and, by the light of hand torches, she continued to attend to the wounded in a cool and collected manner. During this time bombs were falling near by. Dr. MacAlister's courage was an inspiration to the staff of the post and encouraged them to carry out their duties during the night."

Dr. HORSBURGH: "Throughout an air raid Dr. Horsburgh, with complete disregard of his personal safety, engaged in the rescue of persons trapped in the debris of bombed buildings and in giving medical attention to the wounded. He personally sought out and reported many of the incidents and procured the necessary assistance from the rescue and casualty services. On one occasion Dr. Horsburgh personally conducted rescue operations and crawled through the ruins of houses to rescue three people from the debris. He also succeeded, with assistance, in recovering alive a man who had been buried for more than twelve hours. Dr. Horsburgh's work was carried out in circumstances of great and continuous danger from high-explosive bombs and damaged buildings, and his gallantry and devotion to duty were an inspiration to the personnel of the local civil defence services."

T. H. Tomlinson, jun. (*Publ. Hlth. Rep.*, Wash., 1941, 56, 1073) records an outbreak of psittacosis among birds in the National Zoological Park at Washington, D.C., in January and February, 1941. Fifteen birds positive for psittacosis were discovered among sixty dying or killed during the epizootic. These consisted of twelve parrots, both South American and African, one finch, and two African doves. Two of the eight bird-house employees developed clinical psittacosis and recovered. No cases were reported among the general population.

Correspondence

Depressive States in the Soldier

SIR.—I have read with interest Captain R. F. Tredgold's article (July 26, p. 109) upon depressive states in the soldier. It appears that such reactions may prove to be the most typical psychological disturbance of this war, just as the anxiety hysterics were of the last. If this is so, we may gain valuable information concerning the exogenesis of depression. I myself am not in a position effectively to speculate about the different psychological reactions to the two wars, but it would seem plausible that the lack of any real possibility of retreat from the front line to safety in this war may be an important factor.

It seemed to me unfortunate that in a clinical study of depression of the type here described the old boggy of the neurosis-versus-psychosis argument should have been allowed to occupy so much space. This argument as it is generally formulated is particularly sterile and time-wasting, leading as it does away from the accurate study of the individual case towards what Meyer has termed "the arch sin of modern psychiatry—that is, blinding oneself to the specific facts of the case at hand by asking at once, 'Is it a major psychosis?' " I do not think that Captain Tredgold has fallen into this error in his own clinical presentation, but in making reference to a recent paper of mine (*J. ment. Sci.*, July, 1940) he attributes to me, directly or by inference, views which I emphatically do not hold. Thus he suggests that I make a sharp distinction based upon one criterion between neurosis and psychosis, each again subdivided into anxiety and depressive states. He goes on to state that its use (that is, of such a distinction) was justified (by the authorities quoted, including myself) in that it indicated also a complete distinction of treatment and prognosis. In the paper under review I put forward the view that a distinction between psychosis and neurosis based upon the relationship with external reality of the patient's symptoms was useful and valid. I expressly stated that such a distinction could not provide a sharp dividing-line between neurosis and psychosis, and that differences in treatment, though important, could be exaggerated. Lastly, I mentioned my inability to differentiate between anxiety and depressive states.

In my opinion much of the controversy which has arisen over this matter has been due to the adoption of an absolutist standpoint by one or other party. It is as wrong to assume a sharp cleavage between the two conditions as it is to deny the distinction altogether. Seldom in human biology are such clear-cut differentiations to be found, but this is the poorest possible argument for the abandonment of the conception of the affective neurosis. There is a world of practical difference between the normal individual who is mourning the death of a close relative and the manic-depressive in his fifth or sixth attack of depression, the aetiological factors of which may escape a careful psychiatric history taking. Yet a graded series of cases could certainly be produced running from one end of the scale to the other: from what one may term the normal through the neurotic to the psychotic. At one point in the series it would be possible to say, "This patient's mood change is related in an orderly manner to the logical problems of his environment"; at another point this would no longer be true: between the two would be found cases where a differentiation would be a waste of time.

To a psycho-analyst, perhaps to a biochemist, searching the cases for some special facts the whole grading might be irrelevant, but to the clinician it remains of great practical importance. I do not think that Captain Tredgold's paper, concerned as it is with the admissions to a hospital for psychotics, throws much light upon this particular problem.—I am, etc.

C. H. ROGERSON,
Medical Director.

Cassel Hospital, July 30.

SIR.—Captain R. F. Tredgold's topical paper (July 26, p. 109) stirs up interesting questions which merit thrashing out.

1. Does a psychosis differ in any essential feature from a psychoneurosis, and, if so, in what? Those who have had experience in closely studying mentally afflicted patients are. I

think, mostly agreed that there is no hard-and-fast line between the two disorders, but I would suggest that a factor of crucial importance running through the series is the degree and type of "insight" present at any given moment. The psychotic individual has no insight of either type. Once he acquires intellectual insight he, although possibly disordered in mind (a borderline case, perhaps), is not insane. Intellectual insight, however, is not enough, and a patient only recedes from the borderline in proportion as he gains "affective" insight. In the early stages of the process he is a psychoneurotic, but approaches more and more to that scientific abstraction which we call "the normal" as his affective insight increases.

2. It would seem a truism to say, as does Captain Tredgold, that "any state of depression is the result of the interaction of external factors upon a personality." Often, however, the so-called external factors are fictitious. A man most dreads what he imagines may happen, not what actually has happened or is happening. Of course, as an external world does exist, some scapegoat can always be found therein to carry what Captain Tredgold labels "external factors."

3. As regards treatment by "prolonged narcosis," this has come to seem to the writer, whose experience recently has been so largely with those neurotics who resort to alcohol, to be nothing other than the medical equivalent of a good "bout." As argued in a paper entitled "Paraldehyde Addiction" (*Brit. J. Ineb.*, 1934, 31, No. 3), many alcoholists resort to paraldehyde in an attempt to cure alcoholism, which itself resulted from an attempt to cure depression. Truly we can learn from our patients. We might learn what to avoid as well as when to copy. "Bouts" of narcotic substances are not good for shirking neurotics, who have in all probability self-administered that sort of medicine before ever they had to see a doctor.—I am, etc.

Caldecote, July 27.

A. E. CARVER.

Functional Dyspepsia

SIR.—In his paper on the incidence of dyspepsia in a military hospital (July 19, p. 78) Major J. H. Hutchison remarks upon the low incidence of neurosis in his cases as contrasted with the "remarkably high proportion" of cases quoted by Saffley (11.2%). He then mentions that in his in-patient group there were 28.4%, and in his out-patient group 43.6%, of cases classifiable as functional dyspepsia, the chief cause of which he concludes to be worry and anxiety, although he does not regard these men as cases of anxiety neurosis.

Attention is not drawn, however, to the fact that in Saffley's group the diagnosis of anxiety neurosis was made by psychiatrists, to whom the majority of cases showing no radiological abnormality were sent. Thus most of Major Hutchison's groups of functional dyspepsias should have been investigated psychiatrically for a valid comparison; and, from what he states, a high proportion of these soldiers would have been labelled "anxiety neurotics" by a psychiatrist. He makes the diagnosis of psychoneurosis in a few cases showing gross emotional disturbances—quite uncommon features of the average anxiety neurosis—then rejects the diagnosis of anxiety neurosis in the functional dyspepsia groups because there was an "adequate cause" for their worry, which was not of "pathological intensity."

There is surely some confusion here. The "adequate causes" are factors operating on all soldiers, so there arises the problem of the predisposing factor. Major Hutchison answers this by introducing the vague concept of an "autonomic nervous system which is constitutionally somewhat precariously balanced." But is this unsatisfactory explanation necessary? Men who worry to such a degree as to produce dyspepsia "over the fate of relatives in bombed areas or in the unfamiliar surroundings produced by evacuation, or over the uncertainty of future movements," are obviously prone to abnormal anxiety. The author does not appear to have investigated the previous psychological histories of these men. Consequently he misses what, from our experience, would have been their outstanding feature—namely, that they are chronic worriers, or, in other words, anxiety neurotics. Naturally more anxiety is aroused when the external situation is more exacting, but the essential point is that the predisposition is a personality factor which can be understood in psychological terms.

Functional dyspepsia is thus a manifestation of an anxiety neurosis since it is a functional nervous condition produced by anxiety—and anxiety neurosis seems to us a preferable term since it indicates the aetiology and treatment.—We are, etc.,

July 26.

H. S. GAUSSEN.

J. D. SUTHERLAND.

Hyperventilation Tetany in Tropical Climates

SIR,—Surgeon Lieutenant-Commander Forbes Guild's letter (July 26, p. 138) serves the very useful purpose of emphasizing the commonness of "fireman's cramp" under certain conditions of high temperature. There is, however, a clear differentiation between cramp and tetany. The experimental work which I quoted in my short paper showed that true tetany has been produced as a result of prolonged exposure to a high temperature in a hot bath. The conditions in a hot bath are simulated in nature only when a high temperature coincides with a high humidity, and it is in such conditions that the accessory cooling mechanism of over-breathing is called into action. Even when the required conditions prevail, only those persons who are sensitive to hyperventilation will develop tetany. The sensitivity of my patient was proved beyond all doubt.

"Fireman's cramp" can affect anyone who perspires freely over a long period, and, so far as I am aware, does not depend upon any personal idiosyncrasy. My patient, who was a very intelligent man, was quite certain that the tetany produced by over-breathing was identical in every respect with the attacks which he had had in tropical climates. I feel confident that a proportion of the cases which are loosely called "fireman's cramp" are, in fact, manifestations of tetany.—I am, etc.,

London, W.1, July 29.

ALEC WINGFIELD.

Anatomical Nomenclature

SIR,—Anatomy is the foundation of medicine. Each of us should have a profound knowledge of it. The memorizing of thousands of names of structures, as well as remembering their relative positions, throws a great strain upon memory and imagination even when each structure has one name. The old nomenclature, exclusively used before 1895, was heterogeneous, as it included the names of anatomists, surgeons, and mythological characters.

In 1895 the *Basle Nomina Anatomica*—an attempt to improve the old nomenclature—was published. This contained a great many new names, replacing names in the old nomenclature. Many of these new names were better than the old names; many others, however, had no advantage over the old ones; while still others were definitely worse. The effect of the publication of the *Basle nomenclature* upon the teaching of anatomy in this country was appalling. Most universities and medical schools taught the old nomenclature, and many of them still do so; others taught the *Basle* names; and most doctors had some knowledge of the *Basle* names, but kept to the old nomenclature. In 1909 *Gray's Anatomy* adopted the *Basle* names, and after this time books on surgical anatomy and anatomy were written in the old nomenclature with the *Basle* names in brackets; while a few were written in the *Basle* nomenclature with the old nomenclature in brackets. Thomson and Miles's *Manual of Surgery* adopted the *Basle* names, but nearly all surgical books were, and still are, written in the old nomenclature.

This unsatisfactory state of things continued till 1933, when the Anatomical Society of Great Britain and Ireland published the *Revised Basle Nomina Anatomica*, or Birmingham notation. This retains the best names in the two previous notations, while all the new names have been chosen carefully and are generally self-explanatory. It is a simple matter for anyone knowing the old notation to master the Birmingham notation.

It is an encouraging fact that the last edition of *Gray's Anatomy, Descriptive and Applied*, and of *Cunningham's Textbook of Anatomy* are written in the Birmingham notation with the *Basle* names in brackets.

If a small book containing the old nomenclature, the *Basle* nomenclature, and the Birmingham notation were sent to every medical man, and if the Birmingham notation were taught in all universities and medical schools, the present intolerable muddle would end in a year or two. At the present time a student

buying the newest books on surgery, anatomy, and surgical anatomy will probably get *The Operations of Surgery*, 1937, by Rowlands and Turner, written in the old notation; Cunningham's or Gray's textbook of anatomy, 1937 and 1938 respectively, both written in the Birmingham notation; and Callander's *Surgical Anatomy*, 1939, written in the *Basle* nomenclature. In studying hernia he will read of the external and internal abdominal rings and of Gimbernat's ligament in the surgical book; the anatomy book will describe carefully the superficial inguinal ring, the deep inguinal ring, and the pectineal part of the inguinal ligament; and, to help him still further, the surgical anatomy book will call the same structures the subcutaneous inguinal ring, the abdominal inguinal ring, and the lacunar ligament. This sort of thing continues right through each book. These are most excellent books; if the surgical and surgical anatomy ones were written in the Birmingham notation, as Gray's and Cunningham's textbooks are, it would be a pleasure to read them, making one supplement the other. As it is, it is maddening even with the help of bracketed words.

If the Birmingham notation were alone used thousands of useless names of structures would be discarded, and every student of anatomy would get rid of a heavy incubus.—I am, etc.,

Bridgwater, Somerset, July 17.

JOHN H. AYTOUN, M.D., C.M.

Insulin and Diabetic Coma

SIR,—On the subject of diabetic coma Dr. Leslie Cole (July 26, p. 137) states: "With regard to insulin dosage it is very difficult to lay down rules and perhaps it is unwise to try." The following was worked out at the Montreal General Hospital, and when it was explained to me they added that it was fool-proof. The degree of coma varies from mild to profound—in profound there would not be the slightest response to a pin-prick.

The plain insulin is given intravenously, immediately followed by the same amount subcutaneously, and that in turn followed by double the amount of the protamine-zinc-insulin subcutaneously. The result of the intravenous insulin is that the patient snaps out of the coma. The subcutaneous insulin comes into play a little later, while the protamine-zinc-insulin comes into action still later and has a prolonged action. The second half of this treatment follows when the patient comes to; it consists of 20 grammes of carbohydrate every thirty minutes in the form of orange juice. In practice it simply meant that the patient had the juice of two oranges with 2 oz. of sugar every thirty minutes. A pitcher of orange juice was made up and the patient took the required amount every half-hour for a day or two until his diet and insulin were worked out. Since oranges are unobtainable the 20 grammes of carbohydrate every thirty minutes could be made up of something else, but from the results shown me I would suggest the method be given a trial.

Degree of Coma	Plain Insulin		Protamine-zinc-Insulin: Subcutaneous
	Intravenous	Subcutaneous	
Mild	25 units	25 units	50 units
Moderate ..	50 "	50 "	100 "
Severe	75 "	75 "	150 "
Profound ..	100 "	100 "	200 "

—I am, etc.,

Clapham, S.W.4, July 26.

A. P. MAGONET, M.D., C.M.

Brucella abortus Infection responds to Sulphapyridine

SIR,—When a person is infected with *Brucella abortus* he is condemned, as a rule, to a prolonged illness which may not be diagnosed for some time and for which there has been no specific treatment. The subject of this note has been more fortunate than the average, and the case demonstrated the potency of our newest bactericide.

An enthusiastic Home Guard aged 42 took part in a prolonged exercise on Sunday, July 6: the sun was very hot and he had no protection but a "footling forage cap." On that evening he had a headache, fever, and was sick. When he was seen the following day it was decided that he had "sun fever," and was kept in bed on a liquid diet, with salicylates for relief of headache. After a week in bed his headaches had subsided suffi-

ciently to allow him to read; during the greater part of the day he was comfortable, but by 7 p.m. (new Summer Time) he was very feverish and miserable. During each night he sweated profusely and drenched his bed-clothes; by morning he was subnormal and fairly comfortable.

On July 16 he was running an evening temperature of 103°F , dropping to 98°F by morning; he was constipated, but otherwise felt moderately well. A statement that he felt rather as he had done when he suffered from paratyphoid B in France during 1918 led me to take his blood for agglutination tests. At the same time he was given sulphapyridine, a total of six grammes being given within forty-eight hours. His temperature came down and remained down. On July 18 the report came back that his serum agglutinated *Br. abortus* (Bang) in a dilution of 1 in 500. On July 28 he is well and free from fever.

On inquiries being made into possible sources of infection the patient said that he never drank a glass of milk, which he took in his tea and, occasionally, with cereals. His milk came in a bottle labelled "pasteurized" from a good dairy. If this patient's response to sulphapyridine is not a mere coincidence we may congratulate ourselves upon having one more target for our new weapon.

My thanks are due to Dr. Cooper of the Dorset County Laboratory for the tests of agglutination of the patient's serum.—I am, etc.,

Sherborne, July 28.

J. WHITTINGDALE.

Communal Feeding in Schools

SIR.—The very interesting article by a correspondent on communal feeding in schools (July 26, p. 133) revives an old controversy which is now of national importance. Under the stress of war conditions school feeding has become a general necessity, and all would agree that it should be made an opportunity for teaching the value of good cooking, the wise selection of foods, and a civilized manner of life. But I hope the medical profession will think twice before supporting a demand for communal meals as a normal thing for all children in peacetime. It is a very old tradition that regards the taking of meals together as a strong binding element in family life. It is right and natural that husband and children should look to the mother as the dispenser of food, who satisfies hunger, and provides welcome "treats" on festive occasions. Probably more family discipline and parental authority depend on this than is commonly supposed. In discussing this matter over many years with working-class parents I have often heard this view put forward.

Your correspondent evidently feels that the working-class woman is incapable of providing or even learning to provide healthy and wholesome food for her children. I do not believe this is true to-day, as the good health and physique of the nation show. Working-class women do in fact manage to rear sturdy families under conditions which would defeat many school doctors. Surely our aim should be to help her in this task, and not to take it out of her hands, as would certainly be the ultimate effect of your correspondent's proposals. Man does not live by vitamins alone. I would rather see a nation of children brought up to take their food at humble tables presided over by "dad" and "mum" than a nation reared on balanced meals in "refined" restaurants.—I am, etc.,

July 29.

LETTIE FAIRFIELD.

Thirst at Sea

SIR.—The annotation on thirst at sea (July 26, p. 126) interested me greatly in view of my use of hypertonic saline by the bowel in cholera, although only up to a strength of 1.2%—less than half that of sea-water—and in quantities of 10 to 20 oz. every four hours during collapse. I certainly never saw any harm from it. Although in such a disease as cholera it was not possible to say if it had any effect on the loss of fluid from the bowel, I have no doubt much of the fluid was absorbed. Later, in view of the uncertainty whether any of the salt was absorbed, I only advised the use of an isotonic alkaline saline by the rectum, and a hypertonic one intravenously. I note, however, that Martindale's *Extra Pharmacopoeia* (18th edition, p. 745) advises artificial sea-water containing 2.7% sodium chloride as an enema without any reference being given. Ex-

periments appear to be required to decide if rectal injections of salt water permit of water being absorbed into the system.

I would also suggest an inquiry to determine if the chlorides could be precipitated from sea-water by silver nitrate, or other chemical that will leave a potable fluid after filtering off the precipitated silver salt. If so, the required apparatus might be supplied packed for fixing into ships' boats. Silver salts are expensive, but the precipitates might be saved. Doubtless the Medical Research Council can arrange for an early investigation of these suggestions.—I am, etc.,

London, Aug. 1.

LEONARD ROGERS.

SIR.—Pending a decision, probably unfavourable, on the question of the benefits of the rectal injection of sea-water, would it not be advantageous to determine to what extent fresh water can be diluted with sea water before becoming undrinkable? Since normal saline solution, isotonic with body fluids, contains approximately 1% of sodium chloride, and sea-water about 3%, this suggests that a mixture of two parts of fresh water to one of salt water should be possible. If this were so, then what small supplies of fresh water were available could be eked out considerably. In addition, as is well known, a slightly salted water is, in cases where loss by perspiration is heavy, a better drink than fresh.—I am, etc.,

Chester, July 29.

V. BISKE.

Sulphapyridine in Suppurative Otitis Media

SIR.—I have been much interested in the article by Dr. J. B. Jessiman (March 15, p. 399) on the use of sulphapyridine in suppurative otitis media, and think that the following cases may be of interest in this respect.

An Arab girl aged 12 was admitted to hospital suffering from right lobar pneumonia. She had previously attended for over seven years at irregular intervals with a chronic otitis media, with mastoid involvement, for which a cortical mastoid operation had been performed at the age of about 7. In spite of this an obstinate aural discharge continued, with periodical exacerbations, and no apparent response to local and general treatment. On admission she was extremely ill, with high pyrexia and typical chest signs. There was also purulent aural discharge. She was at once put on to sulphapyridine and local aural treatment; the response was immediate and the child made a rapid and uninterrupted recovery. There was still some discharge from the ear when she left hospital, and she was instructed to attend for treatment. This she failed to do, and was lost sight of for a year, after which she returned to hospital as escort to a friend. She stated that since her discharge from hospital the ear had been dry. On examination a normal passage free from pus and a scarred and sclerosed drum were found. Unfortunately smears of aural discharge were not taken on her admission, all attention being concentrated on her chest condition, but there seems very little doubt that the sulphapyridine given for this was the determining factor in clearing up this previously resistant trouble.

Following this two cases of frank otitis media were treated as follows: (1) Indian boy aged 8 months, twenty-four hours history of fretfulness and pain in the ear. Temperature 101°F . drum of the left ear inflamed and bulging. Sulphapyridine 1/4 tablet given four-hourly and local treatment; twenty-four hours later there was no pain or fever, the child had slept well and the drum, though still slightly injected, was no longer bulging. In three days the child was well. (2) Arab child aged 2 years had had a very septic mouth, with gross dental caries, and necrosis of a large part of the left maxilla, which was removed as a sequestrum at operation. One month later he developed left otitis media, but did not attend hospital until there had been a purulent aural discharge for several days. Local treatment was given with sulphapyridine by the mouth. The condition cleared completely in one week.

I should like, in this connexion, to note that in practically all cases of otitis media in children I have found a positive malaria blood film. I should be interested to know if other practitioners in the Tropics have found this, as in view of the frequency of staphylococcal furunculosis as a sequel to malaria there might be a definite connexion.—I am, etc.,

V. RUTH SHARP.

Pemba, Zanzibar, May 28.

Woman Medical Officer, Chale Chake.

Water-borne Outbreak of Paratyphoid B

SIR,—There has recently occurred in this district a small localized outbreak of paratyphoid B fever due to the consumption of a contaminated water supply.

The evidence collected has proved fairly conclusively that the outbreak—twenty cases out of a "population-at-risk" of twenty-eight—was due to the consumption of water from a pump situated in the old type of court and supplying seven houses only. *Bact. paratyphosum* B has been isolated from the water supply during the course of the investigations by three members of the Emergency Public Health Laboratory Service—namely, Prof. Wilson, Oxford, Dr. Knox, Leicester, Dr. Gell, Northampton; and, furthermore, the organism isolated has been shown to be similar culturally and serologically to the organism isolated from specimens of faeces and urine from the patients concerned. This small outbreak is of particular significance, as there is no evidence in the medical literature of an outbreak of paratyphoid fever being caused through the consumption of a contaminated water supply.

I hope very soon to be able to publish a detailed report of the investigations carried out in this very interesting and unique outbreak.—I am, etc.,

Northampton, Aug. 1.

DAVID J. JONES, M.B., B.Ch., D.P.H.

Protecting Eye Shields

SIR,—May I support Mr. Harrison Butler's plea (July 19, p. 101) for issue of the Cruise vizor? As a practical rifle shot there is no question that there is no difficulty in using the rifle when the vizor is down; in fact it acts as an aperture sight and would help the myope. I cannot understand what there is to experiment on in it. It does protect, it does not obstruct, and it is cheap.—I am, etc.,

London, E.C.4, July 30.

C. WYNN WIRGMAN.

* * We understand that as a result of careful and exhaustive tests it was decided not to recommend the issue of the vizor to the Forces.—Ed., *B.M.J.*

Notification of Deficiency Diseases

SIR,—The two Ministries responsible for the maintenance of adequate nutrition of the population under war conditions are at present largely guided by theoretical considerations and lack the means whereby the success or failure of their work can be subjected to any but the roughest of practical tests. The only checks on the adequacy of the national dietary now available are, first, the schools' medical reports; secondly, the incidence of notifiable infectious diseases; and, thirdly, reports of death from starvation collected by way of the coroners' courts. Of these, only the incidence of actual starvation is directly linked to the question of nutrition.

The net is of too wide a mesh to discover a dangerous prevalence of a deficiency disease or subclinical avitaminosis of far wider extent. I believe that owing to the lateness of the spring vegetable season and the scarcity of imported citrus fruits there has been a considerable increase in the incidence of scurvy during last spring and the early summer, and that this could have been avoided had the authorities been aware in good time of the danger.

May I therefore use your columns to make the suggestion that, for the duration of the war at least, deficiency diseases should be made compulsorily notifiable to the Ministry of Health or to the local authority, as are certain infectious diseases? By this means the signals of danger could be received in time enough to prevent a possible outbreak of a deficiency disease by suitable publicity and the distribution of concentrated vitamins.—I am, etc.,

London, N.19, July 27.

HUBERT PEARSON.

The National Loaf

SIR,—If Dr. J. Harris wrote only to the *British Medical Journal* his letter could remain unanswered, it is so barren of real argument. But someone of the same name is both disparaging the national loaf in public meetings and gaining local Press publicity for his views, and that is a very different matter.

Dr. Harris's letter is full of half-truths which are unlikely to deceive the medical reader, but I tremble to think of their effect

on the layman. He says the loaf is to be fortified by calcium alone—he must know that the national wholemeal loaf has five times as much iron, twice as much fat, many times as much vitamins, and the unknown remainder present in natural whole grain but absent in the 73% extractions. He calls the calcium "chalk." Is it not a fact that calcium is added in the form of phosphate? He wants us to have our necessary calcium in milk. Is he unaware that the pre-war consumption of milk was one-fifth of a pint per day per head, and that even then two and a half million more milking cows were necessary to provide the optimum daily pint per head?

Of course we know calcium is ineffective without vitamin D, but is not this supplied with the margarine? A layman could only think that Dr. Harris says the calcium in the national loaf is ineffective. Again, he says there is not a scintilla of evidence that there is a calcium deficiency. Has calcium nothing to do with teeth? Can he produce twelve adults in working-class Liverpool with sound teeth? They have not come to North Wales as evacuees, and if white bread is not responsible for their languid pallor then it is up to Dr. Harris and his colleagues with the advantage of local knowledge to tell us what is.—I am, etc.,

Caernarvon, July 26.

GRIFFITH EVANS.

Suture of Cauda Equina

SIR,—I should be very glad to know of any successful case of suture of the cauda equina. In the official history of the last war it is stated that not a single example was met with, yet most textbooks comment on its feasibility. If, therefore, through the medium of your *Journal* you are able to put me in touch with anyone who has sutured one or more elements of the cauda equina with success I shall be much obliged to you.—I am, etc.,

LAMBERT ROGERS.

c/o Medical Department, Admiralty, S.W.1, July 30.

Sydenham and the Royal College of Physicians

SIR,—Your reviewer of Prof. McDowall's *Biological Introduction to Psychology* (July 26, p. 121) states that Sydenham never became a Fellow of the Royal College of Physicians "probably owing to professional jealousies." This is not correct, as demonstrated by the documents of the College and as stated in the *Life of Thomas Sydenham* by J. F. Payne, a late Harveian librarian of the College and one of our greatest scholar physicians: Sydenham did not become a Fellow of the College because up to an advanced age he had not a doctor's degree and thus, according to the by-laws of the College at that time, was not eligible for the Fellowship. Sydenham obtained a doctor's degree only in 1676, thirteen years before his death, but even then did not apply for admission, as there is no record of any such application in the archives of the College. It is quite possible that at his age he did not feel inclined to present himself at an examination, or possibly the necessities of his practice prevented him from taking an active part in the affairs of the College, which all Fellows at that time were under obligation to do.

There is no question of professional jealousy in all this. On the contrary, according to contemporary documents Sydenham was often praised and given honour by the College.—I am, etc.,

London, W.1, July 28.

A. P. CAWADIAS.

The Services**NAVAL AWARD AND MENTION IN DISPATCHES**

Surgeon Lieut. G. L. Ward, R.N.V.R., has been awarded the D.S.C. for courage, skill, and devotion to duty in operations off the Libyan coast, and Temporary Surgeon Lieut. I. B. Hopkins, R.N.V.R., has been mentioned in dispatches for seamanship, resource, and devotion to duty in rescuing survivors from a merchantman which was being attacked by enemy aircraft.

CASUALTIES IN THE MEDICAL SERVICES**ROYAL NAVY****Wounded**

Surgeon Lieut. Charles John Roberts, R.N.

ROYAL ARMY MEDICAL CORPS**Missing**

Major Patrick David Clifford Kinmont.

Obituary

A. J. CLARK, M.D., F.R.C.P., F.R.S.

Professor of Materia Medica, University of Edinburgh

We announce with deep regret that Prof. A. J. Clark died in Edinburgh on the morning of July 30. He had been pharmacological adviser to the *British Medical Journal* for twenty years, and gave invaluable help at all times to the Editorial Department and to the Journal Committee. He visited London quite recently for a meeting of the Medical Research Council and seemed in his usual health, but he fell ill on July 26 and was operated upon next day.

Alfred Joseph Clark was born at Northover, Glastonbury, on August 19, 1885. He came of Quaker stock, and his father, Francis Joseph Clark, was the head of a long-established manufacturing firm at Street, Somerset.



From Bootham School, York, he went up to King's College, Cambridge, and gained honours in both parts of the Natural Sciences Tripos, taking his B.A. in 1907. Under the influence of the late W. E. Dixon his physiological studies at Cambridge led on to experimental pharmacology, and at St. Bartholomew's Hospital he was clearly marked down for a scientific career. Having

graduated in medicine in 1910, he held the posts of house-surgeon at Addenbrooke's and house-physician at Bart's, and took the M.R.C.P. and D.P.H. He then served in turn as demonstrator of pharmacology at King's College, London, assistant pharmacologist at University College, and lecturer on pharmacology at Guy's Hospital. In 1914 he took his Cambridge M.D., and after the war broke out entered the R.A.M.C. with a temporary commission, and received the Military Cross for gallantry and devotion to duty. When the war was over he sailed to South Africa to take up the chair of pharmacology at Capetown University, but after a short time there he was recalled to University College to fill the professorship for which he had seemed to be destined. After several happy and successful years of teaching and research in London he was appointed in 1926 to the vacant chair of materia medica in the University of Edinburgh.

Prof. Clark was elected F.R.C.P. in 1921, F.R.S. in 1927, and F.R.S. in 1931. He was a member of the Medical Research Council in 1934-8, and again from 1939 to the time of his death. He was also an active member of the Physiological Society, and served on various committees and subcommittees concerned with the actions and uses of drugs and other therapeutic substances. Besides many papers and addresses published in these columns and elsewhere he wrote four books: *Applied Pharmacology*, which was first published in 1923 and reached a seventh edition last year; *Comparative Physiology of the Heart* (1927); *Mode of Action of Drugs on Cells* (1923); and *General Pharmacology* (1938). He liked wandering down bypaths of medicine, and made a special study of the history of anaesthetics and the long tale of quackery through the ages.

The British Medical Association awarded him a research Fellowship in 1911 and 1912, and scientific grants in 1914 and 1919. He was vice-president of the Section of Thera-

peutics and Pharmacology at the Edinburgh Meeting of the Association in 1927 and at the Centenary Meeting in 1932, and was president of the Section of Pharmacology, Therapeutics, and Anaesthetics at Plymouth in 1938. He often visited Tavistock Square, and from 1936 onwards took part in the conferences between representatives of the Science Committee of the B.M.A. and the Pharmaceutical Society.

Sir HENRY DALE, P.R.S., writes:

British pharmacology suffers a new and heavy bereavement in the death of A. J. Clark at the early age of 56 years. The news comes as a shock to a wide circle of friends, mainly workers in the medical sciences, who knew the stimulating quality of his mind and his fine, staunch character. The natural inclination of Clark's interest appeared to be to the study of physiological reactions of a fundamental and generalized type. To this study pharmacology could make its special contribution in showing how drugs modify such reactions. He naturally chose the simplest available physiological schemes for these studies, making use largely of tissues which would survive and remain active in prolonged isolation, such as the frog's heart. To understand the action of drugs on the latter he needed and sought more exact knowledge of its contractile metabolism, the source of its energy, and the conditions determining its normal rhythm. Work on the heart gave scope for another of Clark's interests—that of a naturalist in the varying behaviour and dimensions of such an organ over a wide range of species. He recorded these explorations in a book on the *Comparative Physiology of the Heart*, in a Cambridge series. In this can be found examples of Clark's humorous delight in exhibiting the results of odd calculations and quantitative comparisons. One gets the impression that with a slight change of circumstances or opportunity Clark might easily have found his field of research in experimental zoology. His attention, however, never wandered far from his principal aim—of interpreting the actions of drugs in more fundamental terms. His speculations and researches in this field over many years were embodied in the book on *The Mode of Action of Drugs on Cells*, which brought him wide reputation in many countries, and through which his work is likely to have its most permanent effect on the progress of scientific thought and experiment.

There was, however, another and much more practical side to Clark's interest in pharmacology which must have made him a specially stimulating teacher. This is shown in his *Applied Pharmacology*, in several editions of which, from 1923 onwards, he endeavoured, in his own words, "to bridge the gap between pharmacology and therapeutics," "therapeutics" meaning the methods in actual use or in near prospect at the dates of the successive editions. It included not merely the use of old-fashioned drugs or of drugs in the ordinary sense, but the rapidly developing use of hormones, vitamins, and even radiations. This book was a really remarkable achievement, and showed the range and versatility of one whose own researches had dealt mainly with fundamental and academic problems. The section on "Systems of Medicine" in the introduction to the later editions illustrates Clark's effective use of arithmetic for the purposes of a freakish humour. Hahnemann's recommended dilution of a drug for homeopathic medication, he tells us, "works out at a content of 1 molecule of drug in a sphere with a circumference equal to the orbit of Neptune." Clark found another opportunity for forceful play with this weapon of quantitative humour in his popular tract on *Patent Medicines*, in the "Fact" series. It is sad indeed to think that he will not be there to see the effect of legislation now before Parliament, of a kind for which his brilliant and devastating little book made such an effective plea.

In all these and in many other directions we shall sadly miss one of the brightest and most enterprising spirits from British pharmacology, and a gallant comrade from the ranks of medical research workers.

Sir EDWARD MELLANBY, F.R.S., secretary of the Medical Research Council, writes:

The sudden and unexpected death of Prof. A. J. Clark at the height of his powers is a loss to medical science which can hardly be exaggerated. I wish here to write a few words of appreciation of his work for the Medical Research Council.

He first became a member of the Council in 1934, and his period of office ended in 1938. After an interval of only one year he had the unusual experience of being re-elected to membership, a position he held at the time of his death. Thus Clark belonged to a small group of men, including F. G. Hopkins, C. S. Sherrington, T. R. Elliott, and E. D. Adrian, who have served for more than one period of four years as members of the Medical Research Council. This is just one measure of the Council's appreciation of his wide knowledge of medical science, his wisdom, his reasonableness, and his willingness and ability to help in this important public work.

By his education and natural ability Clark was exceptionally fitted to play an important part in the organization and initiation of medical research by the State. He belonged to the diminishing group of the Cambridge physiology school who were trained to study and appreciate the whole field of experimental medical science. While not necessarily specialists in any one branch, these men learned the fundamentals of experimental physiology, pharmacology, and pathology, and knew when to seek higher authority and call upon the expert for assistance in any particular direction. This did not prevent many of them from becoming leaders in particular lines of study, but never at the expense of their wider outlook. Clark's later experience at St. Bartholomew's Hospital as a medical student and house-physician rounded off his university training and served to extend his knowledge and interest to the science of disease. He succeeded in maintaining his scientific outlook on all biological phenomena, whether in the laboratory or at the bedside. It would indeed have been difficult to find anybody with wider knowledge and greater interest in all branches of medical science than Clark. In his own research his natural instincts often led him to study the more abstruse and fundamental points in biological science, especially the action of chemical agents on living cells, and yet few men have played a greater part in bringing knowledge gained in the laboratory to the practical use of medicine. It was this dual outlook—his interest in the fundamental academic science of biology and his intense appreciation of the need to interweave the work of the laboratory and the ward—which placed Clark in a unique position for helping organized medical research.

An editorial friend writes:

"A. J." was a kind, sincere, and truly modest man, devoted to the science of medicine, and ever anxious to put the laboratory into the service of therapeutics. He took a broad view of pharmacology and its future, and read diligently to keep himself abreast of new work in that rapidly growing field. There was nothing "professorial" in his manner, and indeed at times he seemed a little confused in speech, but he was a good professor, approachable, eager to learn as well as to teach, and radiating love of his subject. Honest himself, through and through, he expected no less of others; towards mere weakness or ignorance he was humorously tolerant. We have lost an understanding friend, a loyal colleague, and a trusted expert adviser.

[Photograph reproduced by Press Portrait Bureau]

Medical Notes in Parliament

Medicine and Pharmacy Bill in the Lords

In the House of Lords on July 29, on the second reading of the Pharmacy and Medicines Bill, Viscount PLUMER moved an amendment urging that the House should not proceed at present with a Bill which proposed to grant a trading privilege to pharmaceutical chemists in the sale of medicines and to deprive herbalists of their existing right to sell many herbal medicines.

Lord ADDISON urged that there was no question of haste about the Bill, which had been long wished for, apart from any professional interest, by sensible people.

Lord HORDER agreed with Lord Addison that legislation on the matter was overdue. Two important principles were established by the Bill. First, there was the principle of qualitative and quantitative disclosure. He could not help feeling that it was on the quantitative demand for disclosure that the herbalists had struck. The art and science of healing advanced very slowly, but they did advance. The advance had been made in

the direction of searching out what was the essential ingredient that did good in the various plants and minerals that Nature had provided.

The advances in the treatment of disease in the last decade of this century had been in the direction of exact formulation of essential ingredients.

The second great principle which the Bill established, not for the first time but more extensively, was control over advertisements. The "fear advertisement" was highly dangerous. There was a crying need still for more control over a form of advertisement which was not dealt with in the present Bill. He had been given an assurance that the Government were prepared to inquire into the working of the Bill after a reasonable time had elapsed. That, with the statements of the Minister of Health in the House of Commons, might be regarded as a pledge that the Government would make at least a full survey of the whole position in the near future. The Bill was a step in the right direction and would conduce to the common health.

Lord Plumer withdrew his amendment.

After further debate, the Lord Chancellor said he agreed with Lord Horder that the Bill went in the direction of reform on two or three matters where reform was very much overdue.

The Bill was read a second time.

Mr. Churchill on Work, Rest, and Diet

During his speech in the House of Commons on the production of war materials, on July 29, Mr. CHURCHILL said that in the three months after Dunkirk our people worked to the utmost of their moral, mental, and physical strength. Men fell exhausted at their lathes, and working men and women did not take their clothes off for a week at a time. Meals, rest, and relaxation all faded from their minds, and they just carried on to the utmost limit of their strength. There were one or two reasons why we could not wholly recapture and maintain indefinitely the intense personal efforts of a year ago. We should win the war largely by staying power. For that purpose there must be reasonable minimum holidays for the masses of the workers, one day in seven of rest as a general rule, and, subject to coping with bottle-necks and with few emergencies which knew no law, a few breaks, and, where possible, one week's holiday a year. Allowances must be made for the very severe change in the diet of the heavy manual worker. It was quite true that no one had gone short of food, and there had been no hunger, but no one could pretend that the diet of the British people, and especially of the heavy workers, had not become far less stimulating and interesting than it was a year ago. Except for the fighting Services we had been driven back to a large extent from the carnivore to the herbivore. That might be quite satisfactory to the dietetic scientists, who would like to make us all live on nuts, but it had produced and was producing a very definite effect on the energetic output of the heavy worker. More meat was wanted in the mines and in the foundries, and more cheese. Great arrangements had been made to send food from America in nourishing, varied, and more interesting quantities. Every effort would be and was being made to supplement this deficiency, and he shared the hope of the Minister of Food and the Minister of Agriculture that our rations in 1942 would be more stimulating and more nourishing than in 1941.

American Doctors for Britain

On July 29, Sir HENRY MORRIS-JONES asked the Minister of Health what progress had been made with the proposal, recently announced by him, for securing the services of 1,000 doctors from the United States of America to help in the medical services of this country. Miss HORSBROUGH replied that the scheme had not yet become fully operative. According to information recently received from the American Red Cross about eighty United States doctors who had applied under the scheme were at present being considered for acceptance, in addition to one who had already arrived and was at work in a civil hospital and four who were on their way to this country.

N.H.I. Statistics

On July 29, Miss HORSBROUGH, replying to Mr. Thorne, stated that on December 31, 1939 (the latest date for which such information could be given), the number of insured persons in

Great Britain was: men and boys, 14,204,000, including 141,000 deposit contributors; women and girls, 7,243,000, including 155,000 deposit contributors. The total sum paid out in benefits in the year ended December 31, 1940, was £34,197,000, the accumulated funds at that date amounted to £146,799,000, and the amount invested by or on behalf of approved societies to £61,224,000. The expenditure in the year ended December 31, 1940, on sickness, disablement, and additional benefits was:

	Men £	Women £	Total £
Sickness benefit ..	8,114,000	4,024,000	12,138,000
Disablement benefit ..	3,781,000	2,029,000	5,810,000
Additional benefits:			
Cash ..	1,479,000	304,000	1,783,000
Non-cash ..	—	—	2,416,000

(Separate figures in weeks were not available.)

The fifth valuations of the approved societies would be completed during the coming autumn, and it was expected that a short report by the Government Actuary, incorporating some statistics of the results, would be available early next year.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

In England and Wales there was a decline in the incidence of the principal notifiable diseases during the week, with the exception of dysentery and enteric fever; the former is over four times and the latter over three times as prevalent as last year. Though a seasonal rise in these diseases may be expected, especially during hot weather, the recent increases would give cause for alarm were it not that the prevailing type is mild—namely, Sonne dysentery and paratyphoid B fever. On the other hand, acute poliomyelitis—another disease of hot dry weather—is exceptionally infrequent. Cerebrospinal fever, in respect of which an exacerbation was recorded last week, is at exactly the same level as last year, and in Scotland at nearly the same level.

Enteric Fever

The Lancaster outbreak, involving Liverpool chiefly, has surpassed that of Birmingham and district in both magnitude and geographical distribution, being widely scattered over the county and in the adjacent county of Chester, chiefly in Birkenhead. No details are as yet available as to the source and mode of spread of the infection. Apart from the counties heavily affected, no area recorded more than 6 cases: Lancaster 146 (Bootle 9, Liverpool 79, Manchester 15, Preston 2, St. Helens 18, Salford 2, Southport 1, Wigan 1, Ashton-under-Lyne M.B. 1, Crosby M.B. 2, Failsworth U.D. 1, Huyton with Roby U.D. 1, Irlam U.D. 1, Morecambe and Heysham M.B. 1, Prescott U.D. 1, Urmston U.D. 1, Widnes M.B. 4, West Lancashire R.D. 4, Whiston R.D. 1, Wigan R.D. 1); Chester 63 (Birkenhead 28, Chester 1, Stockport 1, Wallasey 14, Bebington M.B. 16, Dukinfield M.B. 1, Ellesmere Port U.D. 1, Wirral U.D. 1); Stafford 21 (Stoke-on-Trent 11, Wolverhampton 1, Newcastle-under-Lyne M.B. 1, Stafford M.B. 6, Stone R.D. 2). In Scotland, of the 24 cases notified 5 (3 in Glasgow and 2 in West Lothian) were of typhoid fever; the remaining cases were recorded in Glasgow 7, Dundee 6, the counties of Ayr and Lanark 2 each, Dumfries and Galloway 1, Moray and Nairn County 1.

Dysentery

Only fourteen administrative areas were affected by dysentery, compared with twenty-nine with enteric fever. In none was incidence heavy or widespread, and only in three were there more than 6 cases—namely, Essex 21, all in Brentwood U.D.; Lancaster 13 (Blackburn C.B. 1, R.D. 4, Warrington R.D. 7, Whiston R.D. 1); West Riding of Yorkshire 13 (Bradford 5, Wakefield 1, Aireborough U.D. 7). In Scotland, of the 35 cases notified 11 were in Dundee, 6 in Edinburgh, 5 in Glasgow, 3 each in Coatbridge and Paisley, and the remaining 6 in four counties and one burgh.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics for the British Isles during the week ended July 12.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	184	7	37	2	7	184	14	35	—	5
Deaths ..	—	4	6	—	—	—	—	—	—	—
Diphtheria ..	773	31	161	22	25	726	28	242	23	23
Deaths ..	21	—	—	—	—	23	—	12	—	—
Dysentery ..	68	3	35	5	—	15	1	52	—	—
Deaths ..	—	—	—	—	—	—	—	2	—	—
Encephalitis lethargica, acute ..	3	—	—	1	—	3	1	—	—	—
Deaths ..	—	—	—	—	—	—	2	—	—	—
Enteric (typhoid and paratyphoid) fever ..	315	6	24	5	1	94	12	7	4	1
Deaths ..	3	—	—	—	—	—	—	—	—	—
Erysipelas ..	—	—	43	10	2	—	21	43	3	2
Deaths ..	—	—	1	—	—	—	—	1	—	—
Infective enteritis or diarrhoea under 2 years ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	21	3	11	13	1	27	5	5	4	3
Measles ..	5,368	153	49	155	4	9,082	31	1,149	—	17
Deaths ..	8	—	1	3	—	4	1	9	—	—
Ophthalmia neonatorum ..	99	4	19	—	—	90	4	20	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza* ..	531	23	3	2	2	457	20	2	—	2
Deaths (from influenza) ..	6	13	1	—	3	8	—	2	—	1
Pneumonia, primary ..	—	—	119	21	—	—	21	134	4	3
Deaths ..	—	—	9	—	—	—	—	3	—	—
Poliomyelitis, acute ..	—	—	—	—	—	4	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute ..	—	—	6	2	1	26	—	4	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever ..	2	2	8	3	—	4	4	8	4	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia ..	127	8	31	2	—	134	12	16	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever ..	732	30	99	59	16	1,267	21	128	32	59
Deaths ..	3	1	—	—	—	—	—	—	—	—
Small-pox ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Typhus fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough ..	4,850	259	55	40	7	738	6	40	—	8
Deaths ..	26	4	6	1	—	3	—	1	2	1
Deaths (0-1 year) ..	288	20	62	32	10	293	36	26	20	15
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) ..	4,018	521	565	186	112	4,060	622	595	183	121
Annual death rate (per 1,000 persons living) ..	—	—	12.3	12.3	—	—	—	12.6	12.2	10.6
Live births ..	4,833	368	864	334	226	6,551	991	952	338	229
Annual rate per 1,000 persons living ..	—	—	17.6	22.2	—	—	—	19.3	22.6	29.1
Stillbirths ..	183	13	35	—	—	216	30	33	—	—
Rate per 1,000 total births (including stillbirths) ..	—	—	29	—	—	—	—	35	—	—

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evaluation schemes and other movements of population birth and death rates for Northern Ireland are no longer available.

Universities and Colleges

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At the quarterly meeting of the Council, held in the College House on July 26, with the President, Prof. W. Fletcher Shaw, in the chair, the following officers were elected to take office in October.

President: Prof. W. Fletcher Shaw. *Vice-Presidents:* Mr. Eardley Holland and Prof. C. G. Lowry. *Honorary Treasurer:* Mr. J. P. Hedley. *Honorary Secretary:* Mr. G. F. Gibberd. *Honorary Librarian:* Wing-Commander F. W. Roques, R.A.F.V.R. *Honorary Curator of Museum:* Mr. Aleck W. Bourn.

The following were admitted: *To the Fellowship:* N. L. Edwards, W. A. Taylor, R. Watson. *To the Membership:* J. Joseph.

The following candidates were elected to the Membership: G. Boyd, D. S. Foster, E. Gledhill, Constance E. Peaker, Kathleen M. Robinson, Katharine C. Rogers, R. X. Sands, Violet E. A. Sykes, G. Wynn-Williams.

Medical News

The Annual Congress of the Ophthalmological Society of the United Kingdom will be held, circumstances permitting, in Cambridge on September 4 and 5, 1941. The subject for discussion will be "Ocular Injuries resulting from the War," and the openers will be Dr. O. M. Duthie (Manchester) and Dr. S. Zuckerman (Oxford). It is possible that all male members can be accommodated in college. It is desired that all who hope to attend will notify at an early date the honorary secretary, Mr. Frank W. Law, F.R.C.S., 36, Devonshire Place, London, W.1.

Medical practitioners are informed that the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council has recommended that persons suffering from nephrosis or the nephrotic type of glomerulo-nephritis should be granted three extra meat rations a week. Doctors may therefore complete certificates on behalf of their patients suffering from these diseases for submission by the patient to the local Food Office.

The Board of Education has asked local education authorities to review their school medical services, with a view to releasing doctors and dentists for the Services. Routine medical inspection of school entrants must be maintained, but many other surveys, it is suggested, might be undertaken by school nurses, while doctors of foreign nationality who have been registered in this country might be employed.

Four years ago the National University of Mexico founded its social service system under which every medical graduate is required to practise for five months as a health officer in some part of the country where there is no such representative. He sends in a weekly report of contagious diseases cases seen, and a monthly report which includes information on sanitary questions such as water supply and drainage. Since 1935 more than 100 graduates have taken part in this social service programme.

Lieut.-Colonel Sir Henry Gidney, I.M.S. (ret.) has been appointed a member from British India on the new Indian National Defence Council.

Dr. Gerhard Domagk, professor of morbid anatomy at Münster, who first introduced prontosil, has been made an honorary member of the Spanish Academy of Dermatology and Syphilology.

The May issue of *Annals of Surgery* is a special number devoted to "Surgical Preparedness Symposia."

The Canadian Red Cross Society will send 300,000 lb. of Canada's jam to Britain this year.

A new wing in the Salvador Hospital at Santiago, Chile, has been dedicated to the memory of Harvey Cushing.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Income Tax

Employment by Self and Wife: Housekeeper

"GAMMA" is employed as non-resident medical superintendent of a municipal hospital, and his wife has been appointed whole time to the staff of the M.O.H. for the duration of the war. Consequently it has been necessary to employ a housekeeper. Can an allowance be claimed for this expense?

* No. The point was decided in the case of *Brewers v. Harding* on very similar facts.

LETTERS, NOTES, ETC.

An M.O.H. and the R.M.B.F.

Dr. LEWIS G. GLOVER, honorary treasurer of the Royal Medical Benevolent Fund, writes: I desire to acknowledge through your columns the receipt of the following letter, signed "Medical Officer of Health," in recognition and gratitude to you as well as to the donor. "I recently noticed in the medical press the suggestion that doctors who have received kindness in the form of medical attention to themselves and their families from other doctors should recognize the fact by making a grant to the Royal Medical Benevolent Fund which, to a certain extent, expressed their gratitude. The difficulty of making some return is increased when the recipient doctor is a medical officer of health. I think the suggestion made is therefore helpful, and I propose to follow it in the future and now enclose a 'token' subscription representing in a small way my appreciation for the kindness displayed to myself and family by medical practitioners." As the "token" was a very generous cheque I desire to express my grateful thanks both to the donor and also to you. It is possible that others who may read this letter may be encouraged to follow the example which I am glad to record is being taken up.

Ether Convulsions

Dr. C. LEONARD TRAYLEN (London, N.W.10) writes: May I point out that in my letter (July 12, p. 67) no stress is laid on the fact that no hot ether was used. Dr. Charles Wells was inclined to suggest that this was a cause.

Problems of the Circulation

Dr. G. ARBOUR STEPHENS (Swansea) writes: Prof. McDowall is to be thanked for his two lectures on the problems of the circulation (July 12 and 19), in which he pleads for a closer relation between physicians and physiologists, and deprecates the restriction of diagnosis to restricting formulae. It is interesting in this connexion to note that he, as a physiologist, believes that a muscle when it contracts produces no sound, while teachers of medicine contradict him when they say the sounds of the heart are due in part to the contraction of the heart muscle. Prof. McDowall speaks of "high pressure," but does not define it. In 1932 I pointed out that the height varies according to the width of the armlet, and for that reason emphasized the need for a standard width. He makes no reference to what I hold is of great importance—namely, the restriction of blood flow into the vasa vasorum when the pressure on the blood in the arteries is increased. I hold that the ratio of the systolic pressure to this pressure in the arteries, against which the heart stroke has to pump the blood, is of the greatest importance in connexion with cardiological problems.

ANAEROBIC CELLULITIS AND GAS GANGRENE

BY

GEORGE QVIST, F.R.C.S.

Surgical Registrar at the Royal Free Hospital

Infective gangrene in wounds is a subject of no little importance at present, and while our knowledge is yet far from adequate, enough facts have been established to render unnecessary some of the confusion which still exists regarding its diagnosis and treatment. Differences of opinion are greatest on the question of treatment, and there are wide divergencies in the results obtained from any individual method. These discrepancies are due in part to lack of differentiation between gas infection of the cellular connective tissues and true gas gangrene of muscle. A faulty diagnosis of gas gangrene is often made because attention is focused on the demonstration of gas or of gas-gangrene organisms in a wound instead of on the tissues in which the gas is produced, so that cures of gas gangrene are claimed as due to some particular treatment when in fact the condition was no more than a subcutaneous gas infection without involvement of muscle.

There are two stages in the diagnosis of a gas-infected wound: the first is the demonstration of gas, and the second the identification of the tissue involved. The demonstration of gas or of gas-gangrene organisms is easy and may be made by clinical, radiological, or bacteriological means; but the distinction between gas infection of the connective tissues and gas gangrene of muscle is more difficult and far more important, and can be made only on clinical grounds, radiology and bacteriology playing no part.

Three groups of cases occur; in these the organisms of infective gangrene may be found in a wound (1) as harmless saprophytes in ulcers, with no pathogenicity; (2) as pathogenic organisms producing an infection of the cellular connective tissues—gas infection of a wound or anaerobic cellulitis; or (3) as invaders of muscle—true gas gangrene.

1. Saprophytic Anaerobes

Numerous observers have described the saprophytic form of gas-gangrene organisms. Thus Fleming in 1915 found *Cl. welchii* in 127 out of 210 war wounds of varying ages; Manson (1932) found gas-producing anaerobes in 11 out of 32 chronic ulcers of the limbs; and Roberts, Johnson, and Bruckner (1933) found clostridia in 21.7% cases of unprepared abdominal skin, on 8.5% of surgical knife blades, and from the peritoneum in as many as 14.2% cases operated on for non-inflammatory conditions. Saprophytes of this type are capable of producing toxins: Muriel Robertson (1941) found highly toxic types of *Cl. welchii* in recent wounds, their presence in which had caused no symptoms. The bacteriological demonstration of gas-gangrene organisms in a wound has therefore little surgical significance.

2. Anaerobic Cellulitis

Gas infection of a wound without gangrene of muscle is probably the commonest clinical type of active infection

by the gas-producing anaerobes. In this condition gas is produced in the wound, which may be demonstrated both clinically and radiologically; but there is no infection of muscle, and the patient may well recover without any active treatment. It is certain that many of these cases have been described as gas gangrene and reported as having been cured by different methods of treatment.

The site of the infection is the cellular connective tissues, and therefore there is no reason why the condition should not be recognized by the term "anaerobic cellulitis," comparable to other forms of cellulitis such as the streptococcal type. Following compound injury, and quite apart from muscle damage, conditions in the subcutaneous tissues may favour the growth of anaerobic organisms, with gas production from the proteins and carbohydrates in these tissues and from associated haematoma. This anaerobic cellulitis may spread in the fascial planes for some distance, but in the absence of a suitable pabulum of damaged muscle the infection may remain superficial or completely resolve when the supply of connective-tissue media is exhausted or when anaerobic conditions are terminated by suitable surgical incisions. An important feature in such cases is that the musty odour typical of gas gangrene is not present; this is probably to be correlated with the absence of muscle necrosis. With this local growth of anaerobes toxins are no doubt produced, and the patient suffers from a toxæmia of varying severity, depending on the extent of the damaged tissues and the nature and virulence of the organisms.

This condition is the one referred to usually as "local gas gangrene," but in the absence of muscle infection it would be preferable to distinguish it as "anaerobic cellulitis," particularly because its prognosis and treatment are so different from those of gas gangrene. Obviously the local treatment need never be drastic; if one can be certain that the condition is no more than a cellulitis, there is no necessity for radical surgery. Adequate treatment consists in removing skin stitches and opening up the wound or, in a more extensive case, making incisions under an anaesthetic. In addition, serotherapy and chemotherapy must be instituted, partly to mitigate toxæmia and also because they may help to arrest spread of the infection to muscle of impaired vitality, should any be present in the wound.

The following are three cases of anaerobic cellulitis:

Case 1.—Male aged 30. Road accident, 4/II/38. Multiple abrasions and contusions of lower limbs, with a puncture wound just above the left knee. Given 1,000 units of A.T.S. and 4,000 units of polyvalent anti-gas-gangrene serum. Operation two hours later showed only a large subcutaneous haematoma of the left thigh, and the wound was excised and sutured. On the fourth day there were signs of a gas infection, with crepitus and gas bubbles in the wound. The general condition was fairly

good. T. 101°, P. 108. Under general anaesthesia the wound was opened up and the infection was found to involve only the subcutaneous tissues. It was left open, with hydrogen peroxide dressings, and the infection soon resolved, the temperature becoming normal in three days. Culture of the wound exudate showed *Cl. welchii*.

Case 2.—Female aged 19. Road accident, 28/9/38. Multiple abrasions and lacerations of lower limbs and right hand. Given 1,000 units A.T.S.; wounds excised and sutured. The laceration of the right foot involved the incomplete avulsion of a large piece of skin of the dorsum with considerable soiling by road dirt. Next day the patient was ill. T. 101°, P. 134. Given 10,000 units of anti-gas-gangrene serum and 2 grammes of sulphamylamide t.i.d. A few stitches were removed from the wound of the right foot, when a little odourless brownish fluid escaped. The pulse remained 120-130 until the next day, when there were crepitus and gas bubbles in the wound. A further 20,000 units of anti-gas-gangrene serum was given. Culture of the wound exudate showed *Cl. welchii*. The general condition improved on the third day; there was no spread of the gas infection, and the wound suppurated and eventually developed a clean granulating surface.

Case 3.—Male aged 45. Air-raid casualty, 9/11/40. Compound fractures of left femur and left hand and perforating wound of left leg. Given 3,000 units A.T.S. Excision of wounds and packing with vaselined gauze four hours after injury. The wound of the left leg consisted of a penetrating track through the gastrocnemius; the limb was immobilized with skeletal traction. Immediately after operation he received 10,000 units anti-gas-gangrene serum and 2 grammes of sulphapyridine intramuscularly, the latter being continued as 1 gramme four-hourly. The following day, twenty-four hours after injury, the general condition was fair; T. 99°, P. 120. There was discoloration of the skin of the antero-lateral surface of the left leg just below the wound, with crepitus in this area, and a radiograph showed the presence of gas. There was a mild odour of stale blood in the wound, but no suggestion of the mouse-like smell of gas gangrene. Culture of the exudate showed *Cl. welchii*. Anti-gas-gangrene serum was given, a total of 150,000 units being injected during the next twenty-four hours in doses of 10,000 and 20,000 units at two-hourly intervals into the left thigh and upper end of the leg above the wound. Crepitus disappeared after twenty-four hours, and the wounds suppurated. The Hb on the fifth day was 50%, with 15,700 white cells per c.mm. The fracture united well and the wounds healed within fourteen weeks.

3. Gas Gangrene

The term "gas gangrene" should be reserved for the type of case in which there is gas production with necrosis of muscle. Its prognosis and treatment are different from those in anaerobic cellulitis, and failure to make this distinction is almost certainly the principal reason for the inconsistency of the results reported from various individual methods of treatment, particularly by x rays. While in every wound with anaerobic gas infection we should suspect gas gangrene and watch closely for it, it is unjustifiable to label every case as such unless or until it is established that there is muscle necrosis. It is of interest to note that the earlier clinical descriptions made this distinction clear, whereas more recent writers seem to neglect the point. Thus Fraser (1919), in discussing the types of anaerobic wound infection, clearly recognized anaerobic gas infection of the wound and gas gangrene of muscle, and Keen (1918) also regarded the distinction as of importance. More recently Hosford (1940) and Jocelyn Swan (1940) have called attention to it, and Tudor Edwards (1940) similarly emphasizes the difference between the two conditions.

Diagnosis of gas gangrene resolves itself therefore into the collation of evidence of necrosis of muscle, and the value of any signs and symptoms must be considered with reference to their use in this respect. These are: (a) general signs; (b) local signs; (c) clinical symptoms and signs; (d) inspection of muscle.

GENERAL SIGNS

The toxæmia of an established case of gas gangrene is of course severe, and a gas-infected wound in an extremely ill patient is almost certainly the site of infective necrosis of muscle. But in anaerobic cellulitis without muscle damage there is also a toxæmia, difficult to distinguish from early gas gangrene: it is after all merely a question of degree of toxæmia, since the organisms and toxins may be identical. All three cases of anaerobic cellulitis described above showed toxæmia, particularly Case 2, with raised temperature and pulse rate. Furthermore, it is often difficult to make an exact clinical estimate of the severity of a toxæmia. Again, the signs suggestive of gas-gangrene toxæmia, particularly the raised pulse rate, may be due to shock following the injury, primary haemorrhage, operation, or associated injuries. There are no constitutional symptoms or signs which are absolutely diagnostic of muscle necrosis.

LOCAL SIGNS

(a) *Bacteriology*.—The finding of anaerobic organisms does not give any information about the involvement of muscle.

(b) *Radiology*.—The demonstration of gas in a radiograph does not prove that this is being produced by disorganization of muscle. In Case 3 the radiograph showed gas, but there was never any clinical evidence of gas gangrene, and the gas was no doubt in the connective tissues. The use of radiography has been well summed up by Ogilvie (1940): "X-rays will disclose gas in the tissue planes, but the method is not particularly helpful, since the discovery of gas and the diagnosis of gas gangrene are two different things. The use of x-rays in diagnosis refers to gas infection rather than gas gangrene. If a case is not clinically one of gas gangrene the discovery of gas in a film will not make it so; if it is, photography is a waste of time."

CLINICAL SYMPTOMS AND SIGNS

Pain.—The complaint of pain in the presence of a gas-infected wound is suggestive of muscle involvement, but it is not always a symptom, and only one of the four cases described below had pain of any severity.

Odour.—This is one of the most important clinical signs, because it is probably due directly to the breaking down of muscle tissue as distinct from the connective tissues. The odour of gas gangrene is distinct; it is a musty or mouse-like smell quite different from the odour of stale blood which occurs in a discharging wound a few days old, such as is associated with anaerobic cellulitis. Unfortunately the actual chemistry of the odour is unknown; it would be valuable to have biochemical proof that the gas is formed from the protein or carbohydrates of muscle tissue. But clinical experience very strongly suggests that this particular gas emanates from the action of anaerobes on muscle and on no other tissue. If it is agreed that the breakdown of muscle alone gives rise to this particular odour, then this is the only sign (apart from direct inspection of the muscle) that is pathognomonic of gas gangrene as compared with anaerobic cellulitis. It is certainly a fact that, in spite of numerous other suggestive signs, the experienced surgeon when asked to see a doubtful case will base his diagnosis almost solely on the local clinical inspection of the wound, with particular reference to the odour. Thus Ashurst (1929) says that in the Second Battle of the Marne it became his habit "to wander around the corridors and smell the patients. Those that smelled like mice were operated on right away because they had gas gangrene. The rest of them could wait awhile."

In the present lack of knowledge of the exact nature and cause of the odour, the most that can be said is that it is probably the result of the action of one or more individual anaerobes on muscle tissue and that it is present in most cases of gas gangrene. Since infective gangrene may be due to a variety of organisms, it is not to be expected that all cases will have the characteristic odour, or even that all cases will have gas. Cases of infective gangrene in wounds without gas production have been described: Ghormley (1935) described one such case in which *Cl. septicum* was identified. This type of case is unusual: undoubtedly in the vast majority of cases of infective gangrene of muscle there is gas production with the characteristic odour.

INSPECTION OF MUSCLE

This of course provides the most valuable evidence, but involves operation. Diagnosis is always confirmed thus and the extent of the lesion is determined. The gross features are well recognized and will not be described. The criteria of viability of muscle have been well summarized by Ghormley (1935) as: "If the muscle is red it may be viable; if it contracts when pinched it is usually viable; if it bleeds freely it is probably viable."

The diagnosis of gas gangrene is therefore essentially a clinical one, and depends mostly on the local signs, of which the most important is the odour. It is probably the experience of many that more cases are diagnosed in the early stages by the inspection of a wound as a deliberate routine rather than as the result of a suggestive temperature chart. It follows that a four- or six-hourly examination of the wound should be the practice in the immediate post-operative period in cases in which gas gangrene is a likely complication.

Clinical Types of Gas Gangrene

The commonly recognized types are: (1) local, (2) single muscle, (3) group of muscles, (4) segment of a limb, (5) fulminating.

It is suggested that this classification does not emphasize the important distinction between the first type, "local gas gangrene," and all the others. "Local gas gangrene" is really a cellulitis, not involving muscle, and it should be separate from the others, which differ among themselves only in degree: (1) Anaerobic cellulitis (so-called "local gas gangrene"). (2) Gas gangrene: (i) single muscle, (ii) group of muscles, (iii) segment of a limb, (iv) fulminating. This is not an academic distinction; its recognition would help to avoid confusion in diagnosis, in treatment, and, perhaps as important as anything, in the evaluation of methods of treatment.

Predisposing Factors in Gas Gangrene

In a wound contaminated with suitable anaerobes there must be factors which determine the infection of muscle as distinct from the connective tissues. These factors may be: (1) Variations in virulence of the organisms. (2) Suitable conditions for growth of organisms: (a) anaerobic conditions; (b) damaged muscle.

Variations in Virulence.—It is a well-known bacteriological fact that organisms vary in toxicity and invasiveness. It may be important in gangrene, but in any case it is a subject about which very little can be done in a practical way.

Suitable Conditions.—According to Eliason, Erb, and Gilbert (1937), "the important single factor in the production of gas gangrene is not contamination with the organism

per se but rather a suitable soil in which it can grow." The essential medium is well recognized to be damaged muscle, and it may be effective in any particular case in one or more of three ways: (i) direct trauma to muscle; (ii) impaired blood supply; (iii) delayed excision. It is not necessary to go further into these well-established points, of which the three cases described below are illustrative.*

Case 4.—Male aged 42. A.R.C., 8/10/40. Antero-posterior perforating wound of upper third of left thigh and a small laceration 3 inches long on the lateral side of left calf. Operation seven and a half hours after injury showed a large haematoma due to a puncture wound of the upper third of the femoral artery, which was ligated. The leg wound showed bruising of a few fibres of the gastrocnemius. The wounds were excised and packed with flavine gauze, and sulphapyridine therapy was instituted. Post-operatively there was no pain in the leg, but inspection thirty hours after injury showed discoloration around the leg wound, with crepitus and the typical musty odour of gas gangrene. Amputation through the lower third of the thigh was performed, and subsequent progress was good. The two important predisposing factors in this case no doubt were the damaged femoral artery and delayed operation, the diminution of blood supply being sufficient to determine the rapid onset of gas gangrene in the presence of infection even in such a trivial muscle injury.

Case 5.—Male aged 26. A.R.C., 8/10/40. Multiple small lacerations of face, chest, right arm and forearm, and both legs. Operation eight hours after injury. There was a laceration 4 inches long on the back of the left leg, with some muscle damage, which was excised and sutured, with drainage. The numerous other wounds were excised, exploration of the right arm showing a complete division of the brachial artery. Post-operative sulphapyridine and anti-gas-gangrene serum therapy was instituted. Gas gangrene developed in the left leg fifty-four hours after injury, by which time he had been given 10 grammes of sulphapyridine and 80,000 units of anti-gas-gangrene serum. Amputation through the lower third of the left thigh was performed, and the subsequent progress was satisfactory. The right forearm developed some muscle necrosis and dry gangrene of the tips of the second, third, and fourth digits. The wound in the leg giving rise to gas gangrene was small, and the deciding factor in the case must have been its delayed local treatment.

Case 6.—Male aged 59. Railway accident, 18/4/40. Compound dislocation of right ankle-joint, with severely crushed foot, and compound fractures of upper thirds of left tibia and fibula, with considerable laceration of the calf muscles. General condition poor throughout. After two hours the left leg, which was attached only by nerves and a few muscle fibres, was removed in the patient's bed under local novocain and the stump packed with flavine gauze. Operation five hours later: the amputation stump being excised and the right foot amputated through the ankle-joint, the wounds being packed with flavine gauze; 3,000 units of anti-gas-gangrene serum given. Gas gangrene developed in the left thigh seventeen hours after injury, and the patient rapidly became delirious, dying ten hours later. The wound exudate contained *Cl. welchii* and other organisms in great numbers.

Propylaxis of Gas Gangrene

Excision of Wound.—It is well recognized that the one almost certain way of avoiding gas gangrene is by immediate and complete excision of damaged tissue, especially muscle. The importance of the time factor should be emphasized. Actual practice, of course, may fall short of these desiderata owing to such things as the nature or severity of the injury or to the delay incurred in resuscitation from shock, in transport, or in arranging operation; so that it is important to promote other means of prevention, it being always understood that they are supplementary

* Cases 4, 5, and 7 have already been described in the *British Medical Journal* (1941, 1, 273).

to, and not substitutes for, excision. In advocating the use of serum, Bates (1937) says: "Prophylactic serum without intelligent surgery cannot be expected to prevent the development of gas gangrene."

Sulphonamides.—Experimental evidence strongly supports the use of sulphonamides in prophylaxis. Thus Stephenson and Ross (1940) found that sulphanilamide and sulphapyridine protected mice from lethal doses of *Cl. welchii* and *Cl. septique*, sulphapyridine being more potent, although they were of no use against *Cl. oedematiens*. The best results were obtained from the combined use of sulphapyridine and serum therapy. Hawking (1941) has similarly obtained good results in guinea-pigs, the most effective drug being sulphathiazole, and the best route the local application. His results also showed the importance of immediate treatment, a delay of two hours considerably reducing its value and six hours rendering it useless. There is not yet enough material available to estimate the prophylactic value of the sulphonamides in gas gangrene clinically, but it is to be hoped that the results may support the experimental evidence. It is probably best to give sulphonamides both internally and locally in the wound, and it may even be wise to institute such treatment from the time of admission of the patient, before operation. Considering the rapid onset of gas gangrene, which under suitable conditions may well be from the moment of injury, it is likely that immediate local administration is the most important of all methods. Gordon Watson (personal communication) recommends the application of as much as 40 grammes of sulphanilamide to the wound. In the following case gas gangrene developed in an amputation stump in spite of the administration of a standard prophylactic dose of sulphapyridine given by intramuscular injection (8 grammes): no local application of the drug had been made.

Case 7.—Female aged 16. A.R.C., 8/10/40. Compound fracture of upper thirds of left tibia and fibula. Amputation through the lower third of the thigh, performed two and a half hours after injury, with closure and drainage. Post-operative sulphapyridine therapy instituted. Gas gangrene developed in the stump thirty-six hours after injury, the patient having had 8 grammes of sulphapyridine but no anti-gas-gangrene serum. The wound was opened up and irrigated with hydrogen peroxide, and 40,000 units of anti-gas-gangrene serum were given, but the patient died in seven hours.

Antisera.—Opinion is divided about the use of anti-toxic and anti-bacterial sera. Experimentally, good results have been obtained by the combined use of serum and sulphonamides (Stephenson and Ross, 1940). Henderson and Gorer (1940) found that in mice the best effects were obtained by the combined action of sulphapyridine and antitoxin, or of sulphapyridine and anti-bacterial serum, against infections by *Cl. septique* and *Cl. welchii*. It seems that the use of serum in addition to the sulphonamides is advisable. It is probably best given both intramuscularly around the wound and intravenously. Case 3, which developed a *Cl. welchii* infection that remained localized as a cellulitis, was treated by repeated local intramuscular injections of serum.

Adequate prophylaxis should therefore probably comprise: complete and immediate excision of the wound; administration of sulphonamides, particularly local application; injection of antisera, especially intramuscularly around the wound.

Treatment of Gas Gangrene

Successful results in the treatment of gas gangrene have been recorded with methods varying from the most conservative, such as x-ray therapy, to the most drastic, such as

amputation, and the unbiased critic must find it difficult to believe that one disease could call for such widely differing treatments. Thus while amputation is carried out as a life-saving procedure by some, others condemn this measure under any circumstances, as, for example, Kelly and Dowell (1936), who, in recommending x-ray treatment, say: "Since there is so much shock connected with amputation, and, furthermore, since the diseased area is not all eliminated by some of these amputations, it again seems worth while to omit amputations as an obsolete therapeutic procedure for gas bacillus infection."

Obviously, either many unnecessary operations are being performed or conservative treatment is being applied to a different class of case. Almost certainly the latter is a true explanation of these apparent discrepancies in the results of treatment, and results of numerous cases of anaerobic cellulitis have probably been reported as cures of gas gangrene by conservative means. It is essential to be certain that the case is not simply one of cellulitis before being satisfied that a particular treatment has successfully overcome gas gangrene.

The various forms of treatment are local excision and amputation, sulphonamides, antisera, and x rays.

Excision.—There is no doubt that if infective necrosis of muscle is present the only sure way of dealing with it is by adequate excision. If it is localized to one muscle or muscle group, these may be removed; if it is more extensive, involving a segment or more of a limb, amputation is called for.

Sulphonamides.—As in prophylaxis, there is every reason to use these drugs as a local application as well as by general administration. Again, their use does not dispense with adequate surgical excision. Bohlman (1937) reported three cases of gas gangrene which recovered after sulphanilamide therapy, and Jocelyn Swan (1940) recorded two successful cases following sulphonamide treatment in addition to surgery.

Antisera.—Bates (1937) reported 16 cases treated without serum in which the mortality was 50%, and 16 cases in which serum was used, with a mortality of 18%. Larson and Pulford (1930) reported 6 successful results in 7 cases treated with anti-gas-gangrene serum, the injections being made intramuscularly locally around the wound as well as intravenously. It is probably advisable to use antisera in this way in all cases.

X Rays.—Cases of success from x-ray treatment have been reported—e.g., by Kelly and Dowell in 1936. While it is impossible to be certain, it is very probable that the type of case which recovers with x-ray treatment is not true gas gangrene but anaerobic cellulitis. If, for example, Cases 1, 2, and 3 above were to be loosely called "local gas gangrene" they might be regarded as cures of gas gangrene due to any particular treatment that was given. It is essential in evaluating treatment to be certain of the presence or absence of muscle infection, and not to use the term "gas gangrene" unless muscle necrosis is present.

Summary

It is suggested that more care should be given in distinguishing between gas infections of the cellular connective tissues and true gas gangrene, and that the term "anaerobic cellulitis" should be used to describe the former.

Gas infections of wounds should be classified as: (1) anaerobic cellulitis (so-called "local gas gangrene"); (2) gas gangrene—(i) single muscle, (ii) group of muscles, (iii) segment of a limb, (iv) fulminating.

The importance of this distinction is in diagnosis, treatment, and evaluation of treatment. It is suggested that inclusion of all

Chart I illustrates the progress of one of these staphylococcus carriers. In all charts the counts from the right nasal cavity are represented by a continuous line, those from the left nasal cavity by an interrupted line. The ordinates represent the average of the weekly number of

remained clear till the investigation ceased four weeks later. In the remaining carrier, in spite of treatments with one or other form of sulphathiazole snuff for thirteen consecutive weeks, the bacillus returned four weeks after he ceased to take snuff. Chart II illustrates the case of a carrier in whom the organism reappeared between courses of treatment.

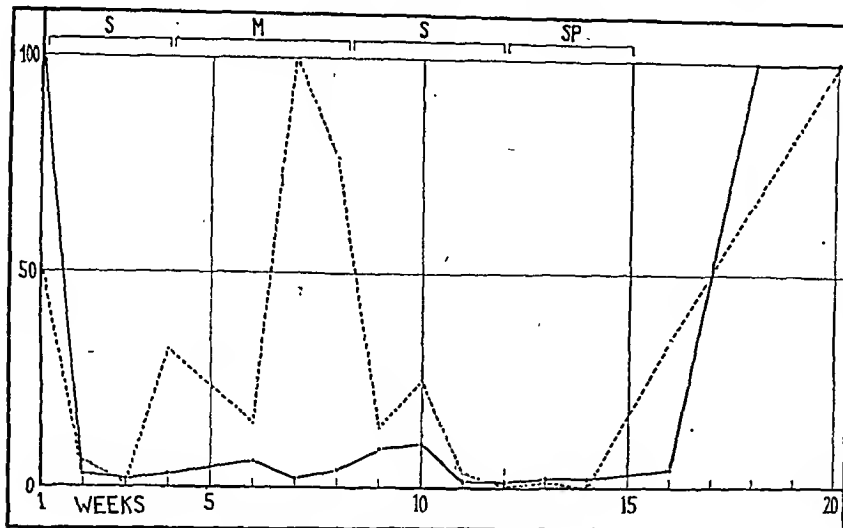


CHART I.—Carrier of staphylococcus.

S = Treatment with 33.3% sulphathiazole snuff.
M = " " magnesium carbonate control snuff.
SP = " " equal parts of sulphathiazole and sulphapyridine snuff.

staphylococcal colonies counted on the blood-agar plates after forty-eight hours' incubation. Counts of over 100 were recorded as > 100 , and are marked as 100 on the charts.

Results with Nasal Carriers of Hoffmann's Bacillus

Eleven of the 17 staphylococcus carriers also carried Hoffmann's bacillus. In every instance the bacillus disappeared directly after sulphathiazole snuff treatment was begun. The 10% sulphathiazole snuff was as effective as the others. With 7 of these carriers the organism, having

Results with Nasal Carriers of Pneumococci

The pneumococcus, so far as this investigation goes, seems to be completely resistant to every kind of snuff used in this experiment.

There were 9 subjects who carried pneumococci for varying periods. One carried the organism throughout the whole of the investigation, 3 carried it for only a short time, and from 4 the pneumococcus was first isolated about a week after the onset of a cold and disappeared after a few days or weeks. The ninth subject first had a pneumococcus in his nose during the third week of a cold and thereafter became a chronic carrier.

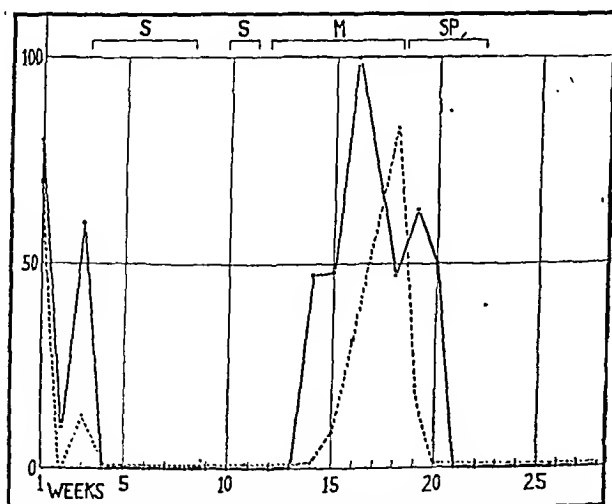


CHART II.—Carrier of Hoffmann's bacillus.

S = Treatment with 33.3% sulphathiazole snuff.
M = " " magnesium carbonate control snuff.
SP = " " equal parts of sulphathiazole and sulphapyridine snuff.

once disappeared after one course of treatment, was never again isolated even after many weeks. In 3 other carriers the organism returned in two to three weeks after the cessation of treatment, but after a third period of snuff the nose

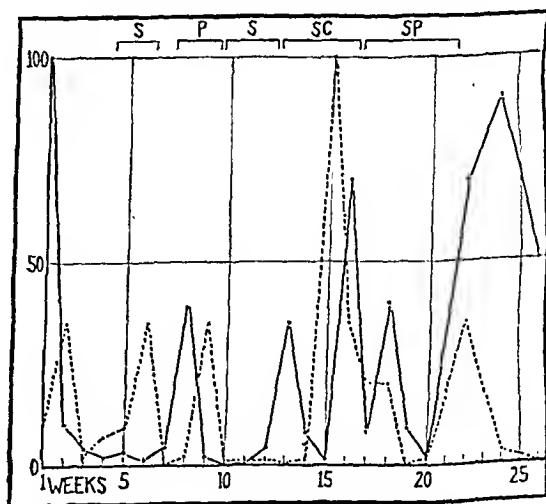


CHART III.—Carrier of pneumococcus.

S = Treatment with 33.3% sulphathiazole snuff.
P = " " 1% penicillin in magnesium carbonate.
SC = " " 1% penicillin with 33.3% sulphathiazole in lycopodium.
SP = " " equal parts of sulphathiazole and sulphapyridine

Two subjects who first showed pneumococci in a snuff-free interval continued to carry a pneumococcus in undiminished numbers, one for two weeks and one for four weeks, while taking sulphathiazole (33.3%) snuff. Another subject (see

Chart III) carried a pneumococcus during the entire investigation in spite of treatment with sulphathiazole (33.3%) snuff and sulphathiazole-sulphapyridine snuff. He was known to be a chronic pneumococcus carrier. Type III and other pneumococci having been isolated from throat and nose on many occasions over several years. Most of the swabs obtained during the present experiment grew Type III pneumococci, but sometimes a mixed growth of Type III and other pneumococci was obtained.

Two further subjects began to carry a pneumococcus while taking sulphathiazole (33.3%) snuff, and each continued to carry the organism for two weeks. Another subject began to carry a pneumococcus in the autumn of 1940, in the third week of a cold, while taking 5% proflavine snuff. He was later treated with sulphathiazole (33.3%) and sulphathiazole-sulphapyridine snuffs for thirteen consecutive weeks, but never lost the pneumococcus. The pneumococci isolated from these carriers were sensitive to sulphathiazole and sulphapyridine *in vitro*, which makes the failure of the snuffs to affect the carriage of this organism difficult to explain. It is possible that this organism tends mainly to colonize the sinuses and sinus cells and other inaccessible nooks and crannies in the nasal cavity.

Results with Other Organisms

Meningococci.—These organisms are not commonly isolated from the nose, and in this investigation the chance of obtaining a culture of meningococcus was small, because the swabs were emulsified in heart broth and the broth was then used to inoculate plates. Meningococci in heart broth may die in a few minutes. In spite of this, meningococci were isolated during January and early February from four subjects who were taking plain magnesium carbonate snuff. From one subject the organism was obtained only once, but from the other three it was obtained on three or four occasions during two weeks. After this each carrier started a course of sulphathiazole (33.3%) snuff, and the meningococci disappeared and were not seen again during the remaining weeks of this investigation, even during snuff-free intervals.

Haemolytic Streptococci.—One subject carried a haemolytic streptococcus (Group A, Type 5) in his right nostril only. It was grown from 19 out of 25 swabs during a period of ten weeks and did not disappear with sulphathiazole (10%) snuff treatment. Afterwards the carrier was treated with sulphathiazole (33.3% snuff) for seven weeks and then with sulphathiazole-sulphapyridine snuff. During the first three weeks of this treatment there were four positive swabs each yielding only one or two colonies. The organism then disappeared, and had not returned four weeks after cessation of treatment.

Neisseria catarrhalis.—There were five carriers of a Gram-negative coccus which did not ferment dextrose, maltose, or sucrose, and had dull grey-yellow colonies which could be easily pushed over the surface of the plate with a wire loop. Only one subject lost this organism when taking sulphathiazole (10%) snuff, and with him it never reappeared. Three others lost it during treatment with sulphathiazole (33.3%) snuff: with one of them it reappeared four weeks after stopping snuff. The fifth subject did not lose the coccus till treated with sulphathiazole-sulphapyridine, and it returned two weeks after stopping snuff.

Proteus vulgaris.—There was one carrier of this organism. Four swabs were all positive when he was first examined. It appeared less often under treatment with sulphathiazole (33.3%) snuff, and was grown from only one of eleven swabs during treatment with sulphathiazole-sulphapyridine snuff. After stopping snuff three out of seven swabs were positive. *In vitro*, *P. vulgaris* was only slightly sensitive to sulphathiazole even in saturated solution.

Antiseptic Snuffs in Relation to Colds

There is now further evidence from a number of people that the snuffs, if taken within two days after the onset of a cold, shorten the course of the disease. The discharge usually remains clear and the purulent stage is either prevented or lessened in intensity. There is no evidence that the snuff prevents colds.

Oral Insufflation of Antiseptic Powders

Three individuals were treated by the oral insufflation of sulphathiazole (33.3%) in magnesium carbonate. The

tonsils and visible part of the nasopharynx were thickly coated with the powder three times a day on five days a week, from Monday to Friday. No evidence was obtained from swabs taken on Tuesday to Thursday inclusive, of any alteration in the type or numbers of organisms present.

Summary

An antiseptic snuff containing sulphathiazole is effective in causing an extreme reduction in the number of staphylococci in nasal carriers of this organism. The carriers are not cured, as the organisms reappear within a few weeks of the cessation of treatment.

It is effective in the cure of carriers of Hoffmann's bacillus and is likely to prove effective in the treatment of chronic nasal diphtheria carriers.

It may be effective in the treatment of nasal haemolytic streptococcus carriers.

It may be of value in the treatment of carriers of meningococci.

It is worth further trial in cases of the common cold, in which it tends to affect the course of the disease favourably although it is not a preventive.

There is no evidence that it affects the nasal carriage of pneumococci.

We wish to express our thanks to all those who have submitted themselves to repeated swabbings and snuff treatment over many months. We are also greatly indebted to Messrs. May and Baker, Ltd., for their generous help in supplying us with the sulphathiazole and sulphapyridine used in this and the earlier investigation.

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JUGULAR THROMBOSIS AFTER TONSILLITIS

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Three cases of jugular thrombosis have been treated. A description of the condition is best given in the details of their clinical history.

Case I

A man aged 21 was admitted to hospital on November 8, 1934. Two weeks before admission he had had a quinsy without pus formation, and swelling below the left mastoid. The temperature was 104°. This responded to local antiseptic treatment. Then just before admission he complained of pain behind the right mastoid process, but no pain in the ear or deafness. There was some thickening over the area of the mastoid emissary vein. The temperature was normal. The tympanic membrane was congested but translucent. Paracentesis was performed and about two drops of serous exudate was obtained. The patient looked so ill, and his temperature had been so high with his throat condition, that a cortical mastoid operation was performed. The mastoid cells were practically normal except for some congestion, and no pus was obtained. The lateral sinus plate was so posteriorly placed that the sinus was not exposed. After a swinging temperature for five days the clean mastoid wound was reopened and a lateral sinus full of pus exposed. This was opened and the outer wall cut away. Bleeding was secured from the torcular but not from the jugular end. Packs were inserted, being removed after five days. Before the operation both optic disks showed about three dioptries of optic neuritis. The whole condition cleared up, apart from an attack of German measles, one month after the first operation.

A blood investigation showed 75% haemoglobin, and ferrous iron was administered in large doses. There had been no swelling in the neck at the time of the lateral sinus operation.

and a jugular operation was not thought necessary. The small amount of serous exudate in the middle ear was thought to be due to the proximity of an infected jugular bulb, and the lateral sinus infection was obviously of too long duration to be put down to the mastoid operation.

Case II

A woman aged 34 was admitted on April 4, 1940, with a lateral pharyngeal abscess below the tonsil at the level of the epiglottis. She had had pain for a week, and for three days acute difficulty in swallowing, with three rigors. Her temperature was 103° when first seen. She was five months pregnant. There was a hard brawny swelling from the left mastoid to the sterno-clavicular joint, the breath was very foul, and there was some respiratory distress. Swelling was present in the submental region.

Under local anaesthesia the left jugular vein was opened and about 30 c.cm. of foul pus obtained. The vein was packed with a thin gauze strip and the wound left open, with the vein edges sutured to the skin. The patient's condition improved, but two days after admission swallowing was almost impossible, and she regurgitated all fluids. Under local anaesthesia the inner wall of the previous incision was cut, and dissection carried through fibrosed tissue to the inner side of the carotid sheath. This was retracted laterally and the thyroid gland medially, and 20 c.cm. of foul pus obtained from a large abscess against the lateral pharyngeal wall. A tube drain was inserted. Her condition again improved, but the submental region became swollen and the floor of the mouth was raised.

Under local anaesthesia an incision was made from the chin to the hyoid bone and pus was obtained from an abscess extending laterally in both submaxillary regions to the angles of the jaw and down to the geniohyoids. The patient's general condition improved and temperature continued at a level of 99°. There were no further changes in the local condition and the whole neck remained brawny. However, three days after the last operation her temperature suddenly rose to 102° and pulse to 160, and the patient died in a cyanotic condition on April 10.

At necropsy the left side of the neck was hard and indurated, with small localized abscesses scattered throughout the muscles. The jugular vein showed thrombosis just below the opening above the junction with the subclavian. There was also a thrombosis in the lateral sinus on the left side. The cavernous sinus was normal.

Besides having the abscess opened, she had been given a large amount of sulphapyridine (intramuscularly when she could not swallow the tablets). The pus from the internal jugular vein showed numerous Gram-negative bacilli and diplococci, and a fair number of Vincent's organisms. On culture *Staphylococcus aureus* was grown. Her haemoglobin never fell below 85% and the leucocytosis varied between 26,000 and 22,000 per c.mm. In this case a more extensive operation should have been done at first—opening of the jugular, extension down the lateral wall of the pharynx, and dissection deep to the submaxillary gland.

Case III

A woman aged 54 was admitted on March 6, 1940, with a history of sore throat for one week, a temperature of 104°, a quinsy on the left side, and a large brawny swelling on that part of the neck. With local treatment and sulphapyridine the condition in the throat cleared up and the temperature was normal in two days. There was still some swelling below the left mastoid, and the patient's temperature was reduced to 101°. At this time her haemoglobin was down to 55% and red cells to 3,000,000; leucocytes were 21,000 per c.mm. On March 19 her temperature rose to 106°; a blood culture was negative, but next day the left internal jugular was opened low down in the neck and pus containing pneumococci and streptococci was evacuated.

The patient's condition now showed some improvement, but she tended to have breathless attacks at times. The pharynx and larynx appeared normal, but on examination of the chest crepitations were found at the right base and radiographs revealed some dimness of the lower half of the right lung. Three blood transfusions were given at weekly intervals. The sulphapyridine was stopped and sulphanilamide was given in regular doses over three weeks. The pulse rate showed a steady

rise and the respiration rate at times was over 40. On April 14 the jugular vein was opened up to the mastoid process and down to the sterno-clavicular joint. Blood clot was obtained but no pus. There had been some question of the thrombosis spreading to the subclavian vein, but the condition of the patient was too bad to warrant operation on this or to expose the lateral sinus.

However, on April 17 symptoms of cavernous sinus thrombosis appeared and the patient died next day. A few hours before death she coughed up 3 oz. of bright blood. As a necropsy was not allowed the source of this could not be ascertained, but was probably the right lung. This loss of blood was not of much consequence, as two days previously her haemoglobin was up to 92%.

Summary of Literature

Several writers have reported cases of this condition, but a description of it seems to have evaded the textbooks. Most of the articles were in the American literature, but van Gilse and Benjamins, in personal communications, have described cases to me. On the Continent drainage of the internal jugular vein has apparently been sufficient, but some of the American surgeons have found it necessary to open and drain both the internal jugular and the lateral sinus. This, I think, should have been done in my last two cases, but of course the second patient was too ill to withstand any further surgical endeavour.

The cases recorded in the United States certainly give better results than mine. Stone and Berger (1936) report two of their own with recovery, two of Eagleton's, and one of Kerman's. Out of five there were three recoveries, in each of which cases the neck and lateral sinus were operated on. Porter (1937), in reporting his case, is also of the opinion that this should be done. Gilmore's case (1939) recovered after only the jugular operation. Beck (1934) seems to favour this, but he had one case in which the lateral sinus was opened because of mastoiditis. Nussbaum (1929) collected 58 cases with 23 recoveries up to 1927, so it may be seen from the literature that the condition carries a high mortality.

Discussion of Treatment

Points in the treatment may be summarized as follows:

1. The operative treatment must not be delayed until a positive blood culture is obtained. Rigors may not occur; sometimes there are feelings of chill.
2. If the external swelling does not begin to subside one day after satisfactory incision of an abscess in the pharynx external operation is necessary.
3. If the condition of the patient does not improve after the internal jugular is opened, drainage of the lateral sinus should be performed. Only about four days should be allowed for this improvement.
4. As regards the sulphonamide group, the last two cases had large amounts of sulphapyridine before operation, and it was noticed that any abscesses found were walled off by strong fibrous-tissue capsules, which made the dissection in the neck very difficult. Also the pus in these abscesses seemed to be thick and semi-organized by fibrin deposits. At necropsy the second case showed muscles and neck contents bound together with small abscesses scattered in the hard fibrous mass almost like actinomycosis. It seemed to me, therefore, that it would be more reasonable in a case that was likely to require opening of abscesses in the neck, especially abscesses among muscles and fasciae, to retard the administration of these drugs until the abscesses could be opened, and opened widely. As Beck (1932) states: "In cervical fascia infections drainage placed in advance of involvement is better than drainage which only trails the involvement." From consideration of these two cases it is my impression that pre-operative treatment by the sulphon-

amide group causes so much scarring and deposit of fibrous tissue that it hinders efficient drainage. This may be said to be a sweeping statement when founded on two cases, but a similar condition can be seen in cases of mastoid abscess that have had large doses of these drugs. Therefore in future cases of deep neck infection I should operate first and then use the sulphonamide group in large doses by mouth, parenterally, or by packing the wound, with the proviso that my operative drainage should be extensive and that it entirely covered any region likely to be infected.

5. The direction of spread of the infection and places that should be inspected for possible infection need not be gone into here. Mosher (1929) has described these matters in detail. It is as well to complete the drainage of the neck region in the one operation, as a second attack may have to be done with landmarks lost in fibrous tissue and difficult to find.

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ECONOMY IN THE TREATMENT OF IMPETIGO AND SCABIES

BY

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The experience of twenty months of wartime dermatology has shown that impetigo and scabies are by far the commonest and most troublesome of skin conditions occurring in the Navy. It has also been observed that before admission cases have been subjected to various forms of treatment. This, it is felt, lengthens the duration of these conditions and is uneconomical. Rapidity of cure and economy in drugs are essential in wartime practice.

The Therapeutic Requirements Committee of the Medical Research Council (1940) classified the drugs employed in dermatological practice and stated:

1. For many of the purposes for which ointments are often prescribed pastes and creams are more satisfactory and require only about half the amount of fatty basis.
2. The amount of mercury used could be greatly reduced, and it need only be available for trial in cases in which alternative antiseptics have not proved satisfactory.
3. A large number of chemical substances will destroy the acarus, and all local treatments depend largely on the efficiency of application. Sulphur ointment still remains one of the most efficacious remedies, and the frequency of sulphur dermatitis has been overstated. If supplies of benzyl benzoate are short this substance would be best reserved for treatment of children.

In view of the above findings, and in the hope that a greater uniformity in the methods of treating impetigo and scabies would result both in a quicker turnover of cases and in economy, the following suggestions are given. More uniformity of treatment would be of value in the Services, where one medical officer so rarely sees a case from onset to complete cure.

Impetigo

Opinions differ as to the most satisfactory treatment of impetigo. Andrews (1938) advises 5% ammoniated mer-

cury ointment, and this would appear to be the treatment most commonly used. Forman (1938) advocates a lotion with copper and zinc sulphate (eau d'Alibour). Roxburgh (1941) prefers a paste or cream with 2% ammoniated mercury incorporated, and also mentions the occlusive treatment with elastoplast. He states that powdered sulphanilamide has been used, but that no figures are as yet forthcoming. Many other antiseptics have also been used, generally in aqueous solutions.

As a result of the study of 74 cases of impetigo contagiosa in hospital during 1940 and the early part of 1941, a technique was devised which on the whole gave satisfaction. The procedure was softening of the crusts with a sulphanilamide ointment (see 1 below), which took approximately forty-eight hours. The areas were then found to be clean and to be oozing serum. A paste consisting of 2% ammoniated mercury in zinc paste was next applied twice a day with only superficial cleaning before reapplication. No attempt was made to remove the adherent paste over the denuded areas. After the paste had been in use for five days it was removed completely with olive oil and the lesions were examined. Any areas still showing evidence of irritation or a tendency to exude serum then received paste for a further seven days. When all lesions were dry and healing eau d'Alibour was applied to the area night and morning for one to two weeks.

Recently it was decided to replace the mercury in the paste by one of the aniline dyes. By this means it was hoped to bring about an improvement in treatment and to save mercury. Brilliant green was chosen as the dyestuff for two reasons. In the first place, brilliant green is bactericidal to *Staph. aureus* in a dilution of 1 in 4,000,000. Secondly, the stearate of brilliant green is fat-soluble and can be incorporated in a paste. Brilliant-green stearate was therefore made up in zinc paste in a strength of 1% (see 2 below). A small number of cases have now been treated with brilliant-green stearate paste, and the results so far achieved have been highly satisfactory.

TABLE 1.—Brilliant-green Stearate Paste in Impetigo

Case No.	Organism	Days on			Days ill
		Sulphanilamide Ointment	Brilliant-green Paste	Eau d'Alibour	
1	<i>Staph. aureus</i>	10	10	7	7
2	Not cultured	10	10	7	12
3	<i>Staph. aureus</i>	10	10	7	9
4	" "	10	10	7	14
5	" "	10	10	7	14
6	" "	10	10	7	14
7	" "	10	10	7	21
8	" "	10	10	7	21
9	" "	10	10	7	21

1. The sulphanilamide ointment is prepared as follows: Sulphanilamide, 5 parts, and glycerin, 30 parts, are dissolved with the aid of gentle heat. Adeps lanæ anhyd., 32.5 parts, and paraffi. molle flav., 32.5 parts, are then heated gently to melt and incorporated with the sulphanilamide solution. The preparation is stirred until cold.

2. Brilliant-green stearate may be prepared by adding excess potassium hydroxide to a solution of brilliant green B.P.C. (sulphate) in water. The resultant precipitate is collected, washed, and heated with an equal weight of stearic acid. The paste is prepared as follows: Brilliant-green stearate, 1 part, and ung. simplex, 50 parts, are heated to liquify, and are incorporated with zinc oxide, 25 parts, and amylin pulv., 25 parts, the whole being stirred until cold.

Scabies

Much has recently been written on the treatment of scabies and many remedies have been advocated. This, among other facts, adds to the difficulty of one who has to treat unsuccessful cases when notes on previous treatment are not forthcoming. Approximately 50% of the cases

receiving treatment in this hospital are secondarily infected, and the majority of those have received treatment with sulphur before admission.

The therapeutic agent now employed is an oil-in-water-type emulsion of benzyl benzoate prepared with triethanolamine from the following formula:

Benzyl benzoas	33.3
Ac. stearic.	2.5
Triethanolamine	0.5
Aq. dest.	ad 100.0

Dissolve the stearic acid in the benzyl benzoate with the aid of gentle heat. Cool to 38° C. and add the triethanolamine dissolved in half of the water. Shake to emulsify and gradually add the remaining water, shaking after each addition.

It has been found that the temperature of preparation considerably affects the stability and viscosity of the emulsion. The product described here showed no separation when placed in a refrigerator for six hours at 0° C.; and when incubated for six days at 37° C. there was slight separation, but it immediately re-emulsified on shaking. Emulsions prepared at higher temperatures were not so stable. The routine of benzyl benzoate treatment as described by King (1940) was followed. It was hoped to confine the treatment to one application, but some cases have required two or more.

Results

The cases so far treated by this method number 39, and they must be divided into three groups:

- I. Primary non-infected scabies (23 cases).
- II. Secondarily infected scabies (5 cases).
- III. Secondarily infected scabies which have failed to respond to earlier treatment (11 cases).

All cases were examined daily for at least one week following completion of treatment. Owing to the degree of secondary infection many remained under observation for a much longer period.

The number of applications found necessary are shown in Table II.

TABLE II

Group	No. of Cases	No. of Applications						Results
		1	2	3	4	5	6	
I	23	18	2	3				No failures
II	5	3		1		1		" "
III	11	4	2	4			1	" "

78% of the primary non-infected type and 42% of the secondarily infected cases were cured with one application. There were no failures in the non-infected cases, but 25% of those secondarily infected did not respond to this treatment. The failures had all been previously treated unsuccessfully with sulphur ointment, but were ultimately cured by mitigal, or dimethyldiphenylene disulphide (C.I.).

Conclusions

We feel that the importance of using a paste in place of an ointment in the treatment of impetigo is not fully realized or sufficiently emphasized. It is also considered that the substitution of a fat-soluble aniline dye in place of the time-honoured ammoniated mercury is a step forward in treatment as well as a justifiable wartime economy.

The use of a stable emulsion we feel is of advantage in the treatment of scabies. The emulsion is easy of application; only one-third of the amount of benzyl benzoate is required for a treatment as compared with the commonly used mixture of soft soap, alcohol, and benzyl benzoate; and the danger of irritation and therefore of secondary infection is reduced to a minimum. Finally, the stability

of the emulsion is of undoubted value in the Services, where varying temperatures are encountered.

Summary

It is suggested that a fat-soluble form of brilliant green might replace mercury in the treatment of impetigo.

It is stressed that a paste might with advantage be used in place of ointment in the treatment of impetigo.

A stable emulsion of benzyl benzoate is advocated for the treatment of scabies, and it is noted that this would result in a saving of benzyl benzoate, as only one-third of the normal amount is required.

We are indebted to Surgeon Rear-Admiral Sankey for permission to publish this paper.

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ROOT VEGETABLES AS ANTISCORBUTICS IN INFANT FEEDING

BY

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AND

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Any shortage of citrus fruits presents a special problem in the feeding of infants and very young children, especially the former, who cannot obtain their supplies of ascorbic acid to any appreciable extent from potatoes or leaf vegetables. Published work, as summarized in the tables of Fixsen and Roscoe (1938, 1940), indicated that the turnip should be a useful source of ascorbic acid. It was decided to make a preliminary investigation of the root vegetables, turnip (*Brassica rapa*), swede (*Brassica campestris*), and parsnip (*Pastinaca sativa*)*. The samples were bought in the open market or picked from crops raised in private gardens from commercial seed in December, 1940, and January, 1941. After our completion of some exploratory work the extensive paper of Chappell (1940) appeared. Our results were in good accord with hers, which were themselves in agreement with those of Olliver (1936, 1940); moreover, the scope of the investigations made by these workers had exceeded ours, so that the separate publication of most of our figures might seem unnecessary. However, the relevant figures published by Olliver and Chappell were concerned with the whole raw vegetables or with the effect of domestic culinary procedure upon the amount of ascorbic acid derivable from them, whereas we were primarily concerned with preparing from the roots something that could be fed direct to the very young; it seems permissible, therefore, to summarize our results and conclusions.

Ways of using Root Vegetables

There are at least three possible ways of using these root vegetables in infant feeding: they will be considered in turn. First, it has occasionally been suggested that the chopped roots should be covered at night with fine sugar, and that any juice separated by next morning could be used as an antiscorbutic. We found that this procedure

* Dr. J. C. Drummond, scientific adviser to the Ministry of Food, expressed interest in the problem, and urged us to look into the matter; the analyses were all carried out by one of us (D. M. M.), with the permission of Mr. A. F. Lerrigo, head of the analytical department of Glaxo Laboratories, Ltd., to whom we wish to express our gratitude.

resulted in negligible extraction of ascorbic acid—about 0.02 mg. per c.cm. (cf. Dr. K. E. Barlow, *Journal*, 1941, 1, 797). On physico-chemical grounds we had regarded as suspect the apparently almost miraculous properties attributed to sucrose as an extractant of ascorbic acid.

Secondly, the grated vegetables were simply squeezed through muslin; juices containing 0.30 mg. and 0.32 mg. of ascorbic acid per c.cm. were thus obtained from swedes and turnips respectively. It might, however, be thought by some that such expressed juices would be unfit for infant feeding unless sterilized by boiling; moreover, the effect on the ascorbic acid content of any ascorbic oxidase present might be significant if the expressed juices were allowed to stand. Boiling would of course destroy any enzymes present. We therefore examined the effect of boiling on the squeezed-out juice. When boiled for periods up to fifteen minutes, and whether brought to the boil slowly or quickly, the juice showed no destruction of ascorbic acid. Prolonged boiling—for thirty minutes or more—sometimes produced slight losses. Exposure to the atmosphere in covered beakers without agitation produced no losses in three to six hours, and up to 25% loss in twenty-four hours; if, however, the juice was agitated (stirred) periodically the loss was more rapid and might amount to 75% in twenty-four hours. We conclude, therefore, that expressed juice can safely be boiled for a few moments and can be kept (whether unboiled or boiled) for several hours, provided it is covered and not vigorously stirred, without any serious loss of antiscorbutic activity.

Thirdly, the roots can be sliced and boiled with a little water, the cooked mass being then squeezed through muslin into the cooking water. The concentration of ascorbic acid in the resulting liquor will naturally depend on the amount of water used, among other things. Even when this was reduced to a minimum—just enough to cover the vegetables—the liquors were less good sources of ascorbic acid than the cold-pressed juices discussed above. Nevertheless both swede and turnip yielded liquors containing from 5 to 16 mg. of ascorbic acid per 100 c.cm. The comparison between the cold-pressed juices and the cooked liquors

Results

As a matter of interest we have summarized in the accompanying table the recent results obtained by Olliver and Chappell, as well as our own, along with some figures for orange juice and blackcurrants. All our determinations were made by titration with 2:6-dichlorophenol-indophenol in the presence of trichloroacetic acid.

Parsnips appear to be of no more use than carrots as sources of ascorbic acid. On the other hand, turnip juice or swede juice, cold-pressed, before or after boiling, or the liquors from squeezing the lightly boiled roots, should be of value, especially in infant feeding. Taking the daily requirements of an infant as 5 to 10 mg., then from 1 to 2 fl. oz. of turnip juice or 1/2 to 1 fl. oz. of swede juice each day would suffice. Either of these juices, since they are only slightly acid, can be used to replace the boiled water of a milk feed without causing any curdling, though it imparts to the product a distinct taste and odour of the vegetable, that from the swede also contributing a little colouring matter.

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Medical Memoranda

100 Cases of Scabies: A Comparison of Treatments

To investigate the relative efficiency, speed, cost, and convenience of the various treatments of scabies recently discussed in the *British Medical Journal* I have treated men suffering from this complaint by five different methods:

1. *Sulphur Ointment*.—Sulphur ointment 10% is applied after a hot bath and a scrub in the morning; another application of the ointment is made in the evening.

2. *Sulphur Ointment and Confection of Sulphur*.—The same as the above, except confection sulphuris 1 drachm is given once daily (Berncastle, 1941).

3. *Benzyl Benzoate*.—Anoint the body with soft soap. Soak in a hot bath, rubbing the affected areas thoroughly. While the body is still wet apply a lotion consisting of equal parts of benzyl benzoate, industrial spirit, and soft soap (King, 1940) vigorously all over with a nail-brush for five minutes. Allow it to dry, then apply the lotion again for a further five minutes. Dry with a towel.

4. *Rotenone*.—A hot bath is taken and the patient is painted all over with 1% rotenone B.D.H. or 2% rotenone (sarevan) Evans in front of a fire (Callar, 1941).

5. *Derris Root*.—The patient is painted thrice daily with a solution consisting of 4 oz. of derris dusting powder, 18 drachms of soap flakes, and 1 gallon of cold water (Saunders, 1941).

There was no selection of cases apart from the exclusion of those in which the diagnosis was in doubt. Each case was treated by one method only until cured.

The diagnosis was founded on the association of itching when warm with the presence of burrows, which are most profuse in certain areas and there give rise to a red papular rash. A patient was considered cured when the itching had ceased, when there was no sign of activity of the rash (redness, swelling, etc., around the burrows), and when the rash had ceased to spread. It is probable that in this series about five days were wasted by hysterical or wilful "prolongation."

RESULTS AND COST

The time taken to cure 20 cases was: method 1, 46 days; method 2, 59 days; method 3, 30 days; method 4, 38 days; and method 5, 41 days. I account for the fact that the 20 cases

Source	Author and Reference	Raw (mg. per 100 gm.)	Cooked (mg. per 100 gm. orig. Raw Material)	Cold Pressed Juice (mg. per 100 c.cm.)	Cooked Liquor (mg. per 100 c.cm.)
Turnip	*Present	14 to 16	10 to 17	19 to 32	5 to 16
"	Chappell (1940)	11 to 22	—	—	—
"	Olliver (1936)	17 to 36	—	—	—
"	" (1940)	—	11 to 17	—	—
Swede	*Present	20 to 24	16 to 19	30 to 36	5 to 16
"	Chappell (1940)	21 to 37	—	—	—
"	Olliver (1941)	30 to 47	19 to 23	—	—
Parsnip	*Present	4 to 5	2 to 8	—	—
"	Chappell (1940)	5 to 6	—	—	—
"	Olliver (1941)	5 to 9	2 to 4	—	—
Orange*	Bacharach et al. (1934)	—	—	36 to 89	—
"	Chappell (1940)	—	—	27 to 55	—
"	Olliver (1936)	—	—	35 to 77	—
Black-currants	" (1936)	172 to 220	141 to 183	—	96 to 122†
"	" (1938)	108 to 344	—	—	—

* Excluding Seville or other bitter oranges.

† Syrup from cooking; about 50% added water, and fruits not expressed.

must not be carried too far; different samples of vegetables were used at different times in the year; and no properly controlled comparison was carried out in this purely preliminary investigation. Our results indicate, however, that cooking, because of the inevitable dilution of the juice and possibly also owing to some destruction, gives a solution of ascorbic acid somewhat less concentrated than the raw or cooked cold-pressed juice, but still a very useful antiscorbutic for use in infant feeding under present conditions.

treated by sulphur ointment took only 46 days as being due to the large number of mild cases in that group.

In assessing the cost, the expense of disinfecting the clothes and blankets is ignored because it varies so much from place to place. The cost of the soft soap for bathing purposes and the soap flakes is also ignored, it being very small. On this basis I calculated that the cost of curing a case by the five methods was: (1) 4.44d.; (2) 6.79d.; (3) 11.25d.; (4) 24d.; (5) 0.25d.

CONCLUSIONS

Benzyl benzoate is the most rapid of the five methods tried. It is clean, but dermatitis results in some cases. Moreover, it is fairly expensive and, at the present time, is difficult to procure.

Diarrhoea is the only appreciable difference that confection of sulphur makes to a man already being treated with sulphur ointment. It has no effect on the time taken to cure him. Sulphur can be counted on to cure the average case in three days. It is reliable and cheap, and only rarely causes dermatitis. The drawback is that it is such a dirty method.

The rotenone preparations, which cure an average case in two days, are clean and convenient but very expensive. In three cases there developed dermatitis of the scrotum following treatment with rotenone; one of these also developed balanitis.

The derris root method is most satisfactory. It is extraordinarily cheap. It is also clean and efficient. There is no necessity for the patient to bathe or to disinfect the clothing he is wearing. I had no case of dermatitis following the use of derris root.

My thanks are due to S.B.P.O. Mellish and Surgeon Captain I. McA. Holmes.

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Convulsions under Anaesthesia

Reports of the occurrence of so-called "ether convulsions" have become very frequent in the last few years, and one of the most anomalous features of this puzzling phenomenon is the apparent fact that, whereas a few anaesthetists or surgeons are able to recount a series of cases, the majority of anaesthetists have yet to meet their first case. The following describes my first experience of this alarming condition in fifteen years of anaesthetic practice, and I hope it will be my last.

CASE REPORT

The patient, an otherwise normal female child aged 10, underwent Steindler's operation upon both feet on June 11 last. Anaesthesia, administered by myself, was smooth and uneventful. The child received premedication with *omnupon* 1/6 grain and *scopolamine* 1/300 grain one and a half hours before operation; induction was with nitrous oxide and oxygen, and after "blind" intubation anaesthesia was maintained with *vinesthene* 25% in ether in closed circuit, using a circle absorber. The child had been anaesthetized previously, at the age of 5, for onsiectomy, the anaesthetic on that occasion being *ethyl chloride* followed by open ether. This anaesthesia is reported to have been without incident.

The temperature upon the evening preceding the Steindler operation was 99°; upon the day of operation it was normal. There was intermittent fever, rising to 100°, for two days after the operation; but this subsided, and for the succeeding four days the temperature was normal. On the seventh day pyrexia returned, accompanied by complaint of pain in the right foot. Pyrexia was intermittent, but since the pain persisted it was decided to change the plasters, and on June 25 I was asked to anaesthetize the child for this purpose. The evening temperature on the 24th was 101°, but on the morning of the 25th it was 98.4°. The child was not obviously ill or toxic.

Premedication was again with *omnupon* 1/6 grain and *scopolamine* 1/300 grain. Induction with nitrous oxide and oxygen was smooth, and was followed by maintenance with *vinesthene* 25% in ether in closed circuit with circle absorber. Intubation was omitted, since upon this occasion the prone

position was not required. The day was hot and sultry, the theatre temperature, in spite of all available ventilation, being 82°. Within the first fifteen minutes of maintenance the respirations became more vigorous than normal, and it was found that the soda-lime in the absorber had become exhausted; this was therefore renewed. Respiration, however, continued to be unsatisfactory, resolving itself into a series of sudden diaphragmatic contractions resembling hiccup, unwarranted by the plane of anaesthesia (lower first plane), with accompanying slight cyanosis. Rhythmical distension of the lungs by gentle bag compression improved the colour and temporarily allayed the diaphragmatic spasms, but these returned, and were shortly followed by generalized convulsions, with twitching of the facial muscles and intense cyanosis. The nature of the condition now being apparent, I withdrew the anaesthetic, raised the head by placing the table in reverse Trendelenburg, instituted lung inflation with oxygen, and ordered some 10% *evipan* solution to be prepared and a rectal temperature to be taken. The rectal temperature, taken under great difficulty, was recorded as 103°; the child, however, was extremely hot to the touch, with a dry skin. No improvement in the condition being apparent, I decided to give the *evipan*. Venepuncture proved to be impossible owing to the absence of visible or palpable veins, and since the condition of the child now appeared to be desperate I gave 4 c.cm. of the *evipan* intramuscularly into the triceps. The patient was now grey-black, with pupils widely dilated and arrested respiration. I rapidly exposed the larynx, passed an intratracheal catheter, and began insufflation with oxygen. This measure quickly restored the colour. No further convulsions occurred, and the operation, which had revealed a septic condition of the wound of the right foot, was completed, and the legs were re-encased in plaster without additional anaesthetic. No further trouble occurred, and the child left the theatre with normal respirations. Next day she was quite well.

COMMENTARY

Of the usually cited causative factors the following were present in this case: sepsis and possibly some toxæmia; an abnormally hot theatre and sultry weather; raised CO₂ tension for about fifteen minutes, due to exhausted soda-lime; a patient partially covered with mackintosh sheets; the administration of ether. The following factors were absent: the pre-operative administration of atropine; suboxygenation; marked toxæmia.

While the comparative rarity of the occurrence of convulsions under anaesthesia would seem to postulate the need for some subtle and rare combination of factors in their production, it is clear from the cases reported that only two of the factors cited are constantly present—sepsis with toxæmia, and anaesthesia in some form. Of these two factors, since cases have been reported as having occurred under both local and general anaesthesia, which differ widely in the physiology of their actions, it would seem that sepsis with toxæmia is the more constant and must therefore be accorded pride of place in causation; while anaesthesia must be relegated to the role of precipitating factor, possibly through a modification of the stimulus threshold of the nervous system. This would seem to support strongly the postulated neurotoxic origin of the condition.

I have complete confidence in the advisability of administering *evipan* in this condition, whatever the state of the patient; and from the rapidity and efficacy of its action in this case it would seem that the intramuscular route is as effective as any other, and, if one may dogmatize after such brief experience, I would advise the adoption of this route, since it would seem to be safer in a moribund patient and to afford a longer period of less depressive sedation. As an alternative technique I would suggest a minimal effective dose intravenously, followed after a short interval by the formation of an intramuscular "depot."

CONCLUSIONS

Of all the possible causative factors so far cited only two are constantly present in every case.

Although the convulsions do not necessarily start in the facial muscles, as has been so often stated, there is not the slightest difficulty in recognizing the condition once it has arisen.

Successful treatment consists in the immediate withdrawal of the anaesthetic, the early administration of *evipan*, intra-

muscularly, intravenously, or by both routes, and the immediate institution of intratracheal insufflation with oxygen.

No anaesthetist should approach a young and febrile patient unless he has the means and the ability to adopt these measures at a moment's notice.

Bournemouth. S. F. DURRANS, M.R.C.S., L.R.C.P., D.A.

Complete Stenosis of Common Bile Duct: Operative Cure

This case is an example of the successful treatment of a condition which is otherwise invariably fatal. It is presented in the hope that it will help to draw attention to the possibility of cure in such cases.

CASE HISTORY

A woman aged 53 was operated on by Mr. Clark at the North Riding Infirmary, Middlesbrough, on May 8, 1939, for gall-stones. An ordinary cholecystectomy was done, but it was noted that the gall-bladder was very adherent to the liver. The common bile duct contained no stones and was not opened. There was no unusual difficulty about the operation, convalescence was normal, and the patient was discharged on July 6, 1939.

Four months later, on November 7, she was readmitted with progressive jaundice and severe pruritus, and on December 5 a second operation was done. The region of the common bile duct was seen to be a mass of dense scar tissue; the duct itself could not be found in spite of careful dissection. As there seemed no prospect of successful treatment the abdomen was closed. The patient's condition became steadily worse, the itching driving her almost mad, and it was obvious that unless something could be done, and that quickly, she would shortly die. In the meantime Wakeley (1939) had described the successful treatment of such a case by incising the liver and duodenum and stitching a rubber tube in place between them, covering the anastomosis with omentum. It was decided to carry out this procedure.

On February 27, 1940, her abdomen was opened for the third time and the operation described by Wakeley performed. The incision into the lower surface of the liver was deepened by blunt dissection to a depth of 2½ inches, using a pair of artery forceps. The patient recovered well from the operation, but for a week there was no improvement in her jaundice or pruritus. Then quite suddenly she began to pass normal-coloured stools and the itching disappeared. Her jaundice began to improve about the same time, but more slowly. She was discharged on April 23, 1940, with only an icteric tinge, feeling very well. A radiograph at that time showed the tube to be still in position. She occasionally passes clay-coloured stools and has some slight skin irritation, but when last seen at the out-patient department on February 10, 1941, her stools were normal, although she still had an icteric tinge. A radiograph taken on August 12, 1940, showed that the tube had disappeared, presumably having been passed per rectum.

DISCUSSION

One interesting point which arose was whether the incision into the liver should be deepened by sharp or blunt dissection. In this case it was done by the blunt method. I have since been informed by Surgeon Rear-Admiral Wakeley that in his case he dissected down through the liver substance with a scalpel until he found a distended bile duct; he opened this and inserted the tube. This is not made quite clear in his description of the case. In the present case it seems likely that after a week the rubber tube eroded a distended bile duct in the liver substance, and thus allowed drainage. It is not surprising that this should happen, as in a similar case, not operated on, a bile duct has actually been known to rupture through the diaphragm and open into a bronchus (Miller, 1939). With this in mind blunt dissection would seem to carry less risk of serious haemorrhage.

I am indebted to Mr. J. C. Clark, the surgeon in charge, for permission to publish the case, and also wish to thank Surgeon Rear-Admiral Wakeley for his encouragement to do so.

FRASER SINCLAIR, M.D.,
Surgeon Lieut., R.N.V.R.

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Reviews

HISTORY OF PHARMACY

History of Pharmacy. A Guide and a Survey. By Edward Kremers, Ph.D., Sc.D., and George Urdang, D.Sc. (Pp. 466: 30 illustrations. 25s. net.) Philadelphia, London, Montreal. J. B. Lippincott Company. 1941.

This typically encyclopaedic German-American work is stated by the authors to be compiled with particular reference to the needs of students. We can hardly believe that, however useful it may be as a book of reference, students can or ought to try to assimilate such a mass of detail. The opening chapters on early backgrounds and medical theories are, however, of real general interest. They are followed by sections dealing with the rise of professional pharmacy in different European countries, and here we detect a mildly patronizing attitude towards England. Nearly half the book is devoted to a minutely documented account of pharmacy in the United States in all its bearings. A bibliography, chronology, and glossary complete this monument of laborious industry.

Certain general conclusions emerge. The authors believe that from the very beginning attempts at rational therapeutics went hand in hand with purely magical procedures. Secondly, it appears that the repeated attempts of the physician to control the pharmacist have not always favoured the scientific advance of pharmacy. It is interesting to learn that the Emperor Frederick II, that extraordinarily modern-minded man, issued an edict in 1240 separating the pharmaceutical from the medical profession. In this country the Society of Apothecaries had in 1617 to emancipate themselves from the physicians on the one hand and the grocers on the other. Then the apothecaries claimed to be practitioners of medicine, and to protect the interests of pharmacy the Pharmaceutical Society was founded just a century ago. Even so the struggle continues between the doctor who dispenses and the chemist who prescribes. Fortunately, a *modus vivendi* between the two professions concerning the *British Pharmacopoeia* and many other matters has been achieved.

The third point is that, although an increasingly high standard of education is demanded of the pharmacist, his privileges stand in danger of serious curtailment through the increasing power of the co-operative societies and patent medicine vendors, on both of whom the legislature casts a curiously protective eye, not to mention the wholesale chemist who sends out remedies all ready to be handed over the counter by a highly trained dispenser. The moral of the history of pharmacy is that if its professional status is not safeguarded the whole technique of healing suffers.

ENCYCLOPAEDIA OF MEDICAL PRACTICE

The British Encyclopaedia of Medical Practice, including Medicine, Surgery, Obstetrics, Gynaecology, and Other Special Subjects. Under the general editorship of Sir Humphry Rolleston, Bt., G.C.V.O., M.D., Publishing Editor, Adam Clark, L.M.S.S.A.; Sub-editor, G. Faulkner, D.Sc. *Summaries and Abstracts and Cumulative Supplement, 1940.* (Pp. 956, and pp. 283. No price given.) London: Butterworth and Co. (Publishers) Ltd.

Continuing to fulfil the plan originally adopted for the *British Encyclopaedia of Medical Practice*, the editors have brought out the 1940 volumes of *Summaries and Abstracts* and of the *Cumulative Supplement* in spite of wartime conditions. These keep the high standard previously remarked on. Though naturally influenced by both war problems and war needs, the contributors take a broad-minded view of the subjects under comment and again set out an up-to-date review of the matter. In the past few years two

advances in medicine have followed the elaborate and often apparently academic researches of the biochemists, and now the medical practitioner is reaping the benefit of all this work in finding great help in diagnosis from the use of chemical tests, and in treatment from the use of the sulpho-amide compounds and the sex hormones. All these are now sufficiently established to have clear indications for their administration and something like reliable standards of efficacy.

The *Cumulative Supplement* is meant to elaborate and add to the information already available in the main body of the *Encyclopaedia*. With the new *Index* it is possible to find one's way to the discussion of the particular subject sought. The *Index* has been produced with the help of those accustomed to the control and running of medical libraries, and we find on testing that it enables a quick and satisfactory reference to the required information to be made.

In the volume of *Surveys and Abstracts* the editors have invited leaders in the various subjects discussed to give a summary of recent work. These articles give, therefore, digested reviews of the present aspects of medicine, surgery, and obstetrics, with special discussions of many of the systemic diseases, and most useful surveys of radiography and radiotherapy, chemical pathology, anaesthetics, and recent developments in drug therapy. The abstracts are remarkable for the breadth and variety of references to current medical literature from the medical profession of the world. In these times of stress and lessened supply the publishers have kept up the standard of production, so that the present volumes align themselves with those already printed before the war.

INTRODUCTION TO PHYSIOLOGY AND ANATOMY

Physiology and Anatomy. By Esther M. Greisheimer, M.A., Ph.D., M.D. Fourth edition. (Pp. 822; 474 illustrations, of which 52 are in colour. 18s. net.) Philadelphia, London, Montreal: J. B. Lippincott Company.

The popularity of this book is well attested by its having reached, since June, 1932, a fourth edition, and by the fact that reprints of all the earlier editions have been required. The subject-matter has been now arranged on what is termed the "unit plan," and the wide scope of the work is indicated by the headings of these units: (1) "The Body as an Integrated Whole"; (2) "The Erect and Moving Body"; (3) "Integration and Control of the Body by the Nervous System"; (4) "Maintaining the Metabolism of the Body"; (5) "The Reproductive System." The last includes an "Introduction to Embryology" and notes on pregnancy and parturition. The description of each subject is followed by brief allusions to practical considerations, and by a summary. The book is amply and well illustrated, the figures including some excellent x-ray photographs, and some useful schemes and tables which summarize recent work on such subjects as water balance, digestion, and the ovulatory cycle.

It may be freely admitted that the present work "reflects the most recent trends and concepts in the teaching of physiology and anatomy." One of these trends is greater attention than heretofore to the study of the physico-chemical side of physiology, which is all to the good. Other tendencies are, however, to reduce the period allotted for the study of anatomy and embryology. This trend has now moved so far that the description of individual muscles or the complete development of particular organs or parts is replaced by schematic tables or general statements which are wholly inadequate for the proper comprehension of these subjects from the standpoint of a medical practitioner. Dr. Greisheimer's book presumably fulfils the

requirements of the modern school of thought, and apart from the above comments the author is to be congratulated on the amount of useful information she has succeeded in putting before the reader in an attractive and interesting manner. From the physiological aspect the book should prove valuable not only to students training for the nursing profession but also to teachers of elementary applied or clinical physiology.

Notes on Books

We have received from Moscow, after three months in transit, a copy of a small book, *Health Resorts of the U.S.S.R.*, being a group of illustrated articles compiled from data in the Central Institute of Balneology under the editorship of Dr. I. A. PERTSOV. In his preface Prof. I. A. Valedinsky brings to light the boundless resources for the development of health resorts in the Union of Soviet Socialist Republics. "Innumerable and varied mineral springs and deposits of medicinal muds, peats, etc., are to be found literally throughout the whole of the Soviet Union." The numerous health resorts are recognized as forming part of the national wealth, and their development has proceeded according to the general State plan. Spa treatment also comprises one of the links in a chain of medico-prophylactic measures for improving the health of the working population of Russia. The book is published by the U.S.S.R. Society for Cultural Relations with Foreign Countries (Bolshaya Gruzinskaya, 17, Moscow, 56). Not many copies are likely to reach this country just now, but those that do will be read with particular interest by balneologists and climatologists.

Preparations and Appliances

TRANSFUSION PANNIER

A transfusion equipment with some special features of interest is now in use in the hospital and ambulance service of the Australian Army. Although not on sale in this country, it is on exhibition by Drug Houses of Australia Export Ltd., Australia House, London, W.C.2, and there are hopes that in course of time it may become standard British equipment. In designing the apparatus, which bears the trade name of "Soluvac," assistance has been given by the Walter and Eliza Hall Institute of Medical Research, Melbourne.

The pannier in which the whole equipment is contained is a masterpiece of packing. For use in the field it is made of cane, covered with canvas, and it contains four litres of 5% dextrose in normal saline, a similar quantity in Ringer's solution, and two litres of normal saline, making ten litres of fluid suitable for intravenous administration, all vacuum-packed in screw-top flasks. There are also five sets for giving these solutions, each set comprising 5 feet of rubber tubing with clamp and dropper, and two glass cannulae with one No. 17 needle for alternative use. Five blood filters for addition to these sets when giving stored blood or blood containing clots are provided. There are two sets for collecting blood from donors. Each set comprises a sterilized bottle, stopper, two spare needles, air filter, 18 inches of rubber tubing fitted at each end with a blood needle of large bore, and a number of ampoules of anti-coagulant solution. Special attention is called to the design of the bottles and the method of closure. The bottle is graduated from both top and bottom and is of one-litre capacity. A metal bail fitted to the base enables it to be hung up by string or hook during delivery of contents. The bottle is closed by a rubber stopper pierced by two holes, one hole accommodating an air-inlet tube and the other being vacant. The stopper is covered by a rubber disk and this in turn by a metal disk, with elaborate precautions for accurate fitting, so that a hole in the disk exactly overlies the vacant hole in the stopper. Both disks are held in position by a metal collar, which screws on to the bottle neck.

The pannier also contains sets for grouping blood, various accessories and spare and alternative parts, and a useful feature of it is that every item is in a box carrying a plainly marked inventory label and showing also how many items of the same kind are included.

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TREATMENT BY HYPOTHERMIA

About two years ago Prof. Temple Fay and Dr. Lawrence Smith of Philadelphia issued their first clinical report on the effects upon cancer growth of a general lowering of the body temperature by about 10°F . They termed this general depression of body temperature "hibernation," while local cooling of a tumour was called "refrigeration." This earlier work has already been reviewed in our columns.¹ A group of workers at the Lenox Hill Hospital, New York, reinvestigated² the effects of this method of general cooling, but called it "cryotherapy." A third careful research has appeared under the authorship of Dr. J. H. Talbot³ of Boston, and he has introduced the term "hypothermia," which on the whole seems more satisfactory and comprehensive than any of the other terms. He has reviewed the literature and points out that the local application of cold for treatment of cancer dates back as early as 1865. Recent studies have shown that regressive changes in tumours are most obvious when local hypothermia can be carried out at a temperature between 40°F and 50°F . Special fitting coils through which a refrigerant circulates are applied and necrosis of tumour tissue may follow. Dr. A. McCravy⁴ has reported favourable results with local hypothermia in five cases of carcinoma of the bladder in which the bladder cavity had been marsupialized and exteriorized. In all cases the patient's life was prolonged beyond that expected for a patient not treated with hypothermia. It is possible that radiation combined with cold might be more effective than either alone, as the effects of cold upon the tumour cells are not so unlike those of radiation with x rays. Talbot emphasizes that hypothermia is not looked on as a cure for cancer by even the most sanguine of its advocates, yet it does have a place in the treatment of a selected group of patients suffering from this disease. The Lenox Hill Hospital authorities publish a list of cases which are unsuitable for treatment by general hypothermia; it needs more careful consideration than does the local therapy.

Contrary to what has been taught hitherto, the lowest internal temperature that man can bear probably lies somewhere between 70°F and 75°F and not between 90°F and 95°F . Two patients of Talbot and his colleague Tillotson had rectal temperatures of 74°F and 75°F , respectively, and both made an uneventful recovery from this cooling. The heat regulatory mechanism presumably ceases to operate below 75°F in animals, and the continued fall in body temperature proceeds at the same rate as that in a dead animal in similar circumstances.

If the animal is then warmed the thermal regulatory mechanism begins to assert itself at approximately 75°F . In the hibernating animal the body temperature may approach 32°F without causing death.

For induction of general hypothermia Talbot recommends three or more grains of nembutal intramuscularly twenty minutes before the patient is placed nude in the cold environment at 32°F . Just before the cooling 0.5 to 0.7 gramme of evipan is given intravenously. Within an hour the anaesthetic effect of evipan has worn off and simultaneously the body temperature falls. The anaesthetic property of the cold usually obviates the necessity for further intravenous anaesthesia or sedative. By keeping the environmental temperature below 60°F a working range for internal temperature (controlled by rectal thermocouple) between 80°F and 90°F is maintained for not more than twenty-four hours in the trial period of treatment. This trial period is especially necessary for patients older than 40 or who have metastatic cancer. Following the initial treatment there may be one or more additional periods of from two to four days each, while the intervals between successive treatments may be as short as two or three weeks. It is not known how many times the treatment may be repeated. A gradual restoration of body temperature at a rate not higher than 2°F an hour is associated with fewer ominous signs than a rapid rise. No serious after-effects have been observed, but the development of pneumonia in patients with metastatic cancer in the lungs is sufficiently common to cause rejection of such patients for treatment. During hypothermia there are various changes such as initial rise of pulse and blood pressure followed by a gradual fall, obliteration of venous channels, constriction of large arteries but no vascular occlusion or thrombosis, prolongation of circulation time from arm to leg, disappearance of pupillary reflexes, cardiac arrhythmias such as sinus arrhythmia and auricular fibrillation. All Talbot's patients whose temperature reached 80°F developed fibrillation, which was corrected by digitalis, quinidine, and restoration of body temperature. Unless fluid balance is maintained there is haemoconcentration with an increase (25%) in the red cell count. The white cell count increases several-fold with a rise in the percentage of polymorphonuclear cells. Routine urine analyses for albumin, sugar, and formed elements were negative.

The principal conditions treated up to the time of Talbot's publication were intractable pain, cancer, morphine addiction, leukaemia, and schizophrenia. Relief of pain may well be the most important gain, and all observers are in agreement concerning this; two-thirds of the patients treated had much relief. Some have found that sedatives, narcotics, and operative intervention (chordotomy and rhizotomy) for pain are no longer necessary. Morphine addiction *per se* has responded to general hypothermia, and the use of cold in diminishing the undesirable effects of alcoholic intoxication has been appreciated for at least 150 years. Talbot refers to a gentleman named Weeks who lived about that time back and was a great votary of Bacchus. For fifteen or twenty years he was in the habit of plunging into cold water when he rose from his bottle and of actually going to sleep in a trough full of water with his head

¹ *British Medical Journal*, 1940, 1, 979.

² See *British Medical Journal*, 1940, 2, 528.

³ *New Engl. J. Med.*, 1941, 224, 281.

⁴ *N.Y. St. J. Med.*, 1940, 40, 1435.

specially supported. Instead of experiencing debility, lassitude, headache, and nausea, he found himself on awaking cheerful, refreshed, and free from all effects of intoxication.

The value of greatly reduced temperatures in other fields of surgery is also being studied by Dr. F. M. Allen of New York and others. Fundamental investigations are being very carefully conducted in order that undue enthusiasm over a spectacular novelty may not be followed by disillusionment, which may obscure any real value of the method. Dr. Allen introduces the use of the tourniquet with low temperature and gives some data of amputations through the thigh and the lower leg for diabetic gangrene and arteriosclerotic gangrene in aged patients; anaesthesia is produced by keeping the bloodless leg tissues for a period of from one to five hours at a temperature of about 5° C. by means of ice-bags or iced water. The leg is rendered bloodless before cooling by careful application of a narrow tourniquet after elevation of the leg to drain off any non-infected blood. The use of cold makes it possible to disregard the rule that a tourniquet must not be applied to a diabetic or arteriosclerotic limb. The tourniquet is released after the operation, when all is in readiness for closure of the wound. It appears that both primary and secondary shock are abolished by suitably low temperature in the damaged tissue, and the surgeon has the opportunity of working in a bloodless and shockless field; the low temperature inhibits growth of bacteria. Loss of vitality in wound flaps or mutilated tissue is also treated by local reduction of temperature, as is post-operative shock. Healing is slowed down but not stopped by low temperature. Attention is also being directed towards the possible use of hypothermia in military surgery and in embolism and other accidents. Embolism of a main artery is one of the conditions in which warming a limb is disastrous, and Dr. Allen believes that a suitable degree of refrigeration may be the most important non-operative treatment. At a temperature of 5° C. the requirements of the tissues for oxygen are reduced, and in intact animals the period of survival of the bloodless limb tissues has been experimentally increased at least to fifty-four hours as against the few hours or minutes at higher temperatures. Dr. Allen has attempted to apply this finding to surgery, but at present his researches are at a preliminary stage.

LEUCODERMA FROM RUBBER GLOVES

Although from time to time cases of dermatitis occur which can be attributed to the wearing of rubber gloves, they are, on the whole, rare considering the nature of the complex substances, organic and inorganic, commonly used in the preparation of rubber. A recent report* by Schwartz and Oliver of an occupational leucoderma, due to an ingredient in the rubber of the gloves they wore, among negro and white workers in tanneries in the U.S.A. is therefore of interest. The report provides a model of how an investigation into

dermatitis should be carried out, and on this ground alone is worth detailed consideration. Workers in tanneries are subject to skin and nail affections due to tannin, sulphides, lime and chrome salts, and also to bacterial infection of the skin, but this leucoderma was something new. The condition was preceded by itching and mild dermatitis in some cases, but there was no great discomfort or disability. Localization of the lesion to the hands quickly led to an investigation of the gloves, which were identified by the manufacturers as "acid-cured" gloves in which the rubber mix had recently been modified by the addition of 0.2% of an anti-oxidant not previously used. This anti-oxidant was the monobenzyl ether of hydroquinone, which, as used, is a tan-coloured light powder with an aromatic odour, a specific gravity of 1.26, and a melting range of 115° to 120°C. It is very slightly soluble in water and benzol and in rubber to 2%; it is said to be non-toxic with ordinary handling, and it does not "bloom" when used up to 1% in rubber. As it does not discolour in daylight and only slightly in direct sunlight, it was recommended for use in white and light-coloured rubber goods. Further, it is not as readily attacked as other anti-oxidants by acid-cure (sulphur monochloride). The incidence of the leucoderma among the Mexicans, negroes, and white Americans wearing these gloves was respectively 31%, 29%, and 21%. In the negroes the areas of depigmented skin were a flat white, but in the white workers the leucoderma showed only in the summer, when the skin of the glove areas failed to tan. In no case were the hairs bleached.

A comprehensive series of patch tests of all the various constituents, including the acid-cured rubber which did not contain the anti-oxidant, the dimethylamine used by one tannery as a de-hairing agent, and the various tanning liquors, were carried out. All the workers reacted to the anti-oxidant patch with greater or less degrees of leucoderma, and only one reacted to a piece of acid-cured rubber containing a mere trace of the anti-oxidant; none of the remaining constituents of the rubber gave leucodermic reactions. The patches were allowed to remain in contact with the skin for seven days; the leucoderma appeared on five of the ten patients tested two weeks after the patches were applied; six months later three more showed leucoderma, and two of the first five were now repigmented. In the majority of cases leucoderma began to develop about a week after the patches were removed. There was skin reaction and leucoderma after only seventy-two hours' application of the anti-oxidant either alone or in unvulcanized or vulcanized rubber. Hydroquinone (1% of which was present in the original anti-oxidant) failed, even in strong concentration, to cause leucoderma. Subjects who had had no previous contact with the anti-oxidant developed leucoderma some months after application of the patches. It would thus appear that this anti-oxidant leads, after a considerable time, to depigmentation of the skin but not of the hairs, and whatever the mechanism may be, the oxidase system responsible for the development of pigment in the skin is not permanently damaged. For repigmentation gradually occurs if there is no further contact with the anti-oxidant.

* *Amer. J. Surg.*, 1941, 52, 225.
* *Publ. Hlth. Rep.*, Wash., 1940, 55, 1111

The histology of the depigmented and repigmented skin was studied, the "dopa" staining method and the usual haematoxylin-eosin technique being used. This showed a fairly sharp line of demarcation between the normal and leucodermic areas of skin, with a gradual decrease in pigment particles in the cells of the basal layer as this was approached. The process of repigmentation could be seen in action by the presence in the basal cells of "dopa" positive particles interspersed among areas of pigment-free cells. No inflammatory reaction in the skin was noted, nor were the pigment cells morphologically affected. The mechanism by which this action of the monobenzyl ether of hydroquinone is brought about is not certain. Schwartz and Oliver consider that anti-oxidants act by their greater affinity for oxygen, thus, for a time at least, inhibiting the action of oxygen on the rubber. The formation of melanin in the skin is a complicated process, but in simple terms it may be described as the oxidation of 3,4 dihydroxyphenylalanine (dopa reagent) to melanin by an oxidizing enzyme in the melanoblasts of the epidermis. Whether the precursor of melanin in the skin is identical with dopa is not clear, but at any rate the two must be closely related. The localization of dopa oxidase, as the enzyme is called, to the melanoblasts is demonstrated by fixing skin sections in formol and treating them for a few hours to a few days with 0.1% dopa buffered to pH 7.3 or 7.4. The cells containing the oxidase will thus be stained deeply with melanin. Before a leucoderma is produced the existing pigment must disappear and new pigment must be prevented from forming. The former was seen to be the result not of bleaching of the existing pigment but of a slow metabolic removal; the second may be brought about by deflecting oxygen from the substrate, by inactivation of the oxidase, or by preventing the formation of the pigment precursor. It is not clear which of these or what combination of them is the true explanation, but from the fact that the "dopa" reaction was negative in the leucodermic areas it follows that the oxidase system was not operative. On the other hand, the fact that repigmentation was slowly re-established shows that the inhibiting factor (presumably the anti-oxidant) gradually disappeared and allowed the oxidase system to operate normally. It seems, therefore, that the action of the monobenzyl ether of hydroquinone in the skin is similar to its action in rubber—that is, it prevents the oxidation of the unsaturated linkages in the rubber molecule and the oxidation of the pro-pigment (dopa) in the skin.

OBSCURE PULMONARY INFECTIONS

The pitfalls that beset the diagnosis of pulmonary tuberculosis in the absence of bacteriological confirmation have been enumerated by Scadding,¹ and they are rendered prominent at the present time by an unfortunate tendency in the Services to board a man out with the diagnosis of pulmonary tuberculosis solely on the evidence of a radiological opacity. In a recent paper Davidson and Ellman² described five patients all of whom had radiological lesions

in the lungs which pursued a benign course. The authors hold the opinion that these were examples of so-called "benign acute pulmonary tuberculosis," as described by Ornstein, Ulmar, and Dittler,³ though in no instance did the sputum contain tubercle bacilli. Many physicians would probably disagree with this diagnosis in some, at least, of the published examples, but the paper is of value because it directs attention to the difficulty of distinguishing between pulmonary tuberculosis and the various atypical forms of pneumonia. A certain amount of confusion has been caused by the indiscriminate use of the term "pneumonitis" to cover a variety of conditions, but Scadding, in a series of articles, has shown that the common forms of atypical pneumonia can be classified conveniently into four groups. The first is described as benign circumscribed pneumonia,⁴ a transient localized consolidation arising in the course of a catarrhal infection of the respiratory tract. This condition is of frequent occurrence, it produces few symptoms, and is commonly found on routine radiological examination. The second form is chronic suppurative pneumonia,⁵ a condition characterized by prolonged pulmonary consolidation and a tendency to abscess formation; the disease may spread, either directly or by aspiration, and when healing occurs it is accompanied by fibrosis. The sputum is purulent and may be offensive, and the patient shows obvious signs of toxæmia. In the third type—chronic diffuse bronchopneumonia⁶—there is a widespread, patchy consolidation of the lungs with fibrosis, the radiographical picture closely resembling that of chronic fibroid tuberculosis; the patient is gravely ill, dyspnoea is the most prominent symptom, and the disease pursues a prolonged but fatal course. The fourth form Scadding describes as disseminated focal pneumonia,⁷ an acute condition not associated with upper respiratory tract infection in which fever, sweating, cough, and, later, sputum are the principal features. Radiologically there is a mottling similar to that seen in miliary tuberculosis, though less widespread, and both the symptoms and radiological lesions disappear in the course of a few weeks.

The aetiology of these infections remains obscure. The sputum commonly shows a mixed flora with no organism predominating. It is probable that the first three conditions are due to the aspiration of infected material into the terminal parts of the bronchial tree, while the recent work of Weir and Horsfall⁸ suggests that disseminated focal pneumonia is a virus infection. An epidemic of atypical pneumonia in infants, probably due to a virus, has been described recently by Adams.⁹ When faced with the need to distinguish between one of these conditions and pulmonary tuberculosis the physician's lot is not a happy one. On the one hand he is in danger of failing to diagnose an early case of pulmonary tuberculosis, while on the other there is the risk of imprinting the stigma of that disease upon an innocent subject. Every recognized aid to diagnosis should be employed. A strong family history of tuberculosis may be a deciding factor. The sputum should be cultured and injected into a guinea-pig whenever possible, and when none is being expectorated it is often possible to obtain a specimen through the bronchoscope. But every investigation may well prove negative or inconclusive, and the search has to be relinquished until the disease either reveals its nature in its own time or remains a mystery. There is a need for new ways of approach to this problem, and the method of diagnostic lung puncture may deserve a more extensive trial.

¹ *Amer. Rev. Tuberc.*, 1931, 22, 223.

² *Quart. J. Med.*, 1939, 8, 79.

³ *Proc. roy. Soc. Med.*, 1935, 31, 1259.

⁴ *Brit. J. Tuberc.*, 1936, 30, 186.

⁵ *British Medical Journal*, 1937, 2, 956.

⁶ *J. exp. Med.*, 1940, 72, 595.

⁷ *J. Amer. Med. Ass.*, 1941, 116, 925.

¹ *Tubercle*, 1939, 21, 1.

² *Brit. J. Tuberc.*, 1941, 35, 5.

TRAFFIC OFFENDERS

Driving a motor vehicle is an act that calls for a sense of social responsibility and for physical fitness to perform it. Many diseases and disabilities are incompatible with safe driving, yet in this country epilepsy is almost the only one, apart from blindness, which is generally recognized as a bar to the driver's seat. Among one hundred traffic offenders referred for medical examination by the Recorder's Court in Detroit, there were fourteen with evident neurological disease, four with well-developed mental disease, and fifty-eight, including four epileptics, with isolated neurological signs; these results were compared with a control group, of whom only twenty-two gave similar findings.¹ The persons observed had been chosen by the judge for medical investigation because of the impression they gave the court when they were in the box; so that the grosser medical conditions at least were presented in far higher proportion than among traffic offenders in general. Though only one-quarter of 1% of all the cases passing through the court were referred, the fact that the sample taken shows nearly 20% of seriously disabling disease proves the desirability of some medical supervision for holders of driving licences. The rising figures for deaths on the road in this country will, we hope, persuade the authorities that action of this kind is necessary. A medical certificate of fitness accompanying each application for a licence should be as obligatory as the passing of a driving test. Such a certificate should, on the analogy of a passport, be signed only by a doctor who has known the candidate for some time, because there are mental conditions of great importance in this respect which may not show themselves at formal clinical examination. There is, for example, addiction to alcohol, of which there were fifteen cases in the Detroit investigation. There are also other forms of irresponsible psychopathy—"sociopathy," as it is sometimes called. A well-planned system would provide for a yearly medical examination. This need not cost the State much because, except in the case of paid drivers, it should be charged to the applicant himself. Failing such a comprehensive measure there should at least be a medical examination of all those convicted of careless or dangerous driving, whether merely of speeding, of intoxication while driving, or of actual manslaughter. There are states of mind other than those characteristic of psychoses which should be a bar to driving but which no routine medical examination could eliminate. There are people who desire power and want to overtake everyone on the road, the aggressive who would like everyone else to get out of their way, the anxiously preoccupied whose attention is only half on the driving, the depressed who contemplate a car accident as a means of suicide, the guilt-ridden whose legs fail when they seek to apply the brakes. Few such are likely to be detected until an accident has happened, if then. On the other hand, it is surprising how comparatively few car accidents occur to psychoneurotics, or even to those who are profoundly depressed constitutionally. It has, however, been shown that even in minor road accidents psychiatric investigation is worth while. Some years ago an investigation was carried out on New York bus drivers who had had more than the average number of accidents. The results showed that they were usually people who, at the time, had domestic or financial cares on their minds. It is impossible for any scheme, however perfect, to eliminate all accidents from such causes. But a good system of licensing should demand not simply an affidavit from the applicant of freedom from disease or disabling defect, but a medical overhaul at least at the time of first application and, say, every five years thereafter,

together with a statutory medical examination if any serious traffic offence is committed. Tests of driving aptitude—a cognate problem—have not so far proved themselves enough to make it worth while to apply them to the ordinary candidate for a licence.

PREVENTION OF DIABETES

Prevention of such a condition as human diabetes must depend upon some degree of certainty as to its causation. What, in fact, do we know of the cause of diabetes in man? In spite of the vast amount of work done on the subject both before and since the discovery of insulin, we know little. The fact that insulin can, and in most cases does, control the condition in greater or less measure means that manufacture in the body has ceased, or that insufficient amounts are available, or that what is produced by the islets is inactive, inactivated, or antagonized. The last possibility must be kept in mind in view of the paucity in many cases of pathological signs in the pancreas. But the success of insulin does not help us to understand why an apparently normal young man suddenly finds that he is losing weight and energy, is always thirsty and hungry, and has to get up at night to micturate. From being a normal, active person he has more or less suddenly become a diabetic. Why? The practitioner, having established the diagnosis in the usual ways, inquires closely into the family history, dietary habits in the matter of carbohydrate, and the rest. Family histories of significance are frequent enough to justify the conclusion that a tendency existed in the patient's forebears; but this is far from saying that the condition is hereditary. Any system of prevention which would involve application to all members of families related more or less closely to groups in which diabetes had occurred would in most cases be a waste of time and effort. A history of excessive consumption of soluble carbohydrate is often obtained, but not often enough for it to be regarded as an essential factor in causation. People with diabetes are met with who have had a lifelong aversion from soluble carbohydrates, and big eaters of sugar remain perfectly free from glycosuria throughout life. A history of high nervous tension is common, but so is a history of phlegmatic temperament. Obesity is not infrequently a precursor of diabetes, which may be of the fulminating type or of the so-called hepatic type. Diabetes is met with in children long before dietary indiscretions are likely to have had any serious effect in exhausting the production of the islets. That diet may have something to do with the onset of the disease was suggested by the fall in incidence which is said to have occurred in Germany during the last war. But diabetes appears among people who have never possessed enough means to do more than live on the borderline of starvation. It must be kept in mind, however, that such people tend to feed largely on carbohydrate foods.

Failing any clear knowledge of the primary cause of human diabetes, Best and his co-workers² propose that children with a family history of diabetes should have their blood sugars determined at frequent intervals, with a view to early diagnosis and treatment. They further suggest that measures should be taken to rest the islet tissue by either dietary means or insulin, or both. It is held that in the early stages of the disease rest of the islet tissue will allow of some recovery of the already affected cells, or that it will at any rate spare those not yet involved. In experimental animals the criterion of functional rest to the islet tissue is taken to be a marked diminution of the insulin content of the pancreas, and it was shown conclusively that starvation, starvation with insulin administration, and

a fat diet with or without insulin all produced such diminution in a high degree. Leaving aside the theoretical soundness of Best's interpretation of his findings, let us consider the fate to which he would sentence thousands of children unfortunate enough to have been born into families in which there had been a case of diabetes or glycosuria. Such children would be brought up with the sugar menace always over their heads, with a diet which would make eating an unpleasant task, with the hospital or doctor constantly on their track, and, as they grew up, with rebellion and resentment in their hearts. But such rebellion would be of little avail, for no one could be certain that the inborn tendency to diabetes would not manifest itself at any time if the regime were discontinued. It might even be argued that life as a diabetic would be preferable in that at least the patient would know where he stood and could get a square meal when he wanted it. Further, as pointed out by Lawrence, a diet low in carbohydrate and protein, combined with systematic dosage of insulin, would give the "potential diabetic" all the apprehensions of the unstabilized diabetic about his next attack of hypoglycaemia. The prevention of diabetes must surely lie in the social, physical, and mental improvement of man, and in the re-ordering of his activities. Spontaneous diabetes in animals, at least in laboratory animals, is a rare phenomenon. The relation of carbohydrate metabolism and the function of the islets to brain centres and the pituitary gland is established. Is it too much to suppose that this disease is in some fundamental way one of the prices which man is paying for his departure from the most elementary principles of his constitution? Cases of acute diabetes occur as the result of violent emotional crises or fear. Harassed and torn by wars and horrors, mankind has denied itself or been denied the possible compensation afforded by a healthful life in the periods between conflicts. In peace his anxieties are often scarcely less disturbing. These anxieties on different planes affect all classes, rich and poor. It is at least plausible to associate the high incidence of diabetes among Jews with the many centuries of persecution to which they have been subjected, and the maintenance of the high incidence in regions where persecution has not been practised for some generations to the inherited nervous instability which resulted.

THE TEACHING OF MOTHERCRAFT

For several years the National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality has been concerned with the organized teaching of mothercraft on a national basis. At a recent discussion of the Maternity and Child Welfare Group of the Society of Medical Officers of Health the subject was fully ventilated by Dr. Leslie Housden¹ and Dr. Agnes Nicoll.² They clearly brought out that workers in maternity and child welfare centres are hampered by coming into contact with the mothers too late, when wrong habits have already been formed because of ignorance of even the most elementary principles of child hygiene. The problem has three main difficulties: first, at what stage of the school curriculum should mothercraft be introduced? This is relatively easy to answer, for obviously the last two years of elementary school life must be the time of choice until secondary schooling is universal. (The National Association, mentioned above, issues a syllabus of theoretical and practical instruction for girls under 16.) More difficult is the question of who is to do the teaching. Clearly a married schoolmistress with a family of her own and herself educated by a special course of training for the purpose

would be ideal. But local education authorities, at all events in times of peace, have a habit of dismissing married teachers, so the speakers at the discussion favoured the choice of a health visitor accustomed to teaching. The choice will have to be made most carefully: the type of instruction for schoolgirls needs, for example, to be different from that for young mothers at an ante-natal clinic. There is also the inevitable question of finance, for the teachers must be paid, and it is necessary to have a certain amount of apparatus, charts, and so forth. Here Dr. Housden was on certain ground when he stated dogmatically that the more a mother knows about the care of her children the less they will cost the State. A reduced expenditure on children's hospitals, juvenile courts, approved schools, and even prisons would eventually result from a national policy of educating all girls for home-making and mothercraft. Many girls now leave school with a good grounding in needlework and cooking and perhaps with some instruction in housecraft, but the care of children is sadly neglected. School is the only place where every potential mother of the future can be reached, and the teaching of mothercraft as an essential part of the school curriculum is a practical contribution to the health of the nation. Incidentally the Maternity and Child Welfare Group of the Society of Medical Officers of Health must be congratulated on turning their attention to the future at a time when wartime duties and temporary arrangements might well have absorbed their energy.

LONDON HOSPITAL ENTERS ITS THIRD CENTURY

This year the London Hospital enters its third century. It was in 1741 that, after a meeting held in a City tavern towards the end of the previous year, when it was decided to rent a house in Featherstone Street, patients were admitted, a banking account opened, a house committee elected, and a woman engaged to act as nurse (at a salary of £14 per annum). A chaplain was also appointed in 1741, and held office for nearly fifty years, and in 1741 the first medical student was entered—a Mr. Godfrey Webb, pupil to the first surgeon, Mr. John Harrison. After being in the hospital six months Webb succeeded in obtaining the post of apothecary, and the polite letter he wrote in that connexion, a masterpiece of flourishes, has just been discovered. To-day the London Hospital is the largest in the Metropolis (though not in Great Britain), with a roof space of ten acres, a total area equal to twice that of Trafalgar Square, and normally bed accommodation for 900. Under war conditions the building in Whitechapel maintains only 360 beds, of which 160 are reserved for air-raid casualties, but it has an annexe at Brentwood with 252 beds, which will eventually be increased to 360 when the nurses' accommodation is completed. Since the air raids started the London Hospital has received direct hits—some of them on the first "blitz" night—it has had many incendiaries, and has lost 3,500 windows. But except for the temporary stoppage of such services as lighting and power, it has never been put out of action. Damage has been done to the nurses' homes, the laundry, and the out-patient department, but not to the wards. They tell at the "London" the same story as is told at all the other hospitals—of the conspicuous devotion of the staff, medical, nursing, and administrative.

A special meeting of Representatives of Home Divisions of the British Medical Association will be held at B.M.A. House, Tavistock Square, W.C., on Thursday, September 11, at 12 noon, and will continue on the following day. The Executive Committee will meet at 10 a.m. and the Council at 11 a.m. on September 11.

¹ *Post. Med.*, 1941, 54, 163.
² *Ibid.*, 166.

SYSTEMIC FACTORS INFLUENCING WOUND HEALING

BY

W. GRANT WAUGH, M.D., F.R.C.S.

Surgeons who were actively engaged in the treatment of the wounded in the war of 1914-18 may legitimately inquire how far and in what manner advance in the treatment of wounds has been made. It would appear that progress has been chiefly in the direction of the inhibition or reduction of infection by the universal recognition of the virtue of early incision, appropriate secondary suture, immobilization by closed-plaster or other technique, and the employment of a chemotherapeutic agent. Given the essential factor of the arrival of the patient at a surgical centre within the "contamination period" it may reasonably be expected that septic infection will be avoided in most cases. Unfortunately a time-lag in evacuation is sometimes inevitable, and established suppuration follows. Advance in the treatment of this condition seems to be almost imperceptible: neither local nor systemic employment of the newer chemotherapeutic substances seems of value. Still more disappointing is the relative ineffectiveness of the Winnett Orr technique as compared with its use in the suppurations of civil surgical practice. This may be due to rapid wasting of the tissues in high-explosive wounds which suppurate, with consequent failure of immobilization, recrudescence of infection, and further spread of sepsis. I suggest that the questions of tissue reactions to suppuration and the mechanisms of repair have not received enough attention in this country, and the discussion of some of these, with clinical inferences to be drawn from them, may be useful.

Exact knowledge of the physiological mechanisms of tissue repair now available originates from the systematic experiments in tissue culture of Carrel and his co-workers: the investigation of the biochemistry of local factors which may accelerate repair or by which differential inhibition of regenerating tissues may be effected is due to a number of research workers, among whom Hammett and Medawar may be cited. An excellent résumé of the subject by Riley (1940) deals exhaustively with this aspect of healing. My aim in this paper is to focus the attention of clinicians on the advances in our knowledge of certain systemic or constitutional factors which also have considerable influence on the repair process. These, too, have been the subject of intensive investigation in the United States and to some extent on the Continent, and the information gained from these researches has been translated into clinical practice in those countries (Whipple, 1940).

It is of the first importance that treatment should have a sound physiological as opposed to an empiric background. Two factors of supreme clinical importance may be considered: (1) the influence of vitamin content; and (2) the effect of controlled electrolyte and protein fluid balance.

Vitamin Content and Avitaminosis

High claims regarding a particular influence in repair have been made for the various vitamins, whether applied locally or given in the diet. Many of these are based on faulty premises or imperfect observation, and it may be stated categorically: (a) that no locally applied vitamin has been shown to influence tissue growth, whether the results are assessed scientifically by mensuration or by the effect on mitosis and cell proliferation as estimated either by photomicrography or by measurement of the nucleophosphorus

output; and (b) that only vitamins C and K taken in the diet have been shown to exert a direct effect on the mechanisms of repair: deficiency of vitamin C results in a fibroblastic aplasia, affecting the collagenation of the proliferated fibroblast cells and their maturation to formed fibrous tissue, and causing weak irregular scars; in vitamin K deficiency the production of prothrombin is inhibited, capillary clotting retarded, and the rhythm of vascular regeneration interrupted.

Several clinical inferences may be drawn from these facts. First, at the risk of appearing polemical, I would say that there is no scientific basis for the very popular use of cod-liver-oil or ointment dressings for the supposed virtue of their vitamin content. I regard their use as an example of pseudo-scientific mumbo-jumbo: any healing effect they may possess dwells, I believe, in their mechanically atraumatic character, and perhaps in the fact that a few hours after their application the wound surface will furnish a distinctly acid reaction (a large volume of research indicates clearly that the discharges of the healing wound have a consistently high hydrogen-ion content). Careful planimetric measurement in six cases treated by cod-liver-oil dressings showed no acceleration of healing, as plotted by the du Noy formula.

Secondly, it is obvious that the diet of the patient in the surgical ward should contain foods of a high vitamin C content—e.g., fruit and green vegetables—and that care should be taken to ensure that the vitamin is not destroyed in cooking. The recovering patient should have a daily intake equivalent to 75 to 100 mg. of ascorbic acid. If this cannot be obtained from the diet it should be given in tablet form. The effect in the case which is slow to granulate is sometimes dramatic; but no effect on epithelialization is to be expected. Thirdly, vitamin K is now available commercially, but by reason of expense its use should be reserved for cases in which recurrent bleeding from granulation tissue is encountered or minor secondary haemorrhage occurs.

Electrolyte Fluid and Protein Balance

This complex factor may be studied from two angles: (a) protein loss and protein replacement, and (b) the fluid balance and the occurrence of oedema.

HIGH PROTEIN INTAKE

Experimentally, observations of the measurement of healing wounds (Carrel, Fischer) confirmed by those on the tensile strength of wounds (Howes, Ellis, Cutler) have established the fact that a latent period of about four days before repair begins is constant for all clean wounds; this delay is reduced or eliminated by instituting a high protein diet from the start; high fat (ketogenic) diet, on the other hand, prolongs the lag period. Cuthbertson (1936) showed that the protein loss following fracture was very high, and the same is true in cases of prolonged suppuration. I made repeated estimations of the urea excreted in ten cases of prolonged bone or joint suppuration in my wards; this averaged 46 grammes daily: as the excretion of urinary chloride was not equally raised it may be assumed that the increased urea output is due to tissue destruction. In a case reported the nitrogen loss was 26 grammes daily—equal to nearly 2 lb. of muscle tissue.

The clinical significance of the hydrogen-ion content of wounds has received little attention in British surgery. From the work of Girgola (1924), Rohde (1926), and others it may be regarded as certain that the healing wound is acid in reaction, and that such acid tissues offer a resistance to invasion by organisms which diminishes as the pH

approaches the neutral or alkaline zones. An acid diet maintains this wound acidity, and may contribute to recovery in this way also.

Protein deficiency retards repair in another way. That the most powerful enemy of repair is the occurrence of oedema is a clinical fact with which we are all acquainted; it is well illustrated by cases of delayed union of fractures in which tissue support has been inadequate or gravitational oedema has been permitted. The protein molecule is of large size, and in hypoproteinaemia the missing large molecule is replaced by the smaller molecules of inorganic salts, especially the chlorides, and as a result salt action occurs in the tissues, followed by intercellular oedema.

From these physiological researches the important clinical lesson may be drawn that high protein intake should be arranged for at the earliest day after injury or operation and should be maintained during the whole course of healing. There is a persistent tendency to put a patient on light—that is, carbohydrate—diet in the early days, especially if the temperature is elevated. It will be seen that this is wrong: provided the digestion is competent the diet should include milk, grated cheese, egg albumen, and perhaps gelatin, followed by pounded fish, scraped meat, etc.; while fats, including butter, should be materially restricted. Protein-containing vegetables and cereals—e.g., peas and beans, oatmeal, and bran—may be useful as substitutes in the present shortage of animal proteins. Although cheese has a high fat content it is retained for the ready absorbability of its protein. For parenteral introduction blood plasma no doubt is the ideal, but the supply is limited; a solution containing the total amino-acids of casein, together with dextrose, is being employed in the United States, and the results so far are very hopeful. It is possible that a similar solution may become obtainable in this country.

LOCAL ELECTROLYTE FLUID BALANCE

It has been indicated that massive oedema is greatly inimical to repair: this is equally true of its occurrence locally. The importance of preventing it by maintaining adequate tissue support, by obviating gravitational fluid collections, and by maintaining functional movement so far as possible cannot be overstressed; for similar reasons care should be taken that tension sutures are not drawn so tight as to create areas of oedema between them. In addition some standard should be adopted for the administration of fluid: too often indiscriminate injection of dextrose-saline solution merely results in wrecking the fluid balance, sometimes to the extent of establishing a condition analogous to anasarca. Intake should bear relation to excretion and an endeavour be made to estimate the excretion of fluid as urine in each case where saline infusion is being resorted to. A good working rule is that no more than one and a half times the amount of fluid excreted as urine in twenty-four hours should be administered. Owing to rapid surface evaporation cases of burns can tolerate rather more, but even these wounds can be drowned in tissue dropsy.

These adjustments in the treatment of cases of wound suppuration have been in use for several months in cases under my care, and it is certain that improvement in the condition of these patients has resulted, as indicated by arrest of wasting, absence of oedema, acceleration of healing, and the maintenance of a normal blood pressure. I believe they form a distinct advance in our technique. It is difficult to ascertain the body weight of bed patients. In three cases, however, it was taken weekly; in these an average loss of 24 oz. a week was arrested on the institution of the acid diet, while a fortnight later the average gain was 30 oz.

Wartime High Protein Diet

Adequate supplies of carbohydrate are readily obtained, but the difficulty of maintaining a high protein diet under war conditions is patent. I must here express my indebtedness to Miss Gatenby, matron of the Memorial Hospital, Darlington, for her effort and ingenuity in this matter: at my request she has added the following notes.

In June, 1939, the full diet given in orthopaedic cases and wound infections possessed a moderately high protein content—approximately 110 to 120 grammes of protein a day. A cooked breakfast was supplied from the hospital kitchen to all patients (previously only tea and bread-and-butter were provided), and a better-balanced diet was maintained. The average daily diet was as follows—with as much variety and as little repetition as possible:

- 6 a.m.: Tea and milk, bread-and-butter (6.2 gm.).
- 8 a.m.: Milk 2 oz., oatmeal porridge 2 oz., kipper 3 oz., tea and milk, bread-and-butter (31 gm.).
- 12 noon: Rabbit stew 4 oz., potatoes 8 oz., chocolate pudding 4 oz., custard 4 oz. (42 gm.).
- 3.30 p.m.: Tea and milk, bread-and-butter, 1 egg (provided by patient) (16.5 gm.).
- 6.30 p.m.: Vegetable soup 8 oz., bread-and-butter, cocoa (15 gm.).
- 10 a.m. and 10 p.m.: 5 oz. milk, cocoa, etc. (10.9 gm.).

This diet yielded 121.6 grammes of protein and gave 3,047 calories.

In August, 1940, an endeavour was made to raise the protein content of the full diet to approximately 145 grammes daily, and emphasis was laid on the importance of persevering with a higher protein intake during the first few days until the patient was in a fit condition to partake of the fuller and more substantial forms of diet. The suggested daily diet for the first week was: 1 egg, 5 oz. milk (10.4 gm.), egg custard (5.9 gm.) (1 egg = 5 oz. of milk), 4 oz. minced chicken (29.6 gm.), 6 oz. pounded fish (37.8 gm.), milk jelly (4.2 gm.), extra milk fluids 5 oz. (4.5 gm.). Total, 96.2 grammes of protein. Balcony treatment, whenever possible, greatly improved the patients' general condition, appetite, and outlook.

To obtain 145 grammes of protein daily the following diet was given:

1. *Animal Protein*.—Breakfast: 4 oz. herring (21.6 gm.), 2 oz. milk (2 gm.), tea (milk) (1.8 gm.). Dinner: 4 oz. roast beef (30.4 gm.). Tea: 1 egg (5.9 gm.), tea (milk) (1.8 gm.). Supper: 2 oz. cheese (14.2 gm.). 10 a.m. and 10 p.m.: 5 oz. milk, cocoa, etc. (10.9 gm.). Approximately 88.6 grammes of protein.
2. *Vegetable Protein*.—Breakfast: 2 oz. oatmeal (7.6 gm.), 8 oz. bread-and-butter (8.8 gm.). Dinner: 4 oz. dried peas (8 gm.), 3 oz. jam tart (3 gm.), 8 oz. milk pudding (10.4 gm.). Tea: 4 oz. bread-and-butter (4.2 gm.). Supper: Vegetable soup (4.8 gm.), cocoa (5.8 gm.), bread-and-butter (4.4 gm.). Approximately 57.2 grammes of protein.

The pulses are among the cheaper foods, and in large quantity will raise the amount of vegetable protein, circumventing the deficiency of animal protein.

The following are valuable foods: Dried peas, butter beans, haricot beans, lentils: can be given as a vegetable or added to soup stock. Pea and bean flour: 1 heaped teaspoonful in each plateful of soup has a protein value equivalent to 1 oz. of meat; by making soup with milk the amount of protein is trebled. Macaroni, semolina, barley: Can be used as milk puddings or for thickening soups. Stet puddings, with milk or egg custard. Cheese: protein and fat content are nearly equal, and both are high. (It is possible to obtain a certain amount of cheese, and necessitous patients benefit.) Corned beef: high protein value, used as iron rations. Farex: added to milk puddings and porridge. Hovis bread: 3 lb. bread yields 100 grammes of protein (richest in nourishment of all breads). Peanuts: 1 oz. yields 8.5 grammes of protein. Bovril and oxo, made with milk: 1 teaspoonful of bovril equals 1/5 oz. meat.

Alternatives for Breakfast.—4 oz. fish cakes (13 gm.), 4 oz. sausage, 2 oz. sardines (11.6 gm.), 2 oz. bacon (13.8 gm.), 3 oz. haddock (18 gm.), 3 oz. herring (16.2 gm.), 3 oz. scrambled eggs (8.7 gm.).

Alternatives for Dinner.—2 oz. boiled mutton (14.6 gm.), 2 oz. fried liver (16.6 gm.), 2 oz. stewed beef (17.4 gm.), 4 oz. stewed tripe (20.4 gm.), 4 oz. fried cod (2.6 gm.).

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NEED FOR BIOLOGY IN EDUCATION

SIR WALTER LANGDON-BROWN'S ADDRESS

At the annual meeting of the British Social Hygiene Council, held at B.M.A. House on July 31, Sir WALTER LANGDON-BROWN delivered an address on "Biology and Health." He began with some remarks on the blight which has fallen upon European culture, the hapless conditions of university life on the Continent, and the subservience of scientific work to National Socialism. Incidentally he mentioned that the *Münchener Medizinische Wochenschrift*, formerly one of the leading medical journals of the world, had now become scientifically negligible, the happy hunting-ground of naturopaths and other cranks who hoped to catch the Fuehrer's eye. The fate of *Pflügers Archiv*, which was for more than seventy years the leading publication of physiological and biological research, was also significant. In 1932, the last pre-Hitlerian year, it ran to five volumes; in 1938 it appeared as one slim volume, the articles being mainly written by Russians and Japanese.

Sir Walter Langdon-Brown went on to say that, brought up as he had been, he found it hard to disbelieve in progress, though not necessarily as a law. Moreover, he thought the study of biology did impress the idea on the mind as the increasing complexity and adaptations of animal life came to be studied. If the study of biology had been pursued with the same intensity as that of chemistry and physics, it was possible that men might have become so interested in the wonderful processes of life that they would not be so keen on inflicting death. Here he mentioned the three main planks in the platform of the British Social Hygiene Council: (1) the study of biology as a subject of general education; (2) the education of the educator; and (3) general enlightenment on the principles of social hygiene. The general public would have no adequate grasp of the principles of social hygiene until they had some idea of biological principles. Recently an inspector of a certain examination of older students remarked to him on the relatively high percentage of failures in biology and the relatively low percentage of failures in physics and chemistry. Inquiry revealed that the teachers in many of the various institutions preparing the students had not been interested in biology and regarded it as a tiresome sideline of their work. If a teacher could not make biology interesting he should not teach at all. Perhaps it was the romanticizing tendency of the English which had made them unwilling in the past to face the uncomfortable fact that behind the divine mystery of the continuity of life lurked the shadows that were responsible for venereal diseases; but it was ignorance of biology rather than unwillingness to face facts which was responsible for failure to realize the natural law that whenever the continuity of life was threatened the impulse to create more life was increased.

Bearing in mind the shadow which accompanied this natural impulse, the work of the British Social Hygiene Council assumed a new significance. It was beside the point to say that there had been no sensational rise in venereal diseases in this war as in the last. It was like saying that the stirrup-pump had served so well when the last shower of incendiaries fell that it could now be discarded. In view of the fact that it was sometimes said that medical officers of health had little opinion of the usefulness of the work of the Council, fifty leading medical officers had been circularized, and the first thirty-three who had replied all said that they thought the Council served a useful purpose, though reservations were made by two. All replied in the affirmative on the question whether direct education on venereal disease was still necessary, and all except four (who were doubtful) were also in favour of a more general type of health education.

The Untrained Intruder

In view of the recent debate in the House of Commons on the Pharmacy and Medicines Bill, Sir Walter Langdon-Brown added a few remarks on the need for educating legislators. He said he was impressed by the curious bias shown in favour of the intruder into a sphere for which he was not trained, even though he was trained for some other. For example, the pharmaceutical chemist was to be safeguarded if he wished to take over the doctor's work of advising and prescribing, but when it came to his legitimate business for which he had been highly trained, sympathy was shown to the competing interests of the co-operative stores, the grocer, and the herbalist. The Minister of Health was very tender towards herbalists, pointing out that an expert committee had recommended that the collection of herbs for medicines and drugs should be encouraged as much as possible. But as he himself read the report of that committee, what it had in mind was the collection of herbs, not for their administration in a crude form, but to enable the extraction of their active principles in a pure state by skilled pharmacological chemists. The *Pharmacopoeia* would indeed be denuded if deprived of pure drugs of vegetable origin. In other words, the pharmacologist carried out the work of the herbalist in a much more scientific form to a higher pitch of accuracy. What struck him about the whole tone of that debate was the extraordinary naïveté with which the value of evidence in these matters was assessed. It might be said that ultimately some steps were taken in the right direction, but these would have been firmer and more speedy if the majority of the legislators had had a modicum of science imparted to them in their general education. There would not then have been so many who seemed willing to believe that an untrained man might intuitively discover a cure for a hitherto incurable disease which could only be brought to the notice of sufferers by advertisements in the lay press.

AWARD FOR GALLANTRY IN CIVIL DEFENCE

The award of the M.B.E. (Civil Division) to Dr. WILLIAM REMINGTON, medical officer, Mobile First Aid Unit, A.R.P. Casualty Service, Woolwich, is announced in a *Supplement* to the *London Gazette* dated August 1. The announcement reads as follows:

"During enemy air raids Dr. Remington has shown resource and a high sense of duty. A high-explosive bomb demolished dwelling houses. Dr. Remington was lowered through a hole in the top of the wreckage, which was in a very dangerous condition, to some casualties underneath. He gave them morphine and remained while the rescue party dug out the victims. On another occasion when a building was demolished and people were trapped, Dr. Remington, regardless of his own safety, stayed at the incident for three hours giving treatment to the casualties."

Walter Bauer and Joseph C. Aub (*J. clin. Invest.*, 1941, 20, 295) state that patients with acromegaly have an abnormal calcium and phosphorus metabolism, characterized by an increased urinary secretion of these minerals. In one patient x-ray treatment of the pituitary caused a reduction in urinary excretion of calcium and phosphorus, in the metabolism of which, the authors conclude, the pituitary gland must be considered one of the controlling factors.

LUNG INJURIES IN AIR RAIDS

A DISCUSSION ON PATHOLOGY AND DIAGNOSIS

A conference on the pathology and diagnosis of lung injuries in air raids was recently held at which a number of expert observers pooled their views on this important subject. A full report is printed below.

Sir JOSEPH BARCROFT, who was in the chair, began by saying that a town might be attacked in a number of different ways at the same time. A mixed bag of casualties might occur—some from gas (more perhaps than they guessed), some from blast, and so on. The question was, in relation to the lung, how to sort out the casualties in accordance with the various causes of injury.

Action of War Gases on Lung

Prof. G. R. CAMERON divided gases into those absorbed through the lungs with little local effects and those which acted wholly or mainly on the lungs, producing bronchial damage and bronchopneumonia or alveolar damage and acute pulmonary oedema. Arsine was an example of the first group: particulates, chlorine, hydrogen selenide, phosgene, nitrous fumes, mustard gas, and lewisite vapour belonged to the second group. Bronchial damage resulted in bronchial spasm and destruction of bronchial epithelium. It might be caused either (1) by the irritant gas acting on the lining epithelium with liberation of histamine-like substances, or (2) through irritation of nerve-endings. Mucous glands were stimulated, often with free outpouring of mucus, which tended to plug the bronchial cavities and cause collapse. Bronchopneumonia might follow such blockage when infection occurred.

Four views had been held concerning pulmonary oedema: (1) The gas might act directly on the alveolar capillaries, altering their permeability so that plasma exuded out into the air spaces. (2) The gas might liberate H substances from damaged lining alveolar cells. (3) Oedema might be secondary to cardiac failure. (4) Lung lymphatics might become blocked, with lymph stasis and overflow into the alveoli. Some gases acted on the capillaries—for example, lewisite and mustard. Although there was little histological evidence that phosgene altered the permeability of capillaries, there was every reason to believe this to be the case. The second view was debatable, as there was much uncertainty as to the nature of the alveolar lining. Cardiac failure was most often secondary to oedema and not the direct cause. No information existed about lymphatic blockage; indeed, the function of lymphatics in the lung was obscure. Certain risks arose from these lung changes. Bronchial spasm resulting from high concentrations of gas might lead to acute asphyxia and interstitial emphysema. Bronchial destruction was more important because of the danger of bronchopneumonia or bronchiectasis, but fortunately these complications were not common. Pulmonary oedema, if acute, might lead to cyanosis and death from asphyxia. If not so acute there were incapacitation and liability to cardiac failure or infection of the lungs. Haemoconcentration might also add considerably to the risks of circulatory failure. In the dog exposed to phosgene haemoconcentration was high, but quickly passed off. Nevertheless the oedema persisted and the animal might die days after from pure pulmonary oedema. In rabbits haemoconcentration was rarely seen with phosgene, though oedema was marked. What, therefore, was the significance of haemoconcentration? What significance, too, was to be attached to mild pulmonary oedema? How quickly was oedema fluid absorbed from lungs? How much oedema was necessary to produce incapacitation of the patient? These questions, Prof. Cameron said, which were of great practical importance, still remained to be answered.

Lung Injuries in Air Raids

Prof. G. HADFIELD confined his remarks to air-raid casualties presenting severe respiratory symptoms without obvious surgical injury. Such cases included: (1) those suffering from "pulmonary concussion" without damage to the thoracic cage; (2) those suffering from asphyxia; and (3) those whose symptoms were the result of pulmonary fat embolism. Pulmonary con-

cussion, he said, was characterized by multiple pulmonary haemorrhages of considerable size throughout both lungs, usually deep in the lung substance but with no constant relation to the ribs or ramifications of the bronchial tree. Rib markings could be identified only in lungs from infants or young children, suggesting that the elasticity of the thorax predisposed to their production. Naked-eye laceration of the lung or irregular tracking of blood through the lung substance was exceptional, and often no blood was present in the pleural cavities. The size of the haemorrhage was clearly related to the survival period, reaching a maximum in about four hours. In cases surviving for thirty-six to forty-eight hours haemorrhagic areas were, on the whole, no larger than in those surviving four to eight hours only. Capillary bleeding seemed to be responsible for the haemorrhage. A fibrin network formed in the alveoli, and a mononuclear cell exudate appeared, so that in thirty-six to forty-eight hours the histological picture was strikingly reminiscent of lobar pneumonia in the red hepatization stage ("pseudopneumonia"). Asphyxia might be presumed to have been a major cause of death when the air passages were found to be obstructed by powdered plaster, brick-dust, etc. It might also be the cause of death when the thorax had been compressed by a heavy mass of wood, stone, or metal. Inhalational asphyxial lungs frequently showed haemorrhages: other cases showed collapse and oedema, which were frequently much more extensive in one lung than in the other, with the usual post-mortem signs of asphyxia. Carbon monoxide poisoning, probably the result of bursting of gas mains, was a frequent complication of pulmonary concussion and asphyxia. The proportion of cases in which fat embolism could be deemed to have caused death was uncertain. Small quantities of fat in the pulmonary capillaries were found in a high percentage of deaths from trauma of any kind. Only when the quantity of fat was large and there was embolism of the glomerular capillaries could much importance be attached to this condition. There was usually a latent period between the incident and the development of dyspnoea. A gross traumatic lesion of subcutaneous fat with a collection of autolysing fat and blood clot was usually found post mortem.

Prof. Hadfield then outlined the clinical manifestations of pulmonary concussion, and emphasized the rapid development of shock, with frequent thready pulse and extreme expiratory dyspnoea. Severe pain and great tenderness of the trunk rapidly developed in the worst cases—probably the result of intramuscular haemorrhage. Dyspnoea might be due to haemorrhage into the respiratory muscle. Restlessness, which was prominent, might be the result of subarachnoid bleeding. Haemoptysis was common within an hour or so of the incident, and tended to be repeated. Dyspnoea became much worse in patients dying after thirty-six to forty-eight hours, and there was haemoconcentration with rise in venous blood pressure. A large venesection might relieve these features. Prof. Hadfield also emphasized the progressive nature of the haemorrhages in pulmonary concussion, and pointed out that one of the chief principles of treatment must be to immobilize the patient as soon as possible and to disturb him as little as possible for a period of several days.

Sir JOSEPH BARCROFT asked how far blast effects were due to something which "hit you outside or inside your lung." It had been shown, he thought, that in a window which had been broken by blast the glass fell out and not in. Was it possible that the burst of the capillary walls was outwards?

Pulmonary Oedema in Gas Poisoning

Prof. SHAW DUNN stressed the importance of dosage of gas in the evolution of symptoms. High concentrations of phosgene elicited violent respiratory disturbance with oedema and overdistension of the lungs, terminating fatally in a few hours; lower concentrations caused early dyspnoea and steadily progressive oedema, which might be fatal but was susceptible to treatment by venesection and oxygen administration. Bronchial spasm was an early event and contributed to the sensation of tightness in the chest and difficulty of drawing breath. Bronchopneumonia was a serious though later addition, and might occur more readily in man than in animals owing to auto-infection or to droplet infection in wards. It added considerably to the risk of fatality, and also, where recovery took place, to the likelihood of permanent damage to the lungs.

Pulmonary oedema was the most fundamental problem in poisoning by lung irritants. Capillaries in the juxta-bronchiolar alveoli showed dilatation and engorgement, with thrombosis in some, and oedema fluid came from those capillaries through which blood continued to flow. The higher the dosage of gas the greater were the dilatation and engorgement of capillaries, and cardio-respiratory embarrassment was more severe, though oedema was less in bulk. Prof. Shaw Dunn discussed the importance of altered capillary permeability in the production of pulmonary oedema, and raised several interesting points. (1) The amount of damage, though sufficient to determine abnormal escape of fluid for many hours, was yet so limited in degree as to permit continued blood flow. (2) There was no evidence that permanent structural changes occurred in the alveolar walls. (3) The most prominent histological evidence of capillary damage was dilatation and congestion. (4) At any moment the total pulmonary blood flow was being transmitted through only a proportion of the capillaries and not through the whole network. Pulmonary capillaries in the gas lesion might thus be visualized as having (a) a slower blood flow; (b) an increased blood content applied to a greatly increased filtering surface; (c) a higher lateral blood pressure, since capillary diameter was enlarged; and (d) walls thinner than normally, due to the distension. These factors appeared adequate to account for the leakage of fluid from the capillaries. Escape of this plasma fluid into the air spaces was contributory to haemoconcentration, and the increased viscosity of the blood which resulted doubtless accounted for embarrassment of the pulmonary circulation. Another contributory factor was the greater pressure exerted on pulmonary capillaries by the fluid in the alveoli than by air. Well-timed venesection, which was so valuable in the treatment of blue cyanosis in gassing, depended not only on alleviation of cardiac embarrassment by removal of blood from an overloaded venous system, but also on the reduction of blood volume, which would favour return of fluid to the circulating blood, even from the lungs. In the stage of grey cyanosis, however, peripheral circulatory collapse had set in and venesection was unlikely to be helpful.

Prof. Shaw Dunn thought it unlikely that confusion would arise between the initial concussed state of blast patients and any stage of gas poisoning. He agreed that the clinical conditions would become much more complex if the effects of poisonous gases were added to those of ordinary trauma, as might easily be the case in air attacks.

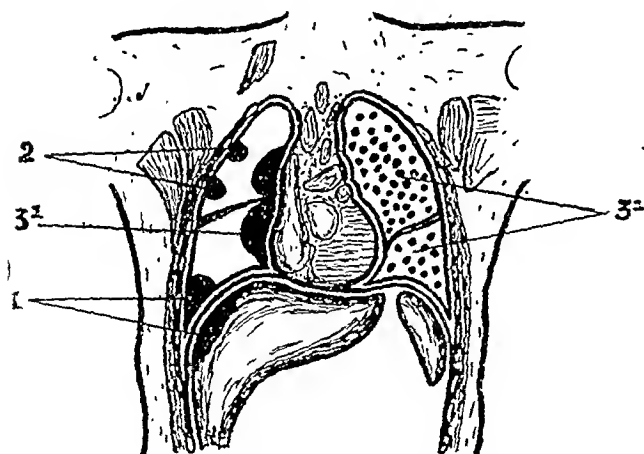


DIAGRAM OF MAIN TYPES OF HAEMORRHAGIC CONCUSSION OF LUNGS

The primary lesions are shown on the right: (1) Phrenico-costal sinus contusion with related liver damage. (2) Two "rib markings" are shown in the upper lobe; these extend to a variable depth and tend to become confluent posteriorly, where they may merge into (3) massive hilar contusions (3'). The hilar lesion is most massive posteriorly. The secondary lesion (3') is shown in the left lung—innumerable haemorrhagic spots, due to inhaled blood, varying in size from about a pin's head to that of a silver threepence. Their distribution is fairly uniform over one lobe, one lung, or both lungs. The variations evidently depend on the amount of blood entering the bronchi and the posture of the patient while the blood is in the bronchi.

Types of Haemorrhagic Concussion

Dr. G. R. OSBORN outlined his experience of primary, secondary, and reactionary lung lesions resulting from a bomb explosion. Primary features were: (1) rib markings, best seen in infants, ill defined in adults, single or multiple, with a location suggesting that they were inflicted with the lungs in the inspiratory position; (2) phrenico-costal sinus contusion; (3) massive hilar contusion. The last, if of obscure origin, might possibly be explained by the penny experiment (if a penny was knocked against a row of pennies only the end one flew off). With a large compressing force the alveoli with air locked in behaved as pennies, and the force was transmitted to the deep parts of the lung in the region of the hilus. In the larger primary lesions the alveoli were packed with red corpuscles which without doubt came from the alveolar capillaries, although the latter were so compressed that the holes through which they had escaped could not be seen. Inhalation of blood was a secondary lesion and resulted in scattering of blood throughout the lungs as small red spots. Reactionary lesions were principally acute pulmonary oedema, "pseudo-pneumonia," and true pneumonitis. Oedema might come on and prove fatal within an hour, or it might not occur for several days. Dr. Osborn thought that cases of acute pulmonary oedema fell into three groups: (1) those primarily due to brain lesions, (2) those due to left ventricular failure, and (3) those due to pulmonary causes. Left ventricular failure was not a satisfactory explanation for all cases. He described a case of lung oedema in a man of 29 with rupture of an aneurysm of the middle cerebral artery. The thoracic organs were normal, and there had been no injury. It was often possible to detect a nervous factor in cases which were apparently due to left ventricular failure or pulmonary lesions. Morphine was the only drug likely to have an effect on the condition.

A Case of Phosgene Poisoning

Commander FAIRLEY described an unusual case of human phosgene poisoning. The patient was an Oxford student who was one of a party round which a tube of phosgene was passed at a demonstration. She was the first person to smell the phosgene. A capillary tube of phosgene was simply cracked in a glass bottle, and she then took a good sniff at the bottle and at once coughed. She had no immediate symptoms, but later in the day began to cough and had all the symptoms of acute asthma. It was not known what was the actual dose of phosgene inhaled. She then became acutely ill, breathing very rapidly, making wheezing noises, but showing no cyanosis. She was so ill that she had to be taken to a nursing home, where she was given continuous oxygen for a week. It was possible that there was a neurotic element in her case. Commander Fairley said he had carried out some experiments on goats in order to try to imitate the conditions under which the patient had inhaled phosgene. The goats were fitted with rubber respirators which were connected to bottles in which similar capillary tubes of phosgene were broken. Phosgene could be smelt in the air expired by the goats. Symptoms similar to those found in the girl were produced. The goats began to breathe very quickly and were obviously ill and restless. Blood counts revealed no change. The goats were killed later, and at necropsy showed no pulmonary oedema, except a very slight degree in one goat. The experiment was repeated, but the phosgene was first put in a Douglas bag, so that the dilution was much greater. This caused no symptoms. The capsules contained 30 mg. of phosgene, which would liberate 8 c.c.m. of gas. This was theoretically a fatal dose, but they did not know whether the girl actually inhaled that amount. The striking thing about the human case he had described was the acute asthmatic attack, resembling ordinary asthma. Sir JOSEPH BARCROFT pointed out the importance of the finding that you could have symptoms without pulmonary oedema.

Diagnosis of Blast and Gas Injuries

Prof. J. A. RYLE said that those who had had clinical experience of gas casualties should not find the differential diagnosis of blast injuries and gas poisoning difficult. The likelihood of

meeting a combination of gas and blast effects was probably small. The differential diagnosis would clearly be assisted by the history of the incident. A case of blast was obviously ill from the start. He would complain of pain and be breathless, and might have haemoptysis. The symptoms of gas poisoning, on the other hand, were of later onset and would be unlikely to include haemoptysis or pain, and in most cases of phosgene poisoning there would be a clear history of gas having been used. As regards treatment, rest was the first essential for both types of case. It was not known whether oxygen was beneficial in blast injuries of the lung. The clinical appearance of cases suggested that they should benefit from oxygen. He had seen the B.L.B. mask poorly tolerated, and wondered whether the old-fashioned nasal tube might be better in some cases. He favoured Prof. Shaw Dunn's view that the primary mechanism in pulmonary oedema was capillary damage. He did not think that the oedema was due to heart failure. To sum up: the differential diagnosis of pulmonary concussion and phosgene poisoning should rest on (1) history, (2) the appearance of the patient, and (3) symptoms and signs.

Dr. A. H. T. ROSS-SMITH agreed with Prof. Hadfield about the findings in cases of blast injury to the lungs. He thought that, on the whole, symptoms would not be confused with those of phosgene poisoning, as in pulmonary concussion symptoms developed almost immediately after the accident. Though it was difficult to assess the importance of pulmonary fat embolism, symptoms might closely resemble those of phosgene poisoning, for they came on about the same time, were characterized by severe pulmonary oedema, anoxaemia, and right heart failure. The treatment, however, was similar for both. He advocated a critical study of the pathogenesis of pulmonary oedema in fat embolism, as it might give some indication of the cause of phosgene oedema. In fat embolism the fat was non-irritative and the changes were consequent on vascular occlusion and local anoxaemia—factors which should be considered in phosgene poisoning. In cases of pulmonary oedema he had frequently observed haemoconcentration in the pulmonary circulation, despite the absence of gross change in the peripheral circulation. Haematocrit analysis of the blood in the two circulations might be profitable. He, like Dr. Osborn, had seen cases of so-called neurogenic pulmonary oedema; the condition had been produced experimentally in America by Farber.

Surgeon Rear-Admiral C. P. G. WAKELEY said that he had met with a rather different type of lung injury, in which the damage was certainly inflicted from without. Men so injured had been in the water near the place where depth charges were going off, and said that when the charge went off they could feel the "kick" from it. Some of them were brought in dead; others died afterwards. As a rule they showed no extreme damage of the chest. They often complained of abdominal pain, and often had haemoptysis, haematemesis, and diarrhoea. Post mortem the lungs showed the appearance of blast injuries. There were also injuries such as ruptured liver and other abdominal traumata.

Some Experimental Observations

Surgeon Lieut.-Commander Foss said that he had carried out some experiments on the effect of adrenal cortical hormone in lewisite poisoning, but he had not examined the medulla of the suprarenals.

Prof. SHAW DUNN pointed out that the pressure in the blood vessels was not the only factor concerned in oedema; the rate of flow also played an important part. He was impressed with the importance of alternation in capillary dilatation. He understood that in the denervated lung no alternation in capillaries could be observed. This might be explained by the total blood supply to the lungs being much greater than in an intact lung. The alternation in bronchial activity was interesting, and if it was present in the human lung he wondered whether it should not be observed by radiologists during screening: he had not heard of any such alternation being observed in the human lung. Prof. J. H. GADDUM said that there was evidence that various forms of lung injury liberated histamine, and that it would be interesting to know

whether phosgene did this. Laqueur and Magnus had observed a primary fall of blood pressure after phosgene. This might be due to liberation of bistamine.

Lung Haemorrhage

Dr. JOAN ROSS dealt in detail with carbon monoxide poisoning and the secondary pneumonia after blast injury to the lung. In compression the haemorrhages might be bilateral and symmetrical, were usually subpleural, and rib markings were usually seen. There was general congestion of the lungs and often oedema; Tardieu's spots were frequently seen, and there might be thrombosis of vessels. In concussion, on the other hand, the haemorrhages were always bilateral and symmetrical, and any subpleural haemorrhage was present as an extension from deeper areas. There was general congestion of the lungs, but Tardieu's spots and thrombosis of vessels were not found. Dr. Ross said she had not seen the massive hilar haemorrhages described by Dr. Osborn. In the typical case of blast injury to the lung there were free red cells in the alveoli, but the alveolar walls were normal and there was no oedema. These were the changes found at the early stages. In cases surviving longer the secondary changes which supervened were very like those seen in an ordinary lobar pneumonia. In the alveoli were red cells, fibrin, and mononuclear cells. It was very difficult to say what degree of fat embolism would prove fatal. Certainly fat embolism would not account for the haemorrhages. Colonel L. E. H. WHITBY asked what Dr. Ross considered to be the source of the fat in cases which had fat in the capillaries. Dr. Ross replied that in many such cases there were no fractures, and the fat was found only in the pulmonary capillaries and not elsewhere in the body. Its origin was unknown.

Technique of Investigating Action of Lung Irritants

Captain R. H. D. SHORT said that to distinguish between desquamation of the mucous membrane of bronchioles and spasm of bronchioles might not be easy, as both conditions might exist at the same time. The nuclei in desquamated epithelium would be pyknotic. In the experimental animal which had received trypan blue intravenously the mucous membrane would show diffuse cytoplasmic staining. In a series of rabbits exposed to I in 15,000 phosgene for fifteen minutes and killed at varying times afterwards collapse was a characteristic finding during the first six hours. Its distribution was lobular. The cavity of many alveoli was completely obliterated; in others it was reduced by more than 50%. It must therefore be decided whether this collapse was real or due to faulty technique. In rabbits in which the lungs had been removed without tying the trachea the degree of collapse described above had not been found, and it was therefore probably not the result of faulty technique. There were two possible causes for the collapse: spasm of the bronchioles, and obstruction of the bronchiolar lumen by desquamated epithelium. In rabbits and guinea-pigs given histamine intravenously examination of the lungs showed a very considerable degree of bronchiolar spasm. There was practically no collapse. It was probable that the alveolar collapse after exposure to phosgene was the result of a complete obstruction by desquamated epithelium of a bronchial lumen already reduced by spasm.

It had been found that alveolar exudate stained in a different manner according to the stage at which the animal had been killed after exposure. Before three to six hours the exudate stained blue with orange G and aniline blue; at about six hours it stained in alternating bands of yellow and blue; and, when fully developed, from twelve hours onwards, it stained yellow. That this was not due to the thickness of the section had been shown by staining sections of 5 and 20 μ , which stained in the same way. Protein films dried on slides and stained showed that solutions containing under 0.5% protein would stain blue; those between 1% and 0.5% had alternating bands of blue and yellow; and those over 1% would stain yellow. Solutions of the three plasma proteins revealed the same phenomenon, and films prepared from samples removed at intervals from plasma digested with a solution of trypsin behaved in the same way as a similar series in which boiled

trypsin solution was used. The staining reaction was not due to breaking down of protein. Though the basis of this staining reaction was obscure it appeared to provide a semi-quantitative method for estimating protein in exudates.

Surgeon Lieutenant R. M. CALDER, R.N.V.R., observed that the role of increased permeability of the lung capillaries in the production of pulmonary oedema had already been stressed. It was interesting to consider the other side of the picture—the mechanism for the absorption of fluid from the alveoli. That such a mechanism existed in a normal lung was an old observation. He had injected as much as 30 c.cm. of serum into a rabbit's trachea without killing it. After three hours about 30% of the injected fluid had disappeared, and 70% was away by eighteen hours. It was hoped to measure the absorption of fluid after phosgene in a similar way, but unfortunately most animals died after 'quite small injections when previously exposed to phosgene. Another difficulty was that one did not know how much fluid was lost by evaporation. Sir Joseph Barcroft calculated that on theoretical grounds a rabbit could evaporate as much as 25 c.cm. of water in a day. The main histological feature of such lungs was the intensity and speed of the phagocytic response. Within thirty minutes the alveoli and septa contained large numbers of mononuclear cells; where trypan blue had been added to the fluid these cells would nearly all contain granules of the dye. There was no dilatation of the lymphatics. This picture was in striking contrast to what was seen after phosgene, where the alveoli were practically free of cells in the stage of oedema and the lymphatics were widely dilated. The normal animal could remove from its lungs quantities of fluid larger than those found in animals dying from phosgene poisoning; this strongly suggested that after phosgene there must be some interference with the normal absorptive mechanism.

INSTRUCTION IN INJURIES OF THE LOCOMOTOR SYSTEM

Because of the need in both the E.M.S. and the Services for more surgeons with training and experience in the diagnosis and treatment of disabilities of the locomotor system, arrangements have been made for courses of instruction in the subject. Each course will extend over six weeks and will provide practical experience and instruction for the whole of that period. The surgeons attending the course will be divided into groups of not more than four, and each group will be attached to the wards and outpatient department of a senior surgeon experienced in this type of work. They will have charge of cases, carry out treatment, and receive practical demonstrations. They will also attend the work and teaching at neighbouring hospitals, fracture departments, and clinics.

The first course, which will start on September 15, at Alder Hey Hospital, near Liverpool, will be conducted by Mr. T. P. McMurray, Mr. B. L. McFarland, Mr. R. Watson-Jones, Mr. F. C. Dwyer, Mr. G. E. Thomas, and Mr. W. R. Mitchell. In addition to Alder Hey Emergency Hospital, the Royal Infirmary, the David Lewis Northern Hospital, and the Royal Southern Hospital, Liverpool, will be utilized. This course is designed for surgical specialists in the E.M.S. and fighting Services, who should be of the status of junior honorary staff or senior registrars. The number will be limited to sixteen, and applications should be sent as soon as possible to Dr. F. Murchie, Ministry of Health, Whitehall, London, S.W.1. Suitable accommodation will be arranged through Mr. T. P. McMurray in the neighbourhood of Alder Hey Hospital.

Before sending in their applications, medical officers in the E.M.S. should obtain through the medical superintendent or medical officer in charge of the hospital the permission of the hospital officer or group officer, and those accepted will be granted special leave to attend the course. Medical officers enrolled in Classes I, II, and IV will be continued on their existing contracts and will be refunded return travelling expenses from their present hospitals. For those enrolled in Class III, in addition to travelling expenses, a subsistence allowance is authorized to meet the cost of their billeting.

Correspondence

Nomenclature of Pituitary Principles

SIR.—The nomenclature of pituitary principles has been a fruitful source of discussion for some time past, and Dr. F. W. Landgrebe,¹ in a letter to *Nature*, has recently suggested that the general suffix *desmic* (from the Greek *δεσμός* meaning a bond or link) should be employed in the description of such substances. *Thyrotropic* becomes *thyrodesmic*, for example.

The multiplication of names in a terminology which is already overburdened can, I believe, lead only to still further trouble, and for this reason alone I cannot support Dr. Landgrebe's suggestion. Moreover, there seems to me no valid objection to retaining the suffix *tropic* now that it has become established in the literature, although in this respect I may not be in entire agreement with Prof. J. H. Burn² and Dr. A. S. Parkes,³ as well as with Dr. Landgrebe. Even if the etymology of the suffix *tropic* were definitely unsound, would it be worth the resulting confusion to attempt an amendment in conformity with what we now believe would have been considered good form by the Ancient Greeks? Prof. Burn² thought not, and Dr. Parkes³ would advocate nothing more than a slight change in spelling, although, it should be emphasized, this change in spelling connoted a definite change in meaning. In my opinion not only is a radical change in terminology undesirable on the grounds of convenience, but is etymologically unnecessary. The suffix *tropic* is ultimately based on the Greek verb *τρέπω*, which, as well as meaning "turn," can also mean "direct" or "change." Thus, on the basis of the origins of the word, a thyrotropic substance is not necessarily one which turns towards the thyroid gland; the term may also denote a substance which directs or changes the gland. The primary meaning is surely not the only one which can be applied to Greek roots in determining their significance in the English language. Every endocrinologist knows what is meant by the adjective "oöstrogonic," but the captious logomach might insist that it primarily means "productive of gadflies"! Bacteriologists are not obliged to believe that "neurotropic" viruses are attracted towards the nervous system. Such viruses need do no more than manifest their presence by causing changes in nervous tissue. Therefore, I submit, the suffix *tropic*, in its application to pituitary substances, need not be discarded on the grounds of unworthy ancestors or undesirable relations.

Dr. A. S. Parkes³ has proposed that "thyrotropic" should be changed to "thyrotrophic" (*τροφός* = a wet nurse, as descriptive of a substance which induces hypertrophy of the thyroid gland, an action which presumably must be associated with increased nourishment of the tissue. The form *trophic* is correctly applicable to certain of the anterior lobe principles, and this form of the suffix was adopted in drawing up the report of the third International Conference on the Standardization of Hormones, held in August, 1939. Nevertheless, this conference, of which I was a member, agreed that both forms—*tropic* and *trophic*—might generally be used. The disadvantage of the form *trophic*, which is tending to become popular, is that some pituitary principles to which it is indiscriminately applied are not in reality *trophic*. Thus the terms "pancreatrophic," "medullotrophic," and "glycotrophic," which appear from time to time in the literature, are incorrect in that the active principles are not *trophic* under the implied conditions. Such difficulties can be avoided by retaining the original form of the suffix—*tropic*—as a general one descriptive of those pituitary substances which alter or change other glands, tissues, or metabolic conditions. This does not exclude the possibility of using, in appropriate cases, the form *trophic* as descriptive of pituitary principles which induce enlargement of other glands, although the more general term is, I believe, of greater importance. A more precise and refined terminology should await further development of our knowledge of the nature and action of these interesting pituitary substances.—I am, etc.,

F. G. YOUNG.

National Institute for Medical Research,
London, N.W.3, Aug. 7.

¹ *Nature*, 1941, 145, 85

² *Biological Standardization*, 1935, Oxf. Univ. Press.

³ *Nature*, 1938, 141, 36

⁴ *Brit. Hlth. Org. L. N.*, 1938, 7, 104

Psychiatric Problems in Wartime: A Plea for Caution

SIR.—The interesting article by Captain R. F. Tredgold (July 26, p. 109), including as it does detailed observations upon psychotic states occurring in soldiers and their prognosis, together with a description of methods of treatment, gives cause for careful thought, and seems to prompt the question as to whether the present is the time to arrive at conclusions concerning problems of the deepest psychiatric significance.

While it may be of the utmost importance for psychiatrists carefully to record their observations and impressions of the clinical material with which they are called upon to deal in time of war, it is submitted that it will be some time before the opportunity for proper assimilation and mutual discussion of this experience and its implications for psychiatric theory can be obtained. For example, the present war came upon us before it was possible to arrive at scientifically based conclusions as to the precise value and sphere of beneficial application of the various forms of shock therapy. Service needs and the associated demand for simplicity and speed in application required the adoption of Raven-Penrose progressive matrices testing upon large numbers of men before there had been opportunity for full evaluation of this method. The investigation of amnesias, etc., under artificially induced states of narcosis—for example, injection of sodium amytal—prompts certain fundamental questions as to its bona fides from the psychopathological standpoint. Various methods of treatment require to be employed on empirical grounds for their symptomatic value alone and in the absence of suitable checks or controls. This may be admissible, but there appears to be a danger of hasty conclusions being formed from consideration merely of results. Further, when compared with the whole field of psychiatric case material, Service cases, though numerous and a formidable problem at the present time, are nevertheless a limited and selected group developing under artificial environmental conditions.

A case in point is the discussion concerning the nature of depression. It may be that the views expressed by Curran and Mallinson (March 1, p. 305) find a substantial measure of agreement among many psychiatrists, while others will continue to subscribe to the views of Ross and others touched upon in your leading article of July 5 (p. 21). But while it is admitted that in many instances the task of differentiating between "endogenous" and "reactive" depression constitutes a severe test of the psychiatrist's clinical acumen, surely there is danger in teaching the student that "distinction between neurosis and psychosis is at times convenient but without substance," when upon that distinction being made at as early a stage as possible in the development of the mental illness the mental well-being, future, and even the life of the patient may depend.—I am, etc.,

Liverpool, Aug. 7.

S. BARTON HALL.

Depressive States in the Soldier

SIR.—My attention has been drawn to Captain R. F. Tredgold's statement in his paper on the above subject (July 26, p. 109) that I "diagnosed the psychotic type [of depression] by the possession of insight." I hope and believe that it is by a mere *lapsus calami* that Captain Tredgold has credited me with this feat, however one interprets his pleasingly ambiguous phrase. To avoid any possible misunderstanding, however, please let me state that if he refers, as I assume, to the patient's insight I have never held or expressed the opinion which he seems to attribute to me. If the word "absence" were substituted for "possession" the sentence would at least be in harmony with my views so far as it goes.

I readily admit the difficulty of assessing insight, but I think most people recognize nowadays that psychiatry is a difficult specialty. I would also suggest, with respect, that in it, as in all other specialties, experience sometimes helps a little.—I am, etc.,

London, W.1, Aug. 3.

HENRY YELLOWLEES, M.D., F.R.C.P.

Air-raid Noises in Psychotherapy

SIR.—I was very interested in the article by Majors F. L. McLaughlin and W. M. Millar (August 2, p. 158), and I feel the authors are to be congratulated on the ingenuity which they have shown in getting gramophone records of the actual noises. I foresee great use being made of this type of therapy, especially

where the psychotherapist can control the volume of the noise at will while the patient is on the couch, and thus be able to work up "the dose." I hope it will be made possible for those doing this type of work to obtain similar records.

Just after the last war I was in a Ministry of Pensions hospital dealing with war neuroses, and I found the same difficulties—that is, that the men were noise-sensitive. The method which I used was in some way similar to those described in this article. I used to get the men to talk about their war experiences until they were very conversant with the anxiety-provoking incidents, and then I would get them to take a blanket out into a field at the back of the hospital (which was near a railway line), lie down, and relax, and when they saw a train approaching I suggested that they should close their eyes and take their minds back to their experiences in France and link up the emotions which they felt with the noise of the passing train. In a large number of cases the men had violent ab reactions coupled with an increase of memory for the actual happenings. After a few weeks of this treatment the majority were able to go into the town near by without suffering any ill effects from the noise of traffic, which had hitherto caused them acute anxiety.

In considering this type of therapy now, in view of my past experience, I cannot help but feel that much greater use should be made of transference relations between patient and therapist—first by adopting the attitude, "We together are facing these difficult situations which proved too much for you when you were alone"; and then, when the patient's self-confidence has been restored, a process of handing back to him the sense of his own responsibility as an adult and a competent member of society.—I am, etc.,

AUG. 5.

D. N. HARDCASTLE

SIR.—If it was Herodotus who declared that history repeats itself, he will find, if he reads the *B.M.J.* in Olympus, remarkable evidence in the article by Majors F. L. McLaughlin and W. M. Millar on the use of air-raid noises on the gramophone as a form of psychotherapy (August 2, p. 158). It certainly recalls with irresistible and entertaining vividness the medicament treating disease with his tom-tom and other cacophonies.

Although it is regrettably true that much of the practice of psychiatry at the present moment is empirical in character, one feels compelled to ask: Is there not a limit beyond which the descent into the extra-rational should not be pursued? If the answer is in the negative and the implication follows that symptomatic treatment is good enough, however achieved, I would like to suggest an improvement. It is that, on the conclusion of the gramophone treatment, a bellicose attitude should be stimulated in the patients by teaching them a war dance. In this the Gaumont British News, I am sure, could help from a selection of their films of Darkest Africa. Finally, the treatment could be properly rounded off by "conditioning" the patients to a record of Herr Hitler delivering one of his celebrated harangues. But that perhaps would be going too far!—I am, etc.,

London, W.1, Aug. 4.

FREDERICK DILLON.

Cardiac Arrest during Anaesthesia

SIR.—In reply to Drs. H. J. Brennan, J. W. Patterson, and Mr. F. R. Brown (August 2, p. 175), I can state that pure chloroform anaesthesia has not been used in any of the hospitals in the many parts of the country where I have worked. The forty cases represent the collected experience of over twenty years. Half of this time was spent in senior resident posts, where the proportion of serious emergency cases was very high. During this period my anaesthetists were for the most part hospital residents, and although I have not made statistics I do not think that the cases of cardiac arrest were unduly high on this account. In the case quoted in my paper the anaesthetic was administered by a professional anaesthetist of the highest attainments, whose skill I appreciate.

I suggest to Dr. Patterson that a surgeon with a penchant for the nerve-racking ordeal which the necessity for cardiac massage entails must be about as common as a general practitioner with a partiality for puerperal sepsis.

I should like to call attention to an error in my article; "Darling and Lane" should read "Starling and Lane" (July 19, p. 85). I am greatly indebted to Dr. Edwin Starling, who, in

pointing out my mistake, has sent me a most illuminating account of the first and successful recorded case of cardiac massage. I feel sure your readers will be interested to know that Sir Arbuthnot Lane conceived the idea of cardiac massage from watching animal experiments on the heart conducted by Dr. Starling's cousin, the late Prof. Ernest Starling, the eminent physiologist.—I am, etc.,

London, W.I. Aug. 2.

HAMILTON BAILEY.

Leadership in Medicine

SIR,—In two letters in your issue of August 2 there sounded a clear note of leadership of a kind for which the profession has been waiting. Sir Frederick Menzies denounced a policy of the Ministry of Health as only another example of "incompetence and unpreparedness," and it is surely time that the Ministry's instructions on the details of medical treatment be equally vigorously denounced as in varying degree superficial, unpractical, inaccurate, and peremptory. It is probable that the instructions have done little harm, because after any useful information has been abstracted they are frequently ignored. But a negative attitude is not enough, and this is one reason why Dr. Douglas Boyd's letter is welcome in calling on us to secure in every sphere a policy which unites personal responsibility with power. There will be great difficulties after the war, and as yet the profession merely exaggerates them and shudders. It is said that individuals will have no money to pay for medical attention; but is this certain? Will there be no money for clothes or food or amusement, and if so how are taxes to be raised to pay for State services? And where will all the national savings have gone? It is said, again, that the large teaching hospitals will require financial assistance from taxes, and that therefore they must come under Government control. The University Grants Committee illustrates that Government financial aid can be given with adequate safeguard of public money and no direct control and no curbing whatever of the grantees' initiative. It is said, also, that the existence of the National Health Insurance Act makes an extension of its methods inevitable, but this is not so, because the working of the Act could be altered so that payments are made for actual services rendered as in most forms of insurance, such as that of the Hospital Saving Association.

There are already medical services of different kinds in this country, and none of them has yet distinguished itself in promoting medical progress. One reason for this is that public authorities do not provide staff or facilities for much more than good modern practice in their hospitals, and feel unable to devote public money to research. On account of this it would be very unwise to make any more hospitals solely dependent on public money which is allocated by Parliament or a local authority. Another difficulty in a service is that the encouragement of new developments is in the hands of the few at the head of the service, so that their sympathies and interests give a bias to the service as a whole. For this reason a national hospital service is to be condemned, and initiative must be maintained in many centres.—I am, etc.,

London, W.I. Aug. 5.

J. M. ALSTON, M.B., M.R.C.P.Ed.

Medical Service under the New Order

SIR,—It may not be considered too revolutionary to suggest that the Medical Planning Commission sees to it that the general practitioner has a fairer deal under the post-war new order than under the old.

Let us look at his lot under the old order. Too often he is a tired man. Notwithstanding partnerships and arrangements between neighbouring practitioners off-duty is hard to get. He hopes with a confinement after a full day's work, and after conducting a confinement in the night he has to be merry and bright or work next day. Before his morning consultation hours, and often before his breakfast, he has urgent calls to people who have suffered rather than send for him in the night. Through people having suddenly become ill, or through their not having anyone to send earlier in the day, he often has to work a good part of the afternoon. The "pop" after his evening consultation hours is so popular that it has often to be carried out on a duplicate or triplicate. He never goes to bed feeling that his work is done. The doctor must work like this. The public demands service twenty-four hours out of twenty-four. The Ministry of Health, Insurance Committees, and various public bodies expect it to be given. Further, the doctor has to pay

towards a mortgage on his practice and very likely on his house. He has to pay for his sickness, for his holidays. He must save for his dependants. Provision for himself he need not make. The Registrar-General's returns show that his life is short. He usually works as long as he lives.

The post-war new order aims at giving the people economic security, healthy conditions, short hours, and big pay. What is sauce for the goose is sauce for the gander. Could the Medical Planning Commission make it an item on its agenda to see that the practitioner, serving a people basking in the sunshine of the new order, gets on himself just a touch of that same sun? The Commission need have no fear that any injustice will be done to the public. A doctor who is working within the bounds of possibility cannot fail to give efficient service. He might have to bear with some bureaucratic control, but there need be no hogg about this if his terms of service were also bureaucratic—that is, economic security, reasonable pay, holidays, off-duty, pensions, etc.

Industrially, it is established that the output of a tired man working overtime does not compare with that of the rested man, and that it pays to maintain the health of the workers. Doctors are just workers. The doing away with the drudgery of doctoring would be a capital thing for the nation and for the doctor.—I am, etc.,

Birmingham, Aug. 7.

J. RENWICK.

Wholemeal Bread

SIR,—In his letter (July 12, p. 64) Dr. R. A. Murray Scott compared wholemeal bread with national 85% bread, and criticized some of the statements made by the Medical Research Council in its second memorandum on bread. There are a number of inaccuracies in Dr. Murray Scott's communication.

In the first paragraph he says that the M.R.C. does not give grounds for the statement that "it is undesirable to increase the roughage in wartime diets," and also that he can only find one reference in the literature to work carried out on the effect of wholemeal bread. The M.R.C. clearly states that wartime diets already contain much vegetable food and derive a large amount of roughage from it. The following references may be added to the single one mentioned: Cramer, W., *Lancet*, 1923, 1, 1406; Gross, L., *J. Path. Bact.*, 1924, 27, 27; Evans, Geoffrey, *British Medical Journal*, 1929, 2, 1044; Mottram, J. C., *Practitioner*, 1930, 74, 691; Lang, E., Gravelli, L. A., and Nash, T. P., *Cereal Chem.*, 1935, 12, 356; Abelin and Biderbost, *Biochem. Z.*, 1932, 247, 429.

Dr. Scott says that until recent years wholemeal was the only meal available and was eaten in double the quantity. Now from personal knowledge I know that germ meals consisting of a mixture of white flour and germ, prepared in the manner suggested in Dr. Scott's concluding remarks, have been available to the public for over fifty years. The keeping properties of these meals are better than those of wholemeal, as the germ is sterilized before being mixed. The vitamin B potency is very little affected by this treatment. The keeping properties of wholemeal flour are mentioned by Dr. Murray Scott, who says that flour stored at temperatures below 60° F. was in sound condition at the end of six months. This is not a fair test, as it would not be practicable under ordinary manufacturing conditions to store flour at such temperatures in the summer.

No mention has been made of the disease in bread known as "rope," caused by a slime-forming bacillus (*Bacillus mesentericus panis viscosus*). The disease is liable to occur in bread, particularly in hot weather, if care is not taken in the baking process. Wholemeal bread is particularly susceptible, and would in my opinion be more liable to it than the 85% meal.

The addition of calcium salts to wheat flour is mentioned, and a table showing nutritive values of wholemeal, 85%, and white flour after addition of calcium is given. Here Dr. Scott is unfair to white bread, as the figure he gives for vitamin B₁ potency does not take into consideration the added synthetic ancurin. No calcium will be added to white flour without the addition of vitamin B. I am in agreement with the policy of adding calcium to flour, but experiments show that the choice of the carbonate is not a good one; better results are obtained if the calcium salt is a soluble one. The following references to experimental work support this statement: Mottram, J. C., and Palmer, N., *Cereal Chem.*, 1937, 14, 683; Palmer, N., and Mottram, J. C., *Biochem. J.*, 1939, 33, 512; Palmer, N., *Biochem. J.*, 1939, 33, 853.

In Canada and the U.S.A., Dr. Scott says, they are quite happy about additions to flour. So far as I know, National Food and Research Councils have published approved "enrichment" factors, but no Government action has been taken, with the result that tablets containing thiamine, nicotinic acid, riboflavin, iron, and vitamin C are on sale to bakers and millers alike with no restriction; so that it would seem possible to obtain bread that theoretically should be a "food of the gods." Whether such synthetic additions are equal to, or as safe as, natural products remains to be seen. For my part I think that the British Government would be wise in wartime to restrict additions of synthetic products as much as possible and to rely upon natural foodstuffs. Palatability is a factor which has not been discussed so far and was not mentioned in the M.R.C. memorandum. The baking process plays an important part in deciding whether the finished bread will appeal to the public; the suggested additions should not affect the production of good bread in any way, but unfortunately it has been my experience that brown breads, unless particular care is taken, are not always palatable, and therefore one prefers other bread, knowing full well that it is not so nutritious.

The 85% national loaf and germ breads are, in my opinion, more palatable than wholemeal, and also more attractive in their external and general appearance.—I am, etc.,

The Laboratories, Messrs. Hovis, Ltd.,
Aug. 1.

J. C. MOTTRAM.

Tuberculosis in Recruits

SIR,—The incidence noted by S. H. Graham and M. Davies (June 21, p. 920) of tuberculosis in recruits referred for the first time by the medical boards to the staff of the Welsh Memorial Association appears to me a very much lower figure than 6% if based on the total number of recruits examined by medical boards. The authors do not make any recommendation for grading quiescent or suspected cases. Tuberculosis officers can be of great help to the chairman of the board in these difficult cases and save the country pension claims if activity develops later.

The view of the authors against the advice of the Horder Committee that radiological examination of all recruits "was impracticable at the present time" has been answered in my communication on x-ray diagnosis of tuberculosis in the *Journal* of October 26, 1940 (p. 573). In fact, Welsh figures confirm my statement that in spite of increased x-ray examination new cases and contacts diagnosed as tuberculosis in England have fallen considerably from 51.2% in 1926 to 35.6% in 1938. The Committee of Inquiry into Anti-tuberculosis Services in Wales and Monmouthshire in 1937 found that for the previous year 20% of cases of tuberculosis proved fatal in three months and 47% of the patients died in less than twelve months. Also for every 100 deaths from tuberculosis 1,055 x-ray examinations were made as against only 467 in England; yet of the new pulmonary suspects only 24.02% were found to be tuberculous by the Welsh dispensaries. From the Ministry reports a diagnosis of tuberculosis was made in 30% of new cases and contacts examined in 1933 in Wales as against 45.6% in England.

G. Jessel states (*Brit. J. Radiol.*, March, 1941) that though more cases were x-rayed in England in 1938 than in 1930 the number of early cases—that is, T.B.—and T.B.+1—decreased in 1938, while the advanced cases—T.B.+2 and T.B.+3—have increased. His explanation that x-ray facilities were inadequate or slight in 1930 and that clinical diagnosis of T.B.—cases was unreliable is, to say the least, unconvincing.

The reports of the medical officers of health for Sheffield, which for a number of years in the past had the lowest tuberculosis death rate among the larger industrial cities, concentrate their preventive work on the T.B.—cases. Yet in 1935, of their sputum-positive cases 40% died within the year. Of the 4,271 sputum-positive cases treated from 1911 to 1922, only 5.9% were alive in 1930 in that city. If one analyses mass radiology figures, so often quoted, the percentages of cases of active tuberculosis are similar—namely, 0.5% (E. L. Cooper, *Journal*, August 24, 1940, p. 245) in 22,000 and 0.56% (D. Galbraith, *Journal*, May 10, 1941) in 100,000 Australian recruits. On the other hand, if the various types of x-ray shadows are included the percentage evidence of tuberculosis in these two observers' findings is 23 and 2.07 respectively—a marked difference. By mass radiology 8% of Storm Troopers in Germany are found to be tuberculous. S. C.

Shanks (*Brit. J. Radiol.*, February, 1941) estimates, from x-ray figures published abroad, early tuberculosis in 1% of apparently healthy recruits. Though based on small sections of the community he gives for England 0.6% to 5%, U.S.A. 1.8% to 3.9%, Germany 2%, Spain 4.5%, and China 17.9%. In short, the variation in diagnosis of tuberculosis by x-ray enthusiasts is as wide as that of the clinical advocate, only the latter still has to assess the grading of fitness.

In my October communication I stated my experience as No. 2 examiner of a medical board coming across one or two suspect chest cases in an average session. At the rate of two sessions a week in twelve months I must have examined a probable total of 2,500 recruits with an estimated 150 suspects in the few minutes available per individual—namely, 6% of total recruits, of whom a third, or 2%, may be considered to reveal tuberculosis by the average dispensary x-ray diagnosis. In my N.E. Divisional area with an urban and lesser semi-rural population the non-reserved age groups show a greater normal prevalence of tuberculosis. Many of my cases may not have been referred to the dispensaries and a lower grading may have been agreed by the chairman, who, more than once, concurred in the opinion that the x-ray examination did not help in some of these cases. The number of recruits referred with physical signs by medical boards in Wales—namely, 216—is small. This must be the case probably in many areas if board examiners have had no previous experience of chest cases.

Thus one may quote the case of a man aged 33 who was clinically diagnosed as tuberculous with, later, positive sputum; when he was referred to a tuberculosis centre the report was: "X-ray and clinical findings not marked." Later a medical board rejected him on the doctor's report. As a public administrator one is faced at the present time with defence service personnel discovered whilst on leave to be suffering from tuberculous pleurisy, etc., who are rejected subsequently as unfit with no established diagnosis of tuberculosis, in some of whom x-ray investigation later has not been helpful.

In conclusion I would again plead for a special category for quiescent and non-infective suspect cases not for total rejection and for at least one examiner in a board with some chest experience. Also the Ministry of Health should collaborate with the Ministry of Labour and the Defence Services in initiating research into the incidence of T.B. as shown by available statistics. Every suspect chest case must also have the benefit of periodical x-ray investigation.—I am, etc.,

Leeds, July 24.

Z. P. FERNANDEZ.

Activity of Tuberculosis

SIR.—In his paper on carriers of tuberculosis (May 3, p. 665) Dr. James Maxwell observes that the presence of tubercle bacilli in the sputum does not of itself indicate active tuberculosis of the respiratory tract. I gather from his letter in your issue of July 26 (p. 136) that Dr. Alec Wingfield accepts this conclusion. Whether we shall all follow his example depends, it seems to me, on our definition of the word "activity." This is not hair-splitting, for the question as to whether a lesion is active or not is most important to the patient, the physician, and the general public. May I call on my old friend and teacher, Dr. Maxwell, to supply this definition?

I should like to outline two types of case: (a) Symptoms are slight: breathlessness on exertion and a little sputum; physical signs are those of apical fibrosis; x-ray picture shows a tuberculous lesion in this situation and the sputum is positive; a period of observation shows that the lesion is not getting larger nor the patient more sick. (b) Classical symptoms and signs of pulmonary tuberculosis are present; x-ray picture shows a tuberculous lesion in the lung and the sputum is positive: the lesion is getting larger and the patient more sick. I suggest that both these patients have active disease; in (b) the process is advancing; in (a) it is not. Dr. Maxwell suggests that (a) has not got active disease but should be classed as a carrier. I cannot agree with this. It seems to me that when a patient has a demonstrable tuberculous lesion in the lung and when he has sputum which contains tubercle bacilli then the lesion is, by definition, active. As Dr. Maxwell says in his letter (July 12, p. 65), we do not apply the term "active" only to those lesions which are advancing. An active lesion may be advancing (as in (b)), or stationary (as in (a)), or retrogressing (as in the patient who is

improving under treatment); but if tubercle bacilli are found in the sputum it is still active. If they are not found the test is inconclusive, and one must decide the question of activity on other evidence. Is this the view of most tuberculosis physicians? Please let us have a generally accepted definition of activity before the word has lost all meaning!—I am, etc.,

Westminster, S.W.1, July 28.

LAWRENCE ROBERTS.

Carriers of Tuberculosis

SIR,—Dr. E. Fraenkel in his letter (June 21, p. 946) does not like the term "tuberculosis carrier" as advocated by Dr. James Maxwell in his paper (May 3, p. 665). To my mind the term is admirable. It may not be correct pathologically, but from a public health standpoint it has tremendous propaganda value, and the detection of tuberculosis could do with some propaganda.

I would go further than Dr. Maxwell and include in his unsuspected carriers all those undiagnosed adult men and women who have very chronic cavities in their lungs and daily expectorate tubercle bacilli in their homes and factories. These people—apart from a productive cough which they call "bronchitis" or "catarrh" or a "smoker's cough"—seldom complain of anything else and rarely seek medical advice. After many years, and if the disease progresses, other symptoms appear and they are eventually diagnosed, or maybe haemoptysis brings the disease to light. But in the meantime these people have infected one or more members of their families, and perhaps other home or work associates.

Tell the public that a person can "carry" tuberculosis without feeling ill, and that he can infect and kill others (with poor resistance) and go on living himself. The fear of what an x-ray examination will show prevents many people from being x-rayed. I think they would readily submit to x-ray examination which might show them to be "carriers" (with the possibility of future breakdown) and not a "real" consumptive, like So-and-so, who has died of the disease. Having prepared the ground thus, the examination of contacts of young persons with tuberculosis (of probable human origin) must not rest with x-ray examination of other young persons in the home. Parents and other adult members of the family must be x-rayed, and, where there is a productive cough, sputum be investigated. If the results are negative, then the carrier should be sought at school, workshop, office, church, etc. The carrier does not necessarily require institutional treatment, especially in these days of limited accommodation. Tuition on the prevention of infecting others can be taught at the dispensary. Work can be continued if the only symptoms are cough and sputum, and the evening temperature and B.S.R. are normal. Serial x-ray films will decide when and if other treatment is necessary.

Spot the carrier of tuberculosis now and do not wait for bigger schemes of mass radiography to do it.—I am, etc.,

The Liverpool Sanatorium, Frodsham, Aug. 4.

R. WRIGHT.

Classification of Cases of Albuminuria

SIR,—Dr. Alexander Lyall, in his article on the classification of cases of albuminuria (July 26, p. 113), again raises the rather vexed question of so-called orthostatic albuminuria. While agreeing with all the hypothetical causes he suggests (they at least cannot be disproved) I should like to suggest one more possibility. Often in routine examinations for insurance, etc., I have come upon this phenomenon and have almost always elicited a history of masturbation. To prove this as the cause of the albuminuria is simple: it is only necessary to get two specimens from the patient—one immediately or soon after masturbation and one where the bladder has been emptied between masturbating and obtaining the specimen. As the patients are usually told to bring a morning specimen a trace of albumin is often found in it. Incidentally, orthostatic albuminuria is usually found in the morning specimen, and just as often represents the net result of the nocturnal eroticism.—I am, etc.,

Darwen, Aug. 3.

J. FERGUSSON.

Burns from Penetrating Bomb Fragments

SIR,—I suggest that the explanation of the delayed discharge of intestinal contents from a retroperitoneal wound of the colon, in the article by Mr. Geoffrey E. Parker (July 26, p. 119), is to be found in the observation that there was "some tissue necrosis from burning." Bomb fragments at close range are always hot

enough to produce burns. In a patient of mine who recovered from six penetrating wounds of the jejunum the fragment had come to rest in the coelomic cavity. An adjacent unperforated loop of ileum showed a white burn with charred centre, which I dealt with by infolding. Its appearance strongly suggested that had it been left it would have perforated some days later. A retroperitoneal burn of large intestine would present a different problem. It should not be infolded, but free drainage would be necessary. The site of bomb fragments in limbs is frequently indicated far from the wound of entry by the skin burn which they produce over them, and clothing carried in by fragments is often scorched so that it crumbles to dust during attempts to lift it out of a wound.

Mr. Parker suggests that his patient was lucky that he did not develop a spreading peritonitis. He would have been in greater danger of this had the peritoneum been opened. Wide drainage of retroperitoneal wounds of the large intestine is essential. The patient's life was probably saved by the early extraction of the foreign body packed in by the surgeon after he had removed the metallic foreign body.—I am, etc.,

Aug. 2.

FRANK STABLER,
Surgeon Commander, R.N.V.R.

The Envelope Treatment of Burns

SIR,—Those who tried the Carrel-Dakin method of treating wounds in the last war will remember that occasionally from about the fifth to the twelfth day the patient would suffer from malaise and become tinged lemon yellow. Both skin and conjunctivae were affected. The urine was normal. There was frequently a rise of temperature to 101° F., and the liver was sometimes tender. The signs subsided in two to three days on discontinuing the hypochlorite. Whether this condition will occur when electrolytic or a stabilized hypochlorite is used, or only with that produced by ordinary chemical means, is not known to me, but it seems opportune to draw attention to the matter.—I am, etc.,

London, W.1, July 31.

G. H. COLT.

The Darning of Hernias

SIR,—I was interested to read Mr. G. Stafford Mayer's letter (August 2, p. 176) on the darning of hernias. I am sure the majority of surgeons are now agreed that Bassini's operation and its many modifications leave much to be desired, and that "darning" with some suitable material gives much better late results. I feel, however, that some of the objections which Mr. Mayer raises to Gallie's operation are totally unfounded—in my experience at least.

There is no need to make a long wound in the thigh or to stitch the edges of the fascia together after taking the required number of strips, nor, in my experience, are fasciotomes "most tricky instruments to use," as Mr. Mayer suggests. During the last year I have performed Gallie's operation in ninety-five cases, and never once has the fasciotome given any trouble, nor have I had to employ a tenotome to free the end of the strip. The fasciotome I always employ is that designed by Mosley, and the fascia is obtained by making a transverse incision on the outer aspect of the right thigh (the instrument being easier to use on the right side) about two inches above the upper border of the patella; the incision need never be longer than three inches. The fascia lata is cleaned with a swab soaked in saline, and is then incised transversely in the line of the skin incision. The fascial strips are then taken by means of the fasciotome, and with care six or even seven strips each 1/4 inch wide can be obtained from one thigh, and not a "maximum of four," as Mr. Mayer states. It is very seldom that one requires more than three strips for even a direct hernia, so that it is possible to obtain sufficient fascia from one thigh to do a bilateral repair in the average case.

As regards the danger of a haematoma in the thigh after using the fasciotome, I can honestly say that I have never once seen one. If one is worried about the possibility of a haematoma, a firm elastoplast bandage applied round the thigh at the conclusion of the operation will obliterate the potential space to which Mr. Mayer refers. Personally, I take the fascia before exposing the hernia, but leave the sewing up of the leg wound until the very end of the operation. This gives me the opportunity to "strip" the thigh downwards and remove any extravasated blood before finally stitching up the thigh and applying the elastoplast.

I have only twice seen a muscle hernia in the thigh following removal of fascia lata, and in both these cases the fascia had been taken through a longitudinal incision over the upper end of the fascia. I believe that a muscle hernia is very rare after operation according to the method I have described. I make a point of inquiring whether the leg has given any trouble when I see my patients after they have returned to work, but have yet to get a positive answer. It is of importance to mention that the majority of my patients have been miners and labouring men, and in this connexion I remember one man (who was a lorry driver) telling me that the leg from which the fascia had been taken "felt stronger now than the left leg." My impression is that herniation is prevented by a series of strong transverse fibres at the lower end of the fascia lata, which are not disturbed or severed if the fasciotome is guided deep to them during its stripping motion, and can be felt easily if a finger is inserted into the upper edge of the wound.

I have only had a very limited experience of silk as a repair material, but, enthusiastic as I am about the value of fascial grafts, I am equally prepared to believe that floss silk will eventually take its place.

In conclusion, I was glad to see Mr. Mayer stressing the importance of the fascia transversalis as a barrier to the posterior wall of the inguinal canal. I think its true strength is best appreciated when one has to divide it in exposing the neck of a femoral hernia above the inguinal ligament.—I am, etc.,

Edinburgh, Aug. 5.

LEWIS G. CRICKSHANK, F.R.C.S.

Treatment of Impetigo Contagiosa

SIR,—I have read Lieutenant E. Snell's letter on impetigo (August 2, p. 178) with interest. In my opinion failure with ung. hyd. ammon. dil. is due to seborrhoea in his patients, which is aggravated by the base in this ointment. I have had good results with hyd. ammon. with a vaseline base or with zinc paste: ten grains to the ounce is usually strong enough.—I am, etc.,

London, S.W.2, Aug. 4.

M. MACSWEENEY.

Sugar-free Diet and Hyperchlorhydria

SIR,—I have been very much impressed by the marked improvement in cases of hyperchlorhydria after the adoption by the patient for two or three weeks of a sugar-free diet. There are many supporters of the view put forward by the late Sir D. P. D. Wilkie that the "abdominal triad" of peptic ulcer, appendicitis, and gall-bladder disease are all caused by a bacterial infection, which is frequently streptococcal. Rosenow¹ laid stress on the important part which the streptococcus plays in gall-bladder disease, and his work has been confirmed by Hlingworth² and A. L. Wilkie.³ Even those who do not agree with this view will admit that there is often a dramatic improvement in a duodenal ulcer following the removal of a chronically inflamed appendix.

While it is obviously absurd to expect a change of diet to cure a chronic appendicitis or cholecystitis with gall-stones, it is only reasonable to remember that these are the end-results of an infection which may have been present for several years. These cases are enormously outnumbered by indefinite cases of so-called chronic indigestion, to which it is impossible to give a definite name but which may, in this view, be regarded as the early stages of an intestinal infection that may or may not end in a condition demanding intervention by the surgeon.

It is interesting to observe that many of the diets recommended for acute peptic ulcer—for example, starvation for a few days, milk at short intervals, and even minced raw beef—have one feature in common—namely, the withholding of sugar—and it might be that some part of the improvement is due to the alteration in the intestinal bacterial flora brought about by the absence of sugar as well as the more obvious advantages of these diets. Additional evidence might easily be obtained from the improvement in symptoms of "chronic indigestion" which might be expected when cases of diabetes have been on a sugar-free diet for two or three weeks, in the absence of focal infection in these cases.

Cane or beet sugar only occurs in Nature diluted with large amounts of vegetable matter. In its refined or concentrated state it is an almost universal article of diet, and many children

develop gastro-intestinal catarrh or "mucous disease" through over-indulgence.

May I suggest that there are reasonable grounds for inquiry into the effect of sugar in the diet on the incidence and treatment of certain abdominal disorders—namely, "chronic indigestion," peptic ulcer, appendicitis, and gall-bladder disease—which some view as being the result of a streptococcal infection in a large percentage of cases?—I am, etc.,

St. Faiths, Norfolk, July 28.

J. N. GALE.

REFERENCES

- ¹ Rosenow, E. C., *Collected Papers Mayo Clin.*, 1919, 2, 819.
- ² Hlingworth, C. F. W., *Brit. J. Surg.*, 1927, 15, 221.
- ³ Wilkie, A. L., *ibid.*, 1928, 15, 450.

Diagnosis of Yellow Fever

SIR,—In the *Journal* of August 2 (p. 171) the following unadorned statement appears in the general discussion after Dr. G. M. Findlay's address at the annual general meeting of the Royal Society of Tropical Medicine and Hygiene: "The absolute impossibility of diagnosing yellow fever on clinical grounds was stressed." To those who remember the worship of the golden calf, *Leptospira icteroides*, for many years, during which the brilliant work of the American Commission under Major Walter Reed seemed to be thrown on the scrap-heap, a protest is necessary.

All observers agree on the difficulties of clinical diagnosis but to state that it is "absolutely impossible" is absurd. Experts have pointed out the great importance of the diagnosis of the first case in any outbreak, and on this early recognition depends to a great extent the effect of local preventive measures. It is to be hoped, therefore, that clinical observers will not allow themselves to be discouraged by this bogey, which is raising its head by no means for the first time.—I am, etc.,

Liverpool, Aug. 5.

G. E. H. LE FANT.

Lack of Calcium

SIR,—The letter by Dr. George Graham and Mr. H. Jackson Burrows (August 2, p. 176) would be of far greater interest if they could show that the addition of simple calcium salts to the diet prevented or cured senile osteoporosis.—I am, etc.,

Middlebrough, Aug. 5

R. N. HERSON.

Novocain Injection in Myalgia

SIR,—I was very interested in the letter by Lieut. M. Good (August 2, p. 175), in view of the following case which I have treated with novocain for myalgia according to the method advocated by Lieut. Good.

A woman of 43 has suffered from myalgia in several localities, but in particular in the region of the left trapezius and deltoid. She had severe pain down the left arm. I found a very tender and well-localized area in the deltoid close to its acromial origin. On inserting the hypodermic needle here she complained of severe constricting pain in the chest of such a nature as to be unbearable. She became pale and her pulse rapid. After persevering with the injection the pain disappeared, and she had marked relief from myalgia and was able to move the arm more freely. When the effects of the injection had worn off she had a return of the pain in the chest for about twenty-four to thirty-six hours, and volunteered the information that she was sweating in the left palm. This I confirmed by examination.

Since then the patient has had marked relief from her myalgia, and neither the pain in the chest nor the increased sweating of the left palm has recurred. There was no history of pain in the chest previous to this injection. The patient is not of the nervous type, and I had injected a myalgic area on her on a previous occasion.—I am, etc.,

London, N.E., Aug. 6.

K. M. HAY.

Communal Feeding in Schools

SIR,—I am very glad that you found space for your correspondent's article on the need for an obligatory midday meal in schools (July 26, p. 133). There is perhaps no single act which could contribute so much of permanent value in education, and the author's argument that war has converted something highly desirable into a necessity seems incontestable.—I am, etc.,

Isleworth, Aug. 4.

DUNCAN G. LEYS, D.M.

Obituary

DUNCAN FORBES, M.B.E., M.D.

Late Medical Officer of Health, Brighton

We regret to announce the sudden death in London on July 25, after an operation, of Dr. Duncan Forbes. A distinguished sanitarian, he was for many years medical officer of health and school medical officer for the County Borough of Brighton.

Duncan Forbes had a brilliant record as a student of the University of Edinburgh. He graduated M.B., Ch.B. with honours in 1898, took the B.Sc. in public health in 1901, and the Cambridge D.P.H., and was awarded high commendation for his Edinburgh M.D. thesis, which was accepted after he had worked for two years as Crichton scholar in pathology; he was also awarded a special certificate in tropical diseases by the University of Edinburgh. He served as resident physician at the Royal Infirmary of Edinburgh, and as resident medical officer at the Monsall Fever Hospital, Manchester, and then in 1902 became assistant M.O.H. for Manchester. Three years later he was appointed M.O.H. for Cambridge. His long and fruitful career in public health administration at Brighton began in 1908. He had been a member of the council of the Royal Sanitary Institute, an active Fellow of the Society of Medical Officers of Health, and examiner in public health for the Edinburgh M.B. In recent years he contributed to the *Lancet* papers on water-borne diseases, on vaccination in the control of small-pox, and on exclusion from school of measles contacts.

For the following appreciation we are indebted to Sir ARTHUR NEWSHOLME, who preceded Dr. Forbes as M.O.H. for Brighton, and was afterwards Principal Medical Officer to the Local Government Board:

I only came to know Duncan Forbes well after he became my successor at Brighton; but already I had (as an examiner at Cambridge) known him enough to realize his qualities; and I had some slight influence in securing his election at Brighton. For Brighton his appointment was invaluable. He had the qualifications, mental and moral, which are specially needed for such a post. It is difficult to summarize those qualities satisfactorily when one is an octogenarian, but the characteristics which stand out in my mind are integrity and originality. He never disguised his views of desirable policy though it might be unpopular, and in some instances—as in housing of the people displaced from slum property centrally rather than peripherally—his views did not always find acceptance. From the point of view of those displaced he was right. I recall one instance in which integrity and scientific accuracy were conjoined. It required courage to discard and abandon much of the elaborate technique involved after a case of infectious disease. He was among the earliest sanitarians in this country who realized that what was to be feared was persons, not things; that persons worried about the infection they had acquired; and that articles of clothing usually be neglected except for what may be described as a meticulous "spring cleaning." In this discovery his name stands alongside of that of Dr. Charles Chapin of the City of Providence, U.S.A. Perhaps they acted independently. I knew them both intimately; and it is right that the names of Chapin and Forbes should be remembered in this practically important research.

THOMAS GIBSON, M.D.

Late Professor of Pharmacology, Queen's University,
Kingston, Canada

Dr. Thomas Gibson, who died on July 2 at the age of 76, had been for many years a member of the British Medical Association. He occupied an important place in the life of Canada as physician in Ottawa and professor in Kingston.

Thomas Gibson was born at Strabane, County Tyrone, Ireland. His father, James Gibson, was a Presbyterian minister; his mother, Hannah McLean, came of a family which had emigrated from the western isles of Scotland to Australia. In 1873 the

Gibson family moved to Perth, in Scotland, where Thomas attended the local high school and later on the collegiate school in Edinburgh. In 1884 he graduated M.A. at the University of Edinburgh, and in 1894 M.B., C.M. with first-class honours. For six months he acted as house-physician to the late Sir James Affleck.

Dr. Gibson (writes a colleague in Kingston) came to Canada in 1895 as medical A.D.C. to the late Lord Aberdeen. In 1898 he started practice in Ottawa, where he was medical attendant to four successive Governors-General, and where he built up a large practice. In the same year he married a daughter of the late Rev. Dr. George Carey of St. John's, New Brunswick. Many of those still living in Ottawa will remember Dr. Gibson as a sympathetic, kindly, and skilful family physician. While in Ottawa he was attached to St. Luke's, the Maternity, and Water Street Hospitals. In 1924 Queen's University was looking for a teacher of therapeutics and pharmacology. Realizing that the person best fitted to teach the action of drugs to the medical student was a man with wide experience in the application of these drugs in general medical practice, the trustees appointed Dr. Gibson to the Douglas Chair of Therapeutics and Pharmacology. With characteristic thoroughness, and before taking over his professorial duties, Dr. Gibson spent some months in England, working under Prof. W. E. Dixon at Cambridge. For fourteen years Dr. Gibson was responsible for the teaching of his subject to Queen's students, and during this period he built up a department second to none in the university. There was no more popular professor in the medical college. In 1934, feeling the need of additional help in the department, he secured the appointment of Dr. Eldon Boyd, an able pupil, as his assistant. It was natural, therefore, that on his retirement from the chair in 1938 he should hand over his duties to Dr. Boyd. Although he gave up the teaching of pharmacology at this time, he continued to lecture upon the history of medicine until the end of the session just now completed.

Dr. Gibson was a true humanist. He was interested not only in medicine but in music, and was also a keen student of English literature and an appreciative collector of good prints and paintings. His own literary and historical writings include a valuable study of the work and influence of Theodore Mayerne, physician to the Royal Family in the time of James I, published in the *Annals of Medical History*. He wrote also a history of Kingston General Hospital and several articles dealing with the early years of Queen's Medical School. He had a remarkable faculty for delving among old records and periodicals and extracting from them relevant information.

Dr. Gibson was the honorary secretary of the central board of the Victorian Order of Nurses from 1898 to 1920 and its president from 1920 to 1922. In recognition of his pioneer work in the institution he was in 1911 given rank in the Order of St. John of Jerusalem. He was a foundation Fellow of the Royal College of Physicians in Canada and a member of several learned societies.

J. S. GRAY, M.B., and J. P. GORE GRIMES, M.B.

Every one of the heavy air raids on Coventry has left its scars, wounded, and dead. In April the Coventry and Warwickshire Hospital was well within the target area and suffered the full weight of the terrific bombardment, and among those who lost their lives untimely while on duty were Drs. J. S. Gray and John P. Gore Grimes.

Dr. Gray, a native of Edinburgh, received his education at George Heriot's School and at Edinburgh University, graduating in July, 1939, as M.B., Ch.B. His prowess at golf achieved for him a place in the university team, and he was also awarded his "green." Shortly after graduation he went to the Coventry and Warwickshire Hospital as house-physician, and showed outstanding ability. His second appointment was that of senior resident in charge of the resuscitation wards and an assistant in a department of pathology. He was particularly interested in the haematology, and under the supervision of the director of the laboratories devoted much of his time and energy to developing the excellent blood transfusion service. Dr. Gray had been on duty throughout all the major raids on Coventry. Earlier on the fateful night he received a serious hand injury, but without

thought of his personal welfare he refused to leave his wards, and subsequently received further injuries which proved fatal.

Dr. Gore Grimes, a native of Dublin, entered Trinity College, Dublin, from St. Gerard's School, Bray. In 1934 he joined the medical school of Dublin University and graduated M.B., Ch.B. in 1939 with honours. He swam for the water-polo team of Trinity College, and represented the Dublin University Yacht Club in several events. After graduation Dr. Gore Grimes held resident posts in Dublin and also did postgraduate work at the Rotunda. In England he was house-surgeon to the Children's Hospital, Birmingham, before going to the Coventry and Warwickshire Hospital as a house-physician. This appointment he took up just before the bombardment of Coventry in November, and in his short stay he was observed to be keen, diligent, and sincere in all his work. His untiring work on the night of April will never be forgotten.

These men (writes the Resident Surgical Officer) were our colleagues; their willingness to help, their unselfishness, and their popularity with all of the Coventry and Warwickshire Hospital are still in our minds. Their careers, cut short so early, indicate in some measure to what heights in the profession they might have climbed, but they died with so many patients to whom earlier in the night they had carefully administered the healing art.

PROF. A. J. CLARK

Brigadier E. M. COWELL writes: One morning during the last days of the Battle of Flanders, 1940, I was, when driving, stopped by an orderly on a motor cycle, who had been sent out by his officer to look for medical help. I agreed and followed my guide. After repeated halts, in the nature of evasive action against dive-bombing, I entered a rather knocked-about building in Hazehrouck and found Colonel Clark acting as a medical officer to the garrison, which was fighting a desperate delaying action. He was very tired, as we all were, but cheerful and doing his best for many severely wounded. Colonel Clark served in France from 1939 till he came away off the beach at Dunkirk, and he occupied an important advisory post at G.H.Q. His fearless devotion to duty and humanitarian efforts should provide a lesson for all of us in the medical profession.

Dr. HENRY LANGDALE died at Stanley House, Warrington, on July 27, aged 74 years. He was a student of Owens College, and qualified M.R.C.S., L.R.C.P. in 1888, taking the M.B. and M.D. degrees of the University of London in 1893. Before starting his career at Warrington, where he became consulting physician to the Royal Infirmary, he had served as house-surgeon at the Manchester Royal Infirmary. "W. E. B." writes: The death of "John" Henry Langdale has deprived Warrington medicine of its best link with the nineteenth century, for after being house-surgeon at the infirmary he bought a well-established practice in the town in the middle of the 'nineties. He had been in active practice, and was often to be seen cycling on near-by visits until a month of his death. His personal interest in and friendship for his patients were unbounded; in fact he had few interests besides them and books. A serious illness fifteen years ago prevented his taking an active part in medical affairs with his colleagues, but before that time many of them had cause to appreciate his kindly and willing help. He leaves a widow, a daughter, and a son. Dr. JAMES BENNET also sends the following appreciation: Dr. Langdale's medical colleagues in Warrington and district feel a great sense of loss now that the senior member of the medical profession in this district has "passed on." A man of few interests outside his own profession, he was the very embodiment of all that is best in the true family doctor tradition, to which my own family bears grateful testimony. He came to Warrington only a few months short of fifty years ago as junior house-surgeon, subsequently becoming senior, and it was not surprising that he afterwards decided to stay on in the town in which he had already become known as a competent physician and surgeon and had earned the good will of both the infirmary board and the public. He remained an honorary physician at the infirmary for many years, and was the oldest member of the British Medical Association in this area. Having further extended a high-class practice taken over from the late Dr.

Sherratt, to whom he had been assistant, he considered it to be in his best interests not to participate in the panel scheme when the N.H.I. Act came into being; but as a consultant to panel practitioners he was in great demand. For over forty years an up to the time of his death he was medical visitor to the mental deficiency homes of the West Derby Hundred and to the Haydock Lodge Private Mental Home, where it was my privilege to meet him quarter after quarter, and I can therefore vouch for the very high esteem in which he was held by all the visiting magistrates. Cultured and courteous, Dr. Langdale set a very high standard, never spared himself, and, being a man of intense kindness, had as a reward the esteem and affection of his patients and his medical colleagues.

Dr. RODERICK MURDOCH MATHESON died at his home in Edinburgh on July 31. He was educated at the University of Edinburgh and the School of Medicine, and graduated M.B. C.M. in 1893, proceeding M.D. (with commendation) four years later, taking for his thesis empyema and its treatment. In 1901 he contributed an article to the *British Medical Journal* on haematemesis occurring in the course of appendicitis. In 1904 he became an F.R.C.S.Ed. He held the posts of assistant surgeon at Noble's Hospital, Isle of Man, and house-surgeon to the lock wards and clinical assistant to the skin department of Edinburgh Royal Infirmary before settling in practice in Edinburgh.

The Services

NAVAL AWARDS

Surgeon Captain P. M. May, R.N. (ret.), has been awarded a Greenwich Hospital pension of £50 per annum in the vacancy caused by the death of Fleet Surgeon C. S. Facey, R.N. (ret.).

The M.B.E. has been awarded to Temporary Surgeon Lieutenant F. R. Badenoch, R.N.V.R., for courage in rescue work during enemy air raids on Portsmouth.

ARMY AWARD

The M.C. has been awarded to Captain R. N. Lees, R.A.M.C.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Surgeon Lieutenant DAVID AUSTIN PROTHERO, who was killed in action, received his medical education at St. Bartholomew's Hospital and qualified M.R.C.S., L.R.C.P. in 1935. Two years later he took the D.A. His home was at Bedford. He was a member of the British Medical Association.

David Prothero (writes "E. H. P.") was injured on duty at sea and died soon afterwards. It was characteristic of him that his first thought after the accident was for those casualties near him, and it was not until they had been attended to that he himself went down to the sick bay. David was an ideal messmate and colleague. His small figure is sadly missed in the wardroom, for in times of stress or depression he never failed to instil a more balanced outlook. He had a sound clinical judgment, and though he had specialized in anaesthetics he was a reliable surgeon. I remember him operating on a gangrenous and perforated appendix while the ship was at sea off the west coast of Africa. Though the temperature of the theatre was 120° F. and tempers were becoming frayed David remained imperturbable throughout. The patient made an uninterrupted recovery.

ROYAL ARMY MEDICAL CORPS

Missing

Captain James Edward Scott Carmichael.

Prisoners of War

Major William Stanley Sykes.

Captain Charles Donald.

Captain William Gordon France.

Captain John Buchanan Fulton.

Captain John Goodworth Jamieson.

Captain George Ross Mackay.

Captain Harold William Wykes.

War Substantive Captain Graham Forrest Hay.

War Substantive Captain Geoffrey Bertrand Leyton.

War Substantive Captain John George Munro.

War Substantive Captain Kenneth Todd.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

K. V. Earle has been approved, in absence, for the degree of M.D.

UNIVERSITY OF LONDON

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

The following scholarships, exhibitions, and prizes have been awarded at University College Hospital Medical School:

Goldsmid Entrance Scholarships.—Miss M. E. P. Hele (Newnham College, Cambridge); R. J. Williams (St. John's College, Cambridge). **Goldsmid Entrance Exhibition.**—R. H. Shephard (University College, London). **Filliter Entrance Scholarship in Pathology.**—P. Shubik (University College, Oxford). **Atchison Scholarship.**—R. E. O. Williams. **Magrath Scholarships.**—**Surgery:** O. P. G. Whitfield; **Medicine:** Miss J. W. Shrimpton; **Midwifery:** Miss S. M. Luty. **Filliter Exhibition.**—Miss G. R. Briggs and R. Barer (joint award). **Tuke Silver Medal.**—J. A. Black. **Liston Gold Medal.**—O. Daniel. **Alexander Bruce Gold Medal.**—A. L. M. Christie and Miss M. Mack. **Fellowes Silver Medal.**—T. R. Fink. **Junior Clinical Surgery Prize.**—Miss J. A. Davies. **Suckling Prize in Obstetrics and Gynaecology.**—A. L. Wolf. **Ferriere Scholarship.**—H. Melhuish.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At the quarterly meeting of the Royal College of Physicians of London, held on July 31, with Sir Charles Wilson, President, in the chair, the following were elected officers for the ensuing year: **Censors,** W. E. Hume, A. C. Douglas Firth, J. A. Ryle, C. M. Hinds Howell; **Treasurer,** H. E. A. Boldero; **Harveian Librarian,** Arnold Chaplin; **Assistant Registrar,** R. Hilton.

The President announced the award of the Bisset-Hawkins medal to Sir Frederick Menzies for his work as Chief Medical Officer of the London County Council; the Baly medal to Prof. Edgar Allen of Yale University for his work on oestrogens; and the Murchison scholarship (by Edinburgh University) to Alan Guild, M.B.

Prof. J. C. Meakins has been asked to represent the College at the centenary celebration of the Queen's University, Kingston, Ontario.

Membership

The following candidates, having satisfied the Censors' Board, were elected to the Membership of the College:

C. L. Davidson, M.D., J. V. Davies, M.B., P. H. Denton, M.D., Flying Officer, R.A.F.V.R., W. Dodd, M.D., C. M. Fletcher, M.B., Stella M. Instone, M.B., G. A. Kiloh, M.D., H. Kopelman, M.B., A. D. Leigh, M.B., Captain, R.A.M.C., J. McMichael, M.D., F.R.C.P.Ed., Hilary F. March, M.D., H. V. Morgan, M.B., R. W. Parnell, M.B., A. M.-M. Payne, M.B., J. Reid, M.B., J. C. Roberts, M.D., R. E. Rodgers, M.D., A. Sakula, M.B., L. W. D. Scott, M.D., H. L. Sheehan, M.D., Major, R.A.M.C., Margaret D. Snelling, M.B., R. H. Taylor, M.B., J. B. L. Tomblinson, M.D., L. Watson, M.B., D. A. Williams, M.D., D. Wilson, M.B., Acting Squadron Leader, R.A.F.V.R., R. Wilson, M.B.

Licences and Diplomas

Licences to practise were conferred upon the following 196 candidates (including 27 women) who have passed the final examination of the Conjoint Board, and have complied with the by-laws of the College:

E. Adler, Brenda N. Akeroyd, G. A. Anderson, E. J. Anthony, G. O. Ashworth, W. J. Atkinson, G. A. Barclay, A. G. Beaton, M. Q. Birkbeck, K. F. Blackburn, D. W. Briggs, Jutta Brokovski, W. A. Bromley, H. J. S. Brown, H. J. M. Browne, J. P. Bull, D. W. Burgess, Katherine D. Caddick, D. Caddy, J. H. Capon, L. G. Capra, W. E. Church, I. I. A. Clarke, S. N. Cole, E. D. H. Cowen, R. A. D. Crawford, C. H. K. Daly, Valerie M. K. Davies, J. J. Y. Dawson, J. C. Day, S. R. Deenadayalu, P. J. R. Deller, P. B. de Maré, M. Diamond, J. P. Donnell, G. B. Downs, Christina N. Duigan, H. L. de V. dit, Durell, K. C. S. Edwards, R. M. Ellison, M. L. H. Evans, W. H. M. Evans, A. Feiner, H. P. Ferreira, J. C. Firth, R. B. Franks, F. E. Fraser, R. Fuller, M. Gang, V. O. B. Garside, D. S. G. Genge, J. A. Gillett, N. Gillman, C. W. Glassey, E. C. Glover, C. L. Grandage, D. McC. Gregg, H. Grylls, Joan I. Hallinan, A. P. Hardman, K. O. Harrison, J. L. G. Hartley, A. Heller, W. G. Helsby, J. A. Henderson, Joan D. K. Hilditch, C. Hiron, F. H. Howarth, G. Howells, Janet R. Humphrey, M. P. Hutchinson, E. L. Ives, B. Jackson, J. R. Jackson, P. Jacobs, C. T. A. James, Alberta M. Jeans, E. R. Jones, Evelyn A. Kaye, B. Kelion, S. K. Kelleit-Smith, G. R. Kershaw, C. A. King, Doreen H. King, M. D. King, F. Kohn, Celia P. Larkins, W. S. Lewis, Ursula M. Lister, H. C. Llewellyn, Sophia Lucas, G. M. Lunn, Stella M. Luty, J. Lyons, J. M. McCurdy, J. L. B. MacFarlane, Joan Mack, Sylvia I. E. Macmillan, J. M. H.

McMurray, T. E. L. J. McNair, A. D. A. Machonochie, F. M. McRae, M. Makin, E. A. de la T. Mallett, J. A. Mantle, W. J. C. Markby, D. E. Marmion, A. H. E. Marshall, S. A. Mason, J. P. Matthews, P. H. N. Matthews, Violet D. Maxwell, R. J. Melhuish, S. L. Melville, A. R. H. Mills, D. V. Milward, F. S. Moore, T. K. Morgan, F. P. Morris, G. A. Mott, R. A. Nabi, D. L. Nichols, J. A. B. Nicholson, H. H. Nixon, J. F. North, A. O'Connor, P. H. Ogilvie, D. J. O'Meara, T. M. Ll. Owen, H. Paradis, T. E. Parn, J. H. Peacock, M. T. Pheils, J. H. C. Phillips, L. G. Piccione, G. H. Pickering, R. J. F. H. Pinsent, R. J. Pitchford, Peggy O. M. Plews, A. Poteliakhoff, C. Reichman, Margaret E. Rhodes, C. W. Richards, G. K. Riddoch, T. B. Ll. Roberts, Dorothy H. Robertson, J. A. Robertson, E. Robinson, A. C. Rogers, M. Rosten, B. Sam, C. S. Savage, G. P. A. Sechiari, J. A. Segal, J. Seiler, B. A. Sellick, J. Shah, O. H. C. Shelswell, J. J. Shipman, M. Shoham, G. Skinner, H. Souster, Eirian Spickett, J. M. Stansfeld, A. W. P. Stone, T. P. Storey, C. G. Stringer, A. Tay, G. G. Taylor, J. G. Taylor, A. E. Thomas, E. F. Thomas, M. G. B. Thompson, Joan M. Thornton, J. P. Turney, G. K. Tutton, A. B. Unwin, Carolina M. van Dorp, C. T. Vincent, W. J. K. Walls, J. A. Ward, K. O. Warner, R. P. Warren, P. C. Watson, Mary E. Wehner, E. Wellisch, Alison D. Wells, L. Wertheim, F. T. Wheelodon, A. H. Widdup, H. L. J. Wilson, J. R. J. Winter, P. H. Wood, R. C. Woolls, G. A. Yorke, Mary Young.

Diplomas in Anaesthetics were granted, jointly with the Royal College of Surgeons of England, to the twenty-two candidates whose names were published in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of June 21 (p. 949), and Diplomas in Laryngology and Otology (four), Psychological Medicine (eleven), and Public Health (six) were granted to the successful candidates whose names were published in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of July 19 (p. 105).

The following diplomas were also granted, jointly with the Royal College of Surgeons of England:

DIPLOMA IN MEDICAL RADIOLOGY.—G. W. Blomfield, Mary A. C. Cowell, A. Fry.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.—K. A. Abayomi, H. C. Black, P. A. Gardiner, J. Halperin, L. H. Lake, T. A. Narayanan, Jean M. G. Shaw, J. L. S. Steele-Perkins, D. Turner.

Medical Notes in Parliament

On August 7 the Royal Assent was given to the Pharmacy and Medicines Act, as also to the National Health Insurance, Contributory Pensions, and Workmen's Compensation Act.

Pharmacy and Medicines Bill

On August 5 the House of Lords considered the Pharmacy and Medicines Bill in Committee. After technical amendments to Clauses 1 and 2, the LORD CHANCELLOR moved an amendment to Clause 8 (Disclosure of composition of medicines). He said that the clause as printed in the Bill provided that the article recommended as a medicine must have a label to show "the appropriate designation of the substance so recommended, or of each of the active constituents thereof." Anxiety was expressed, more particularly on behalf of the herbalists, that this might be taken to mean that they had to state what were the chemical constituents in the bottle, notwithstanding that there might be quite serious changes after the contents had been put together. That would be putting on the herbalist too severe a burden. The amendment was agreed to.

On Clause 9 (Restriction of sale of medicines by unauthorized persons) Viscount PLUMER moved an amendment which, he said, described the processes commonly used in the preparation of herbal medicines, but which were not mentioned in the Bill. The protection given in the clause to herbalists did not go far enough. There was nothing to permit the use of a liquid process which was necessary for the production of many tinctures, essences, and oils commonly used by the herbalist and sold by him in his shop.

The LORD CHANCELLOR said the amendment was too wide. In the end it would lead to the production of an unlimited number of medicines whose efficacy depended on their chemical constituents produced under the alleged shelter of dealing with herbs and herbal extractions. Lord HORDER said that the House had given the herbalists a certain amount of what they had asked for. Now they were asking that certain processes should be permissible in preparing those ingredients which were calcu-

lated, he believed, inevitably to result in so changing and confusing the ingredients as not to make it possible to state finally what they were. This was an effort to side-track one of the two main principles that the Bill established.

Viscount PLUMER moved another amendment dealing with the use of preservatives. He explained that it was impossible to produce a herbal medicine without some form of preservative. His amendment dealt with the addition of glycerin, alcohol, and esters of parahydroxybenzoic acid, "or such other preservative as the Ministry of Health might sanction." The LORD CHANCELLOR, resisting the amendment, said that if alcohol were used as a preservative in these cases a proportion of something like 20% of the whole mixture would probably be necessary for that purpose. Alcohol might, in fact, result in the preparation of a tincture which would be a manufactured article quite remote from the simple herbal remedy, and one having wholly different results. Lord HORDER, who also opposed the amendment, said it was very pertinent to note that no quantity or minimum amount of glycerin, alcohol, and other alcoholic preparations for use as preservatives was suggested. The action of these preservatives on the questionable derivatives remaining after macerating, infusing, boiling, and so on was such as to render the principle of the Bill, which called for disclosure, of no effect. The amendment was negatived.

The LORD CHANCELLOR moved an amendment to make it plain that the phrase in Subsection (5) (a), "the substance recommended as a medicine which the article consisted of or comprised," meant the whole substance contained in the article—the bottle of cough mixture or whatever it might be—and did not refer to each one of the constituents of, for example, the cough mixture.

The Committee stage was concluded. On the Report stage an amendment by Viscount BERTIE which, he said, would enable the Ministry of Health to give that help to herbalists with regard to preservatives which they so badly needed, was withdrawn. The Bill was read the third time, passed, and sent back to the House of Commons.

On August 6 the House of Commons agreed with the Lords' amendments to the Pharmacy and Medicines Bill. Miss HORSBROUGH explained that certain of these had been drafted to reassure the Society of Herbalists, whose representatives had come to the Ministry of Health a few days previously and put their difficulties before the Department.

Mr. VIANI asked the Minister of Health on July 30 to consider the position of naturopaths not retailers of herbs who prescribed for their patients, and sold tinctures, fluid extracts, and compressed tablets under the Pharmacy and Medicines Bill.

Mr. BROWN replied on August 7 that this Act did not affect the right of these practitioners to provide treatment for their patients.

Scotland's Health Services

Introducing the Estimates for the Department of Health for Scotland on July 30, Mr. T. JOHNSTON said that in the past year Scotland had escaped a major epidemic. Figures for tuberculosis were increasing, those for diphtheria were higher than ever, and those for paratyphoid, cerebrospinal fever, and influenza were slightly up. Scarlet fever, measles, and whooping-cough were decreasing. Causes of the increased incidences were the black-out, windows fastened at night, overcrowding due to evacuation, intensification of toil, and above all the long and severe winter. The campaign for immunization of children against diphtheria had been given publicity, materials had been supplied to local authorities gratis, and 500,000 children—half the total—had been treated during the year. Local authorities had been asked to concentrate their attention during the holidays upon pre-school children, whose susceptibility was greater. Mr. Johnston agreed that a larger proportion of the beds in the Emergency Hospital Service should be taken for civilians who were on the waiting lists of other hospitals. The emergency service had seven first-class hospitals and twenty new annexes to existing hospitals. The Department of Health had drawn the attention of every doctor and of all hospital authorities in Scotland to the fact that it was willing to see a large proportion of their waiting lists. He hoped those seven hospitals would be the nucleus of great service not alone for citizens in the areas where they had been built. This, with the stimulus of the

Nuffield Trust, should remove the waiting lists and demonstrate the wisdom of co-operation in wide areas among hospital authorities, municipal and voluntary.

Mr. MAXTON asked Mr. Johnston to ensure that the cheap or free milk provided for the child under 5 was continued till the child received the school ration. Colonel ELLIOT said the hospital waiting lists had always been a scandal in Scotland. A person might have to wait for years for admission, and the same problem existed in the North of England. He was glad a big addition had been made to hospital accommodation. The increasing incidence of some diseases mentioned by Mr. Johnston was a warning that strain and stress were beginning to have an injurious effect on the constitution of the people. Both in Scotland and England the graphs of tuberculosis had turned upward after a long decline, which showed that close consideration should be given to nutrition.

Dr. MORGAN said there were still areas in Scotland where no organized fracture treatment was given, such as the Glasgow Royal Infirmary. Although this had an excellent clinic, treatment was completely dissociated and unorganized in the in-patient departments. Could not the Government, by grants to voluntary hospitals, introduce proper organization in both the in-patient and out-patient departments and bring these hospitals up to Grade I as laid down by the Develingne Committee? In Scotland in 1939 only one hospital—the Glasgow Hospital—was carrying out the treatment laid down for Grade I. Three hospitals were in Grade II, none in Grades III and IV, and six in Grade V. Many dissociated rehabilitation from treatment and did not adopt it until surgical treatment was complete.

Replying for the Government, Mr. WESTWOOD said the annual report of the Department of Health had been suspended during the war, but a rough summary report would soon be available to members. Beds were available in auxiliary hospitals, and there was no justification for a waiting list. He knew of the difficulties of the medical profession, who sometimes did not want to send their work to another hospital.

The House agreed to the Estimates for the Department of Health, and also for a token Estimate for services in that Department arising out of the war, including measures in Scotland to deal with casualties and disease.

Medical Problems of the Ministry of Pensions

Estimates of £37,003,000 for the Ministry of Pensions were discussed on July 31. Introducing them, Sir WALTER WOMERSLEY said consideration had been given to the position of men who, having been passed by a recruiting board on enlistment and placed in Grade I as fit for general service, were, after effective service, discharged on account of a disability shown to have existed before enlistment. Doctors usually referred to this as a constitutional disease. He had concluded that where effective service was found to have caused aggravation in a previously existing condition, and where the man had not given the board untrue information about medical facts known to him, the Minister would be justified in regarding the aggravation as material and as bringing the case within the scope of the Royal Warrant. Under the new rule, if the doctors who examined on behalf of the Navy, Army, or Air Force had made a mistake, then the State must pay. Many cases were being reconsidered, and he hoped that all would be cleared up before long. He had secured an amendment of the Royal Warrant to give him discretion to make a reduced or even a full award where the death or disablement of a member of the Forces involved an element of negligence or misconduct. He would provide by Royal Warrant that a man in the Home Guard, when on duty, came under the same regulations as a member of the armed Forces. Hospitals under the Ministry now had a bed strength of 7,647, against 1,833 at the outbreak of war, and an additional hospital of 600 beds was nearing completion. Some hospitals had suffered severely by bombs, and in every case the staff showed bravery and zeal. The staff included 285 medical men, 100 on a part-time basis. They were all rendering splendid help. During the past year in-patient treatment was given in 5,300 cases, and 5,267 officers, nurses, and men received treatment in mental hospitals. In addition 6,605 Service and civilian casualties received treatment in Ministry of Pensions hospitals. The Government was considering the rehabilitation and training of men discharged from

Medical News

Dr. Frederick Wharton, a surgeon of Lexington, Kentucky, has been elected president of the American Medical Association.

The Home Secretary has appointed Sir Robert Kelly to be a member of the Advisory Committee on the administration of the Cruelty to Animals Act, 1876, in place of the late Sir D'Arcy Power.

Major Alexander Wilson, O.B.E., M.D., has been appointed a Deputy Lieutenant for the County of London.

Jaconet (as defined by the *British Pharmaceutical Codex*) may be obtained coupon-free if sold in pieces not exceeding forty-five inches in length or breadth.

According to the *Schweizerische medizinische Wochenschrift*, a census of persons suffering from venereal disease in Germany carried out in June, 1940, showed that there were, in round numbers, 122,000 men and 75,000 women. These figures imply that the usual increase in these diseases in wartime had not then taken place.

The distinguished service medal for scientific achievement of the American Medical Association has been presented to Dr. James Ewing, formerly director of the laboratories of the Memorial Hospital, New York.

A pamphlet on family allowances, by Mrs. E. M. Hubback, issued by the Family Endowment Society (19, Wellgarth Road, N.W.11) provides an up-to-date short statement on the case for the immediate introduction of a State-paid scheme of family allowances. Its purpose is to show the impracticability of dealing with child poverty among larger families in any other way, especially in wartime.

The Narcotics Division of the League of Nations has been moved from Geneva to Washington.

We regret to announce the death at the age of 85 of Sir Alfred Rice-Oxley. We hope to publish a memoir in our next issue.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS of their articles must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager (hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and subscriptions should be addressed to the Secretary.

TELEPHONE NO.—B.M.A. and B.M.J.: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Timepiece for Blind Person

"INQUIRER" writes: Can any reader give advice as to a suitable timepiece for an old lady who has recently become blind? Her intelligence is good but adaptability only fair. She gets very agitated at not being able to tell the time.

Diminution in Size of Breasts after Childbirth

Dr. H. D. MOORE (Carlisle) writes: I have a patient whose breasts have become rather shrunk and pendulous after childbirth. She is a young woman of 23; first child 6 months, unable to breast-feed it, although efforts were persisted in. Her general health has not been very good. She has lost a little weight—about 6 lb.—and has had a cough, which is now quite well: tuberculosis has been excluded. She is worried about this. Can anyone suggest any treatment, apart from general methods, to improve her health and put on weight?

Income Tax

Travelling Expenses

"G. H." received £260 in medical fees for work under the Military Training Act. Attendance at the board necessitated travelling fourteen miles on each occasion. The £260 was his only earnings for 1940-1. The cost of travelling has been refused.

** As we understand the position, "G. H." accepted an appointment which necessitated attendance at premises some distance away, and his work was carried on there. Such expenses have been judicially held to be incurred before or in preparation for carrying out the duties of the employment and not (as required by the statute) "wholly, exclusively and necessarily in the performance of the duties." They are, therefore, not allowable as deductions. In the result "G. H." may not unnaturally feel that he is placed under hardship—a feeling which the large body of employees who live in suburbs and work in the centres of crowded areas fully share. In a recent debate, however, the Chancellor of the Exchequer said he was unable to redress the grievance.

Sale of Practice: Instalment Payments

"BETA" is arranging to sell his practice at one and a half years' purchase—that is, "50% of the income from the practice for each year for three years." If that is done how will income tax be affected?

** "Beta" should see that the agreement for sale of the practice is expressed in such a way as to make it clear that the practice is being sold for a capital sum to be satisfied by payment for three years of 50% of the gross income. If that is done the payments will rank as capital sums and will not be taxable in his hands. The deciding case on the point is *Commissioners of Inland Revenue v. Ramsay*.

Deduction for Nominal Rent

"A. P." owns his residence, which is assessed at £64 for payment of income tax, Schedule A. There are twelve rooms, of which four are used for professional purposes. What amount should he charge in his professional accounts as "rent"?

** As the rent is treated as £64 net for payment of income tax, Schedule A, he must take that as a basis for calculating the deduction. The four rooms used professionally are presumably on the ground floor—that is, the most valuable floor—and possibly do not include the garage. On the whole, one-half of £64—that is, £32—seems to be a reasonable deduction. (It is assumed that the cost of repairs, decorations, etc., of the professional rooms is charged separately.)

LETTERS, NOTES, ETC.

Flat-foot in Recruits

Dr. W. F. BENSTED-SMITH (Newton Ferrers) writes: I can endorse the results quoted by Captain Sachs and Lieut. Gibson (July 26, p. 127) from the use of rubber as a support. I have for some years used pads shaped from rubber sponges and held in position by adhesive or sewn into socks for bad flat-foot in farm workers and ploughmen (a comparable class) with most cheering results.

The Unburned Cornea

Dr. ARTHUR GREENE (Norwich) writes: In the *Journal* of July 12 (p. 74) under the above heading, after a reference to one of Jules Verne's wonderful books, attention is drawn to cases of patients whose corneas have escaped serious injury though enveloped by molten metal. One would scarcely expect such good luck in the case of a chemical burn, but, a good few years back now, I was called urgently to see a boy (aged about 16) whose eye had just been injured by an explosion while working in the school chemical laboratory. My horror can be imagined on recognizing the boy as one who, I knew, had lost the vision of one eye some nine years previously, and that it was the "good eye" which had received the chemical. The entire cornea was covered up by a dark and adherent rough mass, for all the world like a piece of charcoal moulded to the cornea. Although, fortunately, I had not the courage to say so, I thought it obvious that he was doomed to permanent blindness. The eye made an excellent recovery, and when last I heard of him he was holding an important business position "out East." A prognosis as regards vision should never be given at the first examination of an eye burned physically or chemically, especially a "lime burn," which, though it may look trivial at first, frequently leads to severe visual defect.

The Editor of the *Medical Directory* asks members of the medical profession who have not communicated to him their present addresses to do so without delay, otherwise the words "Address unknown" will appear in lieu of an address in the forthcoming 1942 edition.

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AMOEBIIC DYSENTERY AND ITS EFFECTIVE TREATMENT*

A CRITICAL STUDY OF 535 CASES

BY

Sir PHILIP MANSON-BAHR, C.M.G., D.S.O., M.D., F.R.C.P.

The aim of the present investigation has been to discover the best method of treating intestinal amoebiasis and of eradicating this infection.† 535 cases have been selected for this study out of numerous records of clinical amoebiasis during a period of twenty years. Those only have been included in which *Entamoeba histolytica* or its cysts have been demonstrated by personal observation. No metastatic complications of amoebiasis have been considered unless accompanied by manifestations of active amoebic dysentery.

Of the cases 450 were in men and 85 in women; with the exception of 8 Indian seamen all the patients were Europeans. They were derived from sixty-four countries, though the great majority were from India, Ceylon, West Africa, China, and Malaya; smaller numbers hailed from other parts of Africa, from Egypt to the Cape, including the Canaries, Cape Verde Islands, and Mauritius. In Europe a few were infected in Northern France, Germany, Austria, Greece, South Russia, and Malta. From America cases came mostly from the West Indies and the South American republics. From Australia there was one example, from New South Wales; from England one indigenous infection.

This case occurred in a stevedore in the London docks who had been suffering from supposedly ulcerative colitis. He had never been out of England, but had worked for twenty years on the wharves, where he had probably contracted amoebiasis from association with Indian seamen.

Most cases originated between the second and fourth decades of life, a small proportion (43) between the fifth and sixth, and only 8 above that age. There were 8 under 20 years old, the youngest being 7½ (although the infection had been acquired five years earlier). Amoebiasis therefore appears to be mostly a disease of adult life: European children are seldom affected. It is usually contracted from contaminated water. Thus 10 in this series were employees of a cable company from St. Vincent (Cape Verde Islands), where the evidence of infection from stored and contaminated water was found to be almost conclusive.

Diagnosis

The following is a summary of the findings:

Diagnosed by <i>E. histolytica</i> in scrapings from ulcers in rectum	26
Diagnosed by active <i>E. histolytica</i> in faeces	222
Diagnosed by <i>E. histolytica</i> cysts in faeces (in 17, pre-cystic forms together with cysts)	287

In many cases *E. histolytica* cysts were associated with *Giardia intestinalis*, *Iodamoeba buetschlii*, *Endolimax nana*, *Entamoeba coli*, active and cysts. In no instance were active *E. histolytica* and cysts found simultaneously in blood and mucus stools. It is important to note that in 26 cases diagnosis was rendered certain from scrapings made from

amoebic ulcers in the bowel, whereas no confirmatory evidence had been forthcoming by simultaneous faeces examinations.

Sigmoidoscopy was performed in 258 cases, amoebic ulcers and other characteristic lesions being demonstrated in 234. In 77 cases active entamoebae were recognized in scrapings; in 24 (9.3%) the mucosa had a normal appearance. Routine sigmoidoscopy has therefore proved its value as a means of securing positive diagnosis. Thus:

An officer aged 27 who had for long been regarded as suffering from ulcerative colitis was seen in June, 1934. The faeces had been examined microscopically on many occasions, with a negative result. Sigmoidoscopy revealed ulcerated mucosa, and in scraping active *E. histolytica* was seen. It transpired that up to 10 years of age he had lived in Mauritius, where he had suffered from mild dysentery, but since then had not been abroad. The latent period of this infection was therefore seventeen years.

Complicating Conditions

Many other complicating infections were recorded, such as: malaria (30 cases), kala-azar, trypanosomiasis, filariasis (*A. perstans* 3, *Loa loa* 1), ankylostomiasis, oxyuriasis, ascariasis, bilharziasis (*S. mansoni* 2), sprue (8), cardiac complications (4), *B. coli* bacilluria (5), liver abscess (6), amoebic infection of the skin (1), syphilis (4), renal calculus (3), fistula in ano, rectal abscess, fibroid polyp, pneumonia, tuberculous mesenteric glands, etc. Two cases in which the patient was pregnant (seven months and six weeks respectively) were cured by E.B.I. treatment.

Clinical Notes

Amoebic dysentery is usually chronic in nature and erratic in its course. It is particularly benign, and seldom dangerous to life. There was only one death in this series, in a patient who was moribund when the diagnosis was made:

Though the onset of the fatal illness was sudden and death took place within three days, it is probable that the patient had been infected for a considerable period. He was a ship's carpenter who had sailed to the Tropics for many years. At necropsy extensive ulceration and necrosis of the large intestine were found, as well as five liver abscesses.

The great majority are apyrexial. Fever usually denotes subacute hepatitis, which accounted for 30 in this series, but occasionally an alarming pyrexia, which may best be termed "amoebic fever," may be noted.

A seaman on his arrival from Sierra Leone (July, 1940) had been ill for sixteen days with high fever, headache, bone pains, and other signs of toxæmia. His general condition suggested typhoid. There were occasional attacks of diarrhoea and meteorism. No amoebae could be demonstrated in the faeces, though sigmoidoscopy revealed extensive ulceration of the rectal mucosa, containing active *E. histolytica*. Response to treatment was almost immediate (see Chart).

* Based on the Lumsden Lectures for 1941.

† The results of treatment are given in a series of tables at the end of this paper.

renders the infection eventually more difficult to eradicate. The following principles may be enunciated:

1. A fresh infection is more easy to eradicate than one of long standing.
2. The widely accepted practice of periodic injections of emetine, or even inadequate doses by the mouth of other emetine compounds, is not recommended, for it has been indicated that, so far from effecting a cure, this method tends to render *E. histolytica* emetine-fast.
3. Cases, however resistant, can eventually be cured, provided the course of anti-amoebic treatment is sufficiently thorough and prolonged.
4. Quinoxyl is a potent non-toxic drug, causing few disagreeable sequelae. In resistant cases of amoebiasis it produces the most permanent results in combination with emetine bismuth iodide. This treatment is usually well tolerated, provided that minutiae of dosage and timing are observed.

Results of Treatment

TABLE I.—Showing Nature of Anti-amoebic Treatment on 276 (51.5% of the Series) previously Untreated Cases (110 with Active Amoebae and 166 with Cysts)

Emetine bismuth iodide courses of 20 to 26 grains	29
Emetine periodide courses of 28 to 72 grains with tablets of fel bovinum	9
Quinoxyl pills (4 grains), plus quinoxyl retention enemata 2½%	18
Stovarsol 80 grains (cyst-carrier case)	1
<i>Combined treatments:</i>	
Emetine bismuth iodide 20 to 26 grains, plus quinoxyl retention enemata 2½% (1 case, 5%)	198
Emetine periodide 20 to 30 grains, plus quinoxyl retention enemata 2½%	17
Auremetine 30 grains, plus quinoxyl retention enemata 2½%	4

Out of 276 cases there were only 4 (1.4%) uncured. Two definite relapses occurred one year later, and these were ultimately cured with further treatment. In 2 cases the result could not be followed up.

TABLE II.—Showing Effect of Emetine Injection Treatment on 259 (48.5% of the Series) Cases (138 with Active Amoebae and 121 with Cysts) prior to Parasitic and Clinical Relapse

Emetine injections ranging from 40 to 60 grains, given over a period of 4 to 6 months, in 2 cases reinforced by intravenous emetine	171
Emetine injections, plus 2 to 3 courses of emetine bismuth iodide, emetine periodide, or auremetine	67
Emetine injections, plus oral quinoxyl, stovarsol, carbarsone, or ipecacuanha	21

TABLE III.—Further Anti-amoebic Treatment of Emetine-injection-treated Cases Detailed in Table II

Emetine bismuth iodide courses of 30 to 40 grains	91
Emetine periodide courses of 30 to 70 grains with tablets of fel bovinum	6
Quinoxyl pills (4 grains), plus quinoxyl retention enemata 2½%	17
Stovarsol 80 grains, plus quinoxyl retention enemata 2½%	2
Emetol retention enemata	1
<i>Combined treatments:</i>	
Emetine bismuth iodide 19 to 30 grains, plus quinoxyl retention enemata 2½% (5% in 16 cases)	124
Emetine periodide 30 grains, plus quinoxyl retention enemata 2½%	17
Auremetine 30 grains, plus quinoxyl retention enemata 2½%	1

RESULTS OBTAINED IN THE SERIES OF TABLE III

Of these 259 there were 20 cases which relapsed still further, but all, with one doubtful exception, were eventually cured. The relapse rate was 7.7%. The following are typical resistant cases:

Case 1.—Infected in Tanganyika in 1917; continually relapsed after courses of emetine injections. Admitted to hospital 1920, 1922, 1923, for treatment with E.B.I., E.P.I., and ipecacuanha. Eventually cured in 1928 with full combined course of E.B.I. 30 grains and quinoxyl retention enemata 5% for ten days.

Case 2.—Infected in Nigeria in 1928; had numerous relapses in spite of emetine injections. Had amoebic hepatitis in 1935. Relapsed again after E.B.I. treatment. Eventually cured in 1936 with E.B.I. 20 grains and quinoxyl retention enemata 2½%. Reported up to 1941 in good health.

Case 3.—Had spent forty-two years in West and Central Africa. In 1925 suffered from amoebic dysentery and hepatitis,

controlled by emetine injections. In 1934 *E. histolytica* cysts were found in the faeces, and sigmoidoscopy revealed amoebic lesions. He was treated by E.B.I. 30 grains and quinoxyl retention enemata 2½%. Febrile attacks recurring in 1935, he was operated upon for cholecystitis, but instead a chronic intralobar abscess in posterior part of right lobe of liver was exposed. During convalescence an acute attack of amoebic dysentery developed, with active *E. histolytica*. This was finally cured by repeating the course of treatment with E.B.I. and quinoxyl 5%. He has remained in good health ever since. It is a matter for speculation why the treatment which appeared ineffective in 1934 was curative a year later.

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AMOEBIASIS—PULMONARY COMPLICATIONS

BY

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AND

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Our experience in Natal leads us to believe that pulmonary amoebiasis is fairly common in the coastal belt, more particularly among the non-European population. It is our contention that whenever amoebic dysentery occurs pulmonary complications will be found in a high percentage of untreated cases. This is of great importance to the armies in the East. There is no doubt about the high incidence of amoebiasis in the population of Natal, as judged by the various hospital records. In 1939, for example, at the King Edward VIII Hospital for Natives, Durban, 1,520 cases of amoebic dysentery were admitted—i.e., one-tenth of the total admissions for the year. At the McCord Zulu Hospital in 1940, of 3,763 admissions 251 (6.7%) were cases of amoebic dysentery. Many of these cases had been wrongly diagnosed as pulmonary tuberculosis.

Amoebiasis of the lung may be primary or secondary. The primary form is comparatively rare: the latter form is much more frequent than is thought.

Primary Pulmonary Amoebiasis

Manson-Bahr (1940) states that in primary amoebiasis of the lung "the entamoebae reach the lung by direct embolism from the gut wall. Having gained the pulmonary circulation, they form consolidated nodules, which later break down into small abscesses."

Our cases have presented the following signs and symptoms: cough, sputum, haemoptysis, wasting, night sweats, evening rise of temperature—in fact, all those of pulmonary tuberculosis. The main points leading to a diagnosis of primary pulmonary amoebiasis were: (a) a careful history revealing no family or other known contact with a case of

active open tuberculosis; (b) a history of diarrhoea or dysentery; (c) absence of tubercle bacilli in the sputum on repeated examination; (d) the presence of eosinophilia; (e) the presence of cyst forms of *Entamoeba histolytica* in the stools. On no occasion were amoebae demonstrated in the sputum.

Treatment.—The response of primary amoebiasis of the lung to emetine and carbarsone is remarkable and rapid. Emetine hydrochloride 1/2 grain hypodermically and one carbarsone tablet (0.25 gramme) per os are given twice daily at the same time for five days. Then carbarsone alone is given per os twice daily for five days, followed by rest for five days. If the condition has not cleared, the course is repeated.

Secondary Pulmonary Amoebiasis (or Amoebic Abscess of Lung)

In secondary pulmonary amoebiasis infection of the lung takes place by direct extension from an amoebic abscess of the liver. The abscess may rupture direct into the pleural cavity, giving rise to an empyema. More often the diaphragmatic pleura becomes adherent, thus shutting off the pleural cavity, and extension of the amoebic infection takes place direct into the lung base.

Symptoms and Signs.—The patient complains of cough, and sputum which is blood-stained at times and always characteristically "anchovy-sauce" in appearance, loss of weight, loss of appetite, malaise, and night sweats. Because of these symptoms the cases are often wrongly diagnosed as basal tuberculosis, more particularly in the Bantu, since it is known that basal tuberculosis is commoner in primitive races than in the European. A careful inquiry into the previous history may elicit a previously unsuspected dysentery. On the other hand, many patients give no history of any bowel disturbances. The cough is often troublesome and the sputum profuse. A mere glance at the characteristic "anchovy-sauce" sputum should direct attention to the correct diagnosis. The absence of tubercle bacilli in the sputum would tend to eliminate pulmonary tuberculosis. Examination of the chest reveals dullness at the right base, with deficient or absent breath sounds and often tenderness in the right hypochondrium, due to the associated hepatitis.

Radiological Appearances.—In primary pulmonary amoebiasis the radiograph may present the appearance of tuberculous infiltration or a bronchopneumonic consolidation. In secondary amoebiasis of the lung there is usually a well-marked opacity at the base, with obliteration of the costo-phrenic angle and immobility of the right hemi-diaphragm. The inflammatory reaction spreads from liver to diaphragm, and the process extends then to the lung surface of the diaphragm and to the base of the lung before actual rupture into the lung takes place. The septum between the middle and the lower lobes, usually hardly discernible on the radiograph, takes part in the inflammatory process, becomes thickened, and appears as a fairly thick band limiting the inflammatory process to the base. On account of the elevation of the diaphragm from the hepatic abscess and the inflammatory products of the base, the septum usually assumes an elevated position with the convexity upwards. When the abscess ruptures into the base the thickened septum often prevents the rupture taking place into the middle lobe. From the base the abscess tends to rupture into the particular lobe bronchus or bronchi, and the patient coughs up the characteristic "anchovy-sauce" sputum. Often a radiograph will show a small pocket of air lying subjacent to the septum.

Bronchography.—This may be of value in differentiating amoebic abscess from lung abscess due to other causes,

since in the latter condition a blocked bronchus is usually found. Basal bronchiectasis is easily distinguished on a bronchogram. We have introduced lipiodol into the right lung base in several cases of amoebic abscess in an effort to show a direct communication between the lung and the liver. As yet we have not been successful in this.

Treatment.—As in primary amoebiasis, emetine and carbarsone have a rapid and dramatic effect. Where an empyema is present, drainage is necessary in addition.

The following are records of seven cases illustrative of pulmonary amoebiasis.

Case I

This patient, a European aviator aged 32, was employed by Imperial Airways and travelled up and down Africa. About eight months previously he began to complain of cough and blood-stained sputum, which has continued up to the present time. He had lost some weight and his appetite "had gone off." His weight is now stationary. There was no history of any dysentery. He was referred to the King George V Hospital as a case of pulmonary tuberculosis. His personal and family history revealed nothing of note.

On examination his general condition was good. Neither anaemia nor clubbing of fingers was present. Crepitations were heard in the left mid-zone. Nothing abnormal was found in the cardiovascular and genito-urinary systems. The sputum was negative both on direct smear and on concentration. A radiograph showed an area of infiltration in the left lung (Fig. 1).



FIG. 1.—Primary pulmonary amoebiasis. Radiograph shows fairly extensive infiltration in left mid-zone and base.

A blood count revealed a 10% eosinophilia. His stool was examined and cyst forms of *E. histolytica* were found. A course of emetine and carbarsone was given, following which there was rapid and dramatic improvement and his cough and sputum cleared up completely. A radiograph taken after treatment showed the lung fields to be clear (Fig. 2).

Case II

This patient, a native labourer aged 35, was seen at a neighbouring hospital, where he was being treated for pulmonary tuberculosis. He gave a history of cough and sputum, blood-stained at times, associated with loss of weight and energy. His

sputum was repeatedly T.B.-negative. He had also had an attack of "dysentery" some two to three months previously. His general condition was fair; he had a cough productive of much "anchovy-sauce" sputum, but no clubbing of fingers.

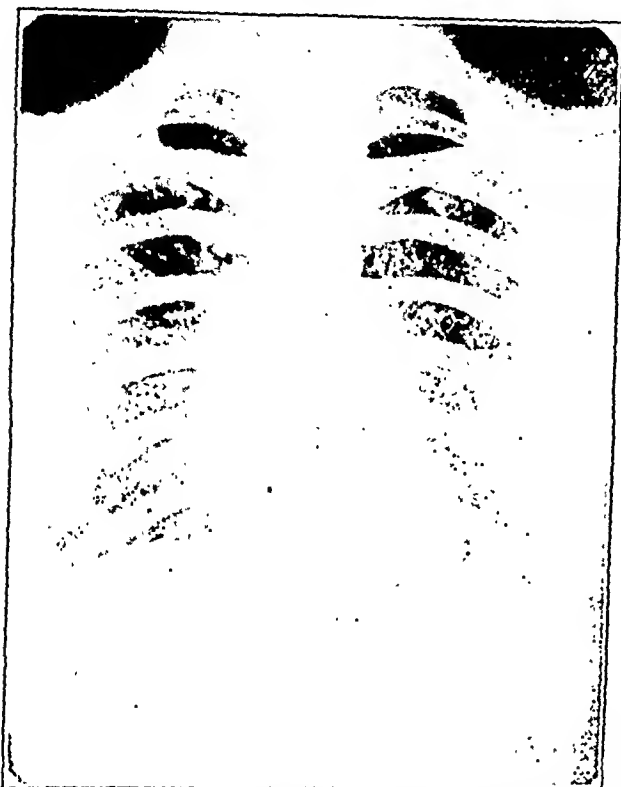


FIG. 2.—Radiograph, taken after one course of emetine, shows an almost complete disappearance of the original lesion.

There was dullness and poor air entry in the lower half of the right lung. The cardiovascular system was normal. The sputum was negative both on direct smear and on concentration. A blood count showed 10,000 white cells per c.mm., with an 8% eosinophilia. Examination of the stool on three occasions was negative for *E. histolytica*. A radiograph of the chest revealed a fairly massive infiltration at the right base and mid-zone.

A diagnosis of amoebiasis of the lung was made. Emetine and carbarsone were given, with marked improvement in the patient's general condition and great diminution in symptoms. A radiograph taken after two courses of emetine and carbarsone did not reveal any lung lesion.

Case III

This patient, a native labourer aged 38, when first seen had been treated for two months for pulmonary tuberculosis. He gave an indefinite history of abdominal pain about eighteen months previously, for which he had been treated in the out-patient department. He felt quite fit till about the last four or five months, when he began to complain of cough and sputum, blood-stained on occasion, and of progressive lassitude and disinclination for food.

On examination his general condition was poor and he looked ill. The temperature was 98 to 100.2°. There was dullness at the right base with poor air entry, and some moist rales were audible. The cardiovascular system was normal. Some tenderness was present in the right hypochondrium. The liver was not palpable. The sputum had an "anchovy-sauce" appearance; it was profuse and somewhat offensive, and was negative on direct smear and on concentration. Repeated blood counts showed a polymorph leucocytosis up to 12,000 per c.mm., but no eosinophilia. A radiograph revealed a fairly extensive lesion at the right base.

Following treatment with emetine and carbarsone, there was a very rapid and dramatic improvement and his cough and sputum disappeared. The lung lesion was not seen in a radiograph taken after one course of emetine and carbarsone.

Case IV

A native labourer aged 36 years first developed pain in the right side of his chest six months previous to admission. Cough ensued, with sputum which later became blood-stained. Early in 1939 he had had abdominal pain with frequent blood-stained stools, for which he was "treated" by a native witch-doctor.

On examination he was seen to be very thin. There were depigmented marks on the face, present from childhood, and slight clubbing of fingers. Breath sounds were absent over the right lower lobe in front, and crepitations were heard posteriorly. The sputum was T.B.-negative. There was tenderness over the liver, the edges of which were palpable.

On admission he was having a frank haemoptysis, but later produced "anchovy-sauce" sputum. A radiograph revealed an opacity at the right base. Amoebic abscess of the lung was diagnosed. No hiatus communicating with the liver detected by bronchography. Following emetine therapy the patient showed much improvement in general condition, and the lesion at the right base was not present on serial radiographs.

Case V

This patient, a male native, was a proved case of amoebic abscess of the right base. Bronchography was done in an attempt to outline the hiatus communicating between the liver and the lung. This, however, was unsuccessful. Following bronchography he was treated with emetine and carbarsone, the lesion then clearing completely.

Case VI

This patient, a native labourer aged 37, was admitted on May 7, 1940. For the last year or so he had had pain on the right side of his chest and cough associated with periodic attacks of shortness of breath. He described his sputum as "dark yellow" and blood-stained at times. He had had a frank haemoptysis about six months previously. He did not complain of night sweats, and his appetite was good. One sister has a "bad cough." He gave no history of amoebic dysentery, but was treated for roundworms in 1938, and had had an untreated urethral discharge in 1935.

On examination his general condition was fairly good; he was anaemic and afebrile, and there was clubbing of fingers. Signs of a large cavity were observed at the right base, and there was tenderness over the liver. Sputum was copious but not foul, brownish, and T.B.-negative. A radiograph revealed a cavity at the right base. Bronchography on May 10 showed the lipiodol filling up the bronchi surrounding the cavity, which was well outlined.

A tentative diagnosis of amoebic abscess with cavitation was made, and emetine and carbarsone were given. About three weeks later the cavity had completely disappeared, the cough and sputum had practically ceased, and there was great improvement in the patient's general condition.

Case VII

This patient, a native labourer aged 22, had been seen at a neighbouring hospital as a case of pulmonary tuberculosis. He gave a poor history, but so far as could be ascertained he began to cough about a month before admission. His sputum had been blood-stained on and off for about two weeks. He complained of progressive loss of weight and energy, loss of appetite, and night sweats. About six months before the coughing began he had had an attack of diarrhoea but could not remember whether he had passed any blood. The diarrhoea disappeared after he had taken one bottle of medicine. About two months earlier he had had some abdominal pain. He was admitted to hospital and a diagnosis of amoebic hepatitis was made, but he left at his own request after receiving only two emetine injections.

On readmission to hospital he looked ill and appeared to be somewhat dyspnoeic. The temperature was 98 to 102°. Clubbing of fingers and pallor of mucous membranes were present. There were dullness and crepitations at the lower half of the right chest, and a few moist rales at the left mid-zone. The cardiovascular system was normal. The liver edge was palpable two fingerbreadths below the costal margin, but was not tender. The sputum was negative on direct smear and on concentration. A radiograph showed infiltration at the right mid-zone and base

and some infiltration at the left mid-zone. Cyst forms of *E. histolytica* were found in the stool. There was a leucocytosis of 10,200 per c.mm., with a 7% eosinophilia.

He was given a course of emetine and carbarsone, and his temperature came down to normal after forty-eight hours. A radiograph taken ten days later showed the lesion on the left side to be cleared, and there was some clearing of the lesion on the right. The course of emetine and carbarsone was repeated, and another radiograph after one month revealed still further clearing of the lesion on the right. At this stage the white cells numbered 8,700, with a 5% eosinophilia. Stool examination was negative for *E. histolytica*.

This patient is feeling much better; his cough and sputum have greatly decreased, and he is anxious to leave hospital. At the time of writing he is still under treatment, but will be discharged as soon as the lesion at the right base has cleared.

Commentary

The diagnosis of pulmonary amoebiasis is important because of its very rapid response to a specific therapeutic agent—emetine. In the diagnosis various factors must be considered:

(a) *History*.—A history of blood and mucus in the stools, no matter how long before the lung symptoms are manifest, is an important point. However, many patients do not admit to any previous bowel disturbances.

(b) *Site of Lesion*.—In secondary pulmonary amoebiasis the lesion is inevitably at the right base.

(c) *Stool*.—Examination of the stool very often reveals the presence of cyst forms of *E. histolytica*.

(d) *Sputum*.—The macroscopic appearance of the "anchovy-sauce" sputum is characteristic. Microscopically the sputum reveals an absence of other bacilli, such as tubercle bacilli. In primary amoebiasis *E. histolytica* is said to occur in the sputum, but in our series of cases, in both the primary and the secondary forms, we have been unable to demonstrate the entamoeba.

Differential Diagnosis

Tuberculosis.—Involvement of the right base with the apices clear is against tuberculosis, except in primitive races, in whom basal tuberculosis is not uncommon. Repeated negative sputum examinations would rule out pulmonary tuberculosis.

Bronchiectasis.—Bronchography would demonstrate the presence of bronchiectatic dilatation at the site of the lesion.

Foreign Body in Bronchus.—Unless there is a clear history of aspiration of a foreign body or the foreign body is easily seen on the radiograph, bronchoscopy is indicated in order to make a diagnosis.

Neoplasms.—A neoplasm may cause bronchial obstruction with resultant atelectasis, which may simulate secondary amoebiasis in the radiograph. Bronchography may show a characteristic "rat-tailing" of the affected bronchus. Bronchoscopy would be of value in differentiating a malignant from an innocent tumour by obtaining a biopsy specimen.

Syphilis of Lung.—As is well known, the symptoms and signs of syphilis are protean in their manifestations. Particularly in the Bantu, syphilis may show itself in the lung as a large tumour or as an extensive infiltration. The presence of a positive Wassermann reaction and the rapid response to the arsenicals would confirm the diagnosis.

Unresolved Pneumonia.—This may show as an opacity on the radiograph. Serial radiographs would show a gradual disappearance of the lesion.

Avitaminosis.—Jersild (1939) reported a case of haemoptysis and lung infiltration caused by avitaminosis. In the

Bantu in South Africa, more particularly in the urbanized native, symptoms of avitaminosis are very frequent. We feel, therefore, that a condition of avitaminosis should be considered in a differential diagnosis.

Where the diagnosis of pulmonary amoebiasis cannot be definitely established we feel that in suspicious cases the patient should be given the benefit of a therapeutic test with emetine and carbarsone.

Summary and Conclusions

Pulmonary amoebiasis is discussed.

Seven cases of primary and secondary amoebiasis are described.

The importance of examination of the stool, sputum, and blood is emphasized.

Bronchography may be of value in demonstrating a communicating hiatus between the primary lesion in the liver and the secondary lesion at the right base.

All cases of pulmonary amoebiasis show a striking response to emetine and carbarsone.

We wish to thank Mr. M. E. Gibson, M.S.R., for taking the radiographs.

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THE SURGICAL COMPLICATIONS OF AMOEBIC DYSENTERY

BY

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The British Empire is at the moment fighting for its existence in a vast area where amoebic dysentery is endemic. So ubiquitous is this disease that about one-fifth of the whole population is involved. After the evacuation of Gallipoli in the last war 23.7% of 971 cases were infected. In China the percentage of carriers in over 13,000 cases was 20.3, and amoebic dysentery is the direct cause of between 5 and 10% of all hospital admissions. Since its effects may extend over a period of from three months to thirty years it is important, at this time, to emphasize that it has significance in every branch of clinical medicine, and will continue to have for many years to come.

It is necessary first to recall some of the pathological features of the primary lesion, which is an ulcerative inflammation of the colon. The *Entamoeba histolytica* gains access to the large bowel through being able not only to attack and ingest the mucosa but to secrete a ferment which causes coagulation necrosis and tissue lysis. Having reached the submucosa, it multiplies in the centre of a small nutritive cytolysed area, which in its turn, although surrounded by some oedema, is not shut off by an extensive tissue reaction. Spreading in this way, it causes thrombosis of veins and venules, invades the clot, gets into the portal circulation, and is from then onwards caught in the wide mesh of the liver substance. That this is usually a most effective filter is shown by two facts: (1) it was found impossible to produce anything more than cloudy swelling of the liver by injecting very large numbers of amoebae into the portal vein of kittens; (2) amoebae rarely get into the systemic circulation, although amoebic abscess of the brain and the epididymis is well known to occur very occasionally.

It is true that cases of infection of the urinary and even of the uveal tract have been described; but these have not been accepted as genuine by many critical workers. Nevertheless the fact that such records do exist should be a

stimulus to further clinical observation. In any case, further involvement usually takes place by direct spread to contiguous tissues, from either the liver or the bowel, and its clinical results may be conveniently described under one of two headings—*hepatic* or *colonic*.

Involvement of the Liver and its Effects

As previously stated, hepatitis is secondary to an ulceration of the colon. This is widespread in about half the cases, but it is important to add that a large proportion of hepatic complications occur in just those cases in which the caecum of an apparently healthy patient is the seat of one or more solitary ulcers. When the liver is invaded by amoebae it may become suddenly enlarged and inflamed to a surprising degree. This phenomenon, known as acute hepatitis, is often accompanied by an acute inflammatory reaction in the contiguous pleura or peritoneum, and consequently may produce effects which equal in drama and interest anything that occurs in clinical medicine. Moreover, nothing is so therapeutically satisfactory as an acute condition which is resolved by the administration of 2 to 3 grains of emetine hydrochloride.

In the ordinary course of events, when the case is elucidated the following features emerge: (1) There is a history of diarrhoea or amoebic dysentery, which may coexist or may have occurred a long time ago. (2) There are fever and pain: the former is variable and is, in contradistinction to that caused by the "ordinary" acute abdomen, apt to be spiky, high, and associated with sweating and chills; the latter is classically referred to the shoulder or, if the parietal peritoneum is involved, to the abdominal wall, causing rigidity and tenderness. (3) The liver is enlarged. (4) There is a characteristic leucocytosis of from 10,000 to 30,000, in which the polymorphonuclear cells seldom make up more than 75 to 80% of the total. If the leucocytosis is more than 80% the condition is probably not amoebic or there is an associated secondary infection.

Differential Diagnosis

These cases, often admitted as emergencies, are diagnosed by the clinician who is not "amoeba-conscious" as diaphragmatic pleurisy due to basal pneumonia, or appendicitis, or the perforation of a hollow viscus. Malaria with pneumonia, and acute cholecystitis, are not uncommon preliminary diagnoses, made before or on admission. It is fortunate in acute cholecystitis that the necessity for intervention is not urgent and that emetine does it no harm, for the differentiation may produce real difficulties. But the word "diarrhoea" somewhere in the history gives a clue to the diagnosis; the blood count provides strong circumstantial evidence; and the examination of a little blood-stained mucus from the stool makes it a certainty. Emetine provides a cure for the immediate symptoms. Below are two typical case histories:

Case 1.—A woman aged 50, when seen, was doubled up with acute abdominal pain. There was extreme tenderness and boardlike rigidity over the upper right side of the abdomen, which extended beyond the midline to the left, and on the right, down as far as the right iliac fossa. She had vomited at the onset about five hours previously; temperature was 103°, pulse 110. There were no physical signs of pleurisy or pneumonia, and no history of dysentery except that everyone in the East has a short attack of diarrhoea at some time or other. There was a vague history of indigestion, more suggestive of cholecystitis than anything else. No special diagnostic methods were available, so with some trepidation she was given an anaesthetic, and on palpation of a relaxed abdomen the liver was felt to be enlarged.

Case 2.—This patient, aged 43, was ordinarily a robust healthy woman. She was three months pregnant, and during an in-

fluenza epidemic complained of some malaise and a little pain in the back, with a temperature of 100°. Two years previously she had suffered a mild attack of acute amoebic dysentery, which was adequately treated and carefully controlled in the interval. Her stools after treatment were consistently negative, both for amoebae and for cysts. On examination her liver was painlessly enlarged down to just below the anterior superior spine. She had a leucocytosis of 23,000, of which 72% were polymorphs. This condition rapidly subsided with emetine therapy, and for the last fifteen years no further symptoms have appeared.

Between these two extremes come the cases which unfold themselves with textbook uniformity. In all of them, once the diagnosis is made, the treatment is simple. It consists in giving 1/2 grain of emetine deep subcutaneously or intramuscularly thrice daily for about three days, after which the dose is reduced to 1 grain daily. More than 15 grains should not be administered at any one time, and the patient should be in bed. After a few days' rest the standard routine treatment for amoebic dysentery, consisting of emetine bismuth iodide and quinoxyl, should be given.

If this acute stage is unnoticed the case may progress until massive colliquative necrosis of a large or small area in the liver has taken place and the patient gets a liver abscess. Its physical signs and symptoms are usually clear-cut. They are well known and adequately described. But in spite of this it has to be realized that almost every experienced physician in tropical practice has at some time or other seen at necropsy a large liver abscess which has been unrecognized during life.

Within the last few weeks a patient was admitted to the French Hospital in a state so serious as to preclude exact diagnosis or treatment. A few weeks previously a perinephritic abscess had been opened elsewhere. He died within twenty-four hours, and at necropsy his liver, which was of normal dimensions, was found to contain an abscess the size of a large orange in the right lobe posteriorly. Pleural and peritoneal reaction was minimal.

For the exact diagnosis and treatment of liver abscess paracentesis is necessary, and when proper precautions are taken this is a safe procedure. These precautions are: (1) the needle track through the parietes should be anaesthetized with novocain; (2) the needle should be of fairly wide bore and be marked at intervals of half an inch; (3) it should not be inserted more than 3½ in. for fear of entering the vena cava, and its direction should be upwards and inwards; (4) the shortest route to the abscess should be taken, and this is indicated by local bulging or radiological evidence of a change in the height of the diaphragm. Aspiration should be repeated until no more pus is obtained, and the pus should be cultured. Amoebae are seldom found in the first aspiration.

One important fact should always be borne in mind. A liver abscess is a cold abscess and should be treated as such. If culture shows it to be secondarily infected drainage is indicated, and in such cases it is imperative that the drainage track should be sealed in some way or other. The growth of a few small colonies of staphylococci, however, is not in itself an indication for radical surgical measures. Where emetine has no effect on the temperature chart it is a sure sign of secondary infection. If the patient has a pleural effusion and a liver abscess beneath the diaphragm the following line of treatment should be followed:

Both pleurisy and the liver abscess should be treated by aspiration. If the former becomes grossly infected from the lung, pleural drainage should be deferred, if possible, until the liver abscess has been aspirated several times and the patient is well under emetine treatment. If both are secondarily infected, then radical transpleural and/or transdiaphragmatic drainage should be done. In the few cases of this kind seen by me the pleural cavity has been well sealed off by adhesions.

Further extension of the disease beyond the liver is as a rule by direct spread. It is well known that the diaphragm and lung may be involved and that a pleural effusion may occur as with any inflammatory process below the diaphragm, but it is not so well known that from the liver it may spread to the skin, producing a large ulcerating surface. Such a case I was privileged to see in consultation. It was reported and illustrated by Heimburger (1925) so precisely that the account may profitably be consulted by anyone interested in the histopathology of amoebiasis. There was an area about the size of the palm of one's hand covered with pale oedematous granulations; its appearance was as if a quantity of red brickdust had been ground into the ulcerated surface. It healed rapidly with emetine therapy.

A liver abscess sometimes extends to the abdominal cavity. When this happens the size of the liver may be difficult to determine, and an inflammatory swelling arises which is, as a rule, somewhere continuous with the liver margin. This swelling may extend quite low down in the abdomen, limited either on the right or on the left by the falciform ligament. When it occurs on the left side it is very puzzling, because the occasional abscess arising in the left side of the liver is frequently overlooked. Such an abscess may extend well to the left above the spleen. In ordinary clinical practice it would be regarded as the result of a localized perforation of a peptic ulcer. Such localized intraperitoneal collections of pus from a liver abscess often have a somewhat indirect connexion with the liver, and it may be wise to open them and wash them out. If this course is taken, intentionally or inadvertently, the wound should always be sewn up without drainage and the parent liver abscess aspirated after localization. No harm comes if the patient is immediately put under emetine, and this should, if possible, be invariably done before any intervention is contemplated.

An extremely acute abscess may sometimes perforate into the peritoneal cavity, the case being admitted as an acute abdominal catastrophe. The condition is nearly always such as to preclude any surgical intervention.

Direct Spread from Colonic Lesions

Involvement of the muscular and peritoneal coats of the bowel wall is not uncommon. Sir Leonard Rogers has found amoebae in the lymph adherent to the base of an unperforated ulcer. Actual perforation is rare, but a localized slowly spreading peritonitis is by no means uncommon. It is important to bear in mind its possible existence, because it complicates the diagnosis of other abdominal conditions. The finding of amoebae in the stools makes the diagnosis simple.

Localized abscesses round the appendix are well known but not often seen, and the same may be said of retroperitoneal and perinephric abscesses. If their amoebic origin is not recognized extensive invasion of the abdominal wall may take place.

Ulcers of the colon may be secondarily infected and may produce a localized inflammatory mass which resembles diverticulitis. The lumen of the bowel may be so narrowed by oedema or fibrosis as to produce obstruction. In these cases routine treatment of the dysentery is not always sufficient, and a resection has to be performed.

Finally, the rectum is a common situation for amoebic lesions, and in severe untreated cases these involve the tissues in the ischio-rectal fossa, producing fistulae and ischio-rectal abscess. These may occur in patients who are extremely ill, originating in quite small ulcers without much surrounding infiltration. In more chronic cases the local ulceration may be widespread and, owing to second-

ary infection, the surrounding tissues be infiltrated widely. This may produce a particularly intractable form of stricture requiring colostomy for temporary relief.

Conclusion

It should be remembered that local lesions in the bowel do not as a rule progress thus far, but they do frequently and for a long time act as foci of irritation, exercising a profound influence on the physiology of bowel movement. Such patients have localized spasm and tenderness for years, their bowel is irritable, and they pass frequent stools containing a little mucus. They become bowel-conscious, and haunt the "colon lavatories" in the West End of London and the consulting-rooms of sympathetic physicians. They are diagnosed as cases of anything from spastic constipation to mucous colitis. They require above all things rest, both of the mind and of the colon.

This account by no means exhausts the widespread manifestations of amoebiasis, but enough has been said to show that a knowledge of its manifestations is necessary to every clinician handling cases in or from the East, and to suggest that to the use of the stethoscope must be added that of the microscope and sigmoidoscope as part of the routine examination of patients. By the employment of these methods we arrive at a positive diagnosis of a disease which can be "cured" in a sense that cannot often be used in the case of diseases commonly met with in this country.

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CYSTICERCOSIS EPILEPSY

BY

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The case reported by Dr. W. Blyth (1941), to which be applied the above diagnosis, has many points of similarity to one which came under my notice some years ago, and in which a diffuse cysticercosis of the brain was found post mortem. Out of a large number of post-mortem examinations on mental hospital patients extending over a period of thirty-odd years this was the only case I met with. The condition, though rare, is of interest because—as pointed out by Sir W. P. MacArthur (1941)—of "the importance of considering it as a possible cause of epileptiform attacks commencing in a previously healthy adult after service or residence abroad." The histories of all the cases I found recorded come within this category, though one might extend the term "epileptiform attacks" to those presenting other ill-defined and vague symptoms of cerebral disease. The value of radiographic investigation in the diagnosis is emphasized by Dr. Blyth, but it is not clear from the particulars he gave that these investigations did reveal the presence of cysticerci in the brain tissue of his patient.

References in Literature

The case which came under my observation, and in which unfortunately the possibility of cestode infection as a cause did not occur to me, demonstrated from the necropsy that a condition of cysticercosis of the brain diffuse in distribution produces a clinical picture of epilepsy with dementia difficult to distinguish from the idiopathic form except by the more rapid development of the dementia and of a fatal termination. The cysts examined showed no evidence of calcification. I was so impressed by this massed invasion of the brain by these parasitic cysts that I consulted a number of standard textbooks on psychiatry and cerebral

pathology, but found only scanty reference to the condition, and in some instances none at all, and could discover less than half a dozen cases reported in medical journals in this country over a period of twenty-five years. From these sources I quote the following references:

Von Graefe, it seems, was the first to demonstrate the presence of cysticerci in the vitreous humour. Fagge mentions that as a bladder worm (cysticercus) the parasite is most frequently met with in the eye and in the brain; is often solitary or appears in small numbers, but that probably it is most frequently present in the muscles and subcutaneous tissues, where it is apt to escape notice. Da Costa states that in the brain the chief symptom is violent and increasing epilepsy. Bianchi mentions it in a footnote to his chapter on epilepsy. In *Twentieth Century Practice* (Collins, New York) there is an account of the condition in which it is stated that cysticerci in the brain are more common than echinococci; the symptoms are various—hysteria, hypochondriasis, acute mania, and various motor symptoms resembling Jacksonian epilepsy or cerebral tumour. Osler states that if the ripe ova of *Taenia solium* get into the stomach of man he is liable to become the intermediate host (the part usually played by the pig). This accident, Osler suggests, may occur in an individual the subject of *T. solium*, the most likely manner being by the forcing of mature proglottides into the stomach as by prolonged vomiting. The symptoms produced depend on the number of ova ingested and the localities reached: he groups them under general, cerebrospinal, and ocular.

In his own experience Osler met with only one instance—a patient who was admitted to his wards in a stiff and helpless condition, complaining of numbness and tingling in the extremities and general weakness, and who was first thought to have a peripheral neuritis. On examination subcutaneous nodules were found which proved to be cysticerci. There were none in his eyes, and he had no symptoms pointing to the brain. He saw another, with Friedländer in Berlin, with symptoms of diabetes and anomalous nervous disturbances. The post-mortem examination revealed a cysticercus beneath the valve of Vicussens and pressing on the floor of the fourth ventricle. As to the local distribution of cysticerci, he quotes 155 cases compiled by Stiles: the parasite in 117 was found in the brain, in 32 in the muscles, in 9 in the heart, in 3 in the lungs, subcutaneously in 5, and in the liver in 2. He adds that, except when in the eye, the diagnosis can rarely be made, or, when subcutaneous, one may be excised and examined. Purves-Stewart (1937) quotes a case (reported in the *Centralblatt für Neurologie*, 1902) of a characteristic form of vertigo produced by the presence of a cysticercus in the fourth ventricle. Beattie and Dickson (1925) state that the immature larval or cysticercus stage of *T. solium* may occur in man not only in muscle but in the skin and subcutaneous tissues, where they may be present in large numbers; and in various organs, especially the eye and the brain. In the brain the cysts may attain a considerable size. In the eye they have been known to persist for twenty years. Such infections originate (a) from the patient himself if harbouring the adult cestode, or (b) from a fresh infection from without. Those authors indicate the manner of its dissemination thus: after ingestion by a suitable intermediate host the embryonal shell is dissolved off and the active embryo proceeds to bore its way through the intestinal wall. By way of the lymphatics, or more probably by the mesenteric veins, it reaches the liver (which in the case of *T. echinococcus* forms the special habitat for its bladder-worm stage). In the case of *Cysticercus cellulosae* the embryo travels from the liver, probably by way of the blood stream, to muscles and other tissues of the host's body. In whatever situation the embryo is finally lodged it settles down and becomes passive, loses its hooklets, and undergoes distension with fluid, forming a cyst, and thus entering upon the larval, bladder-worm, or cysticercus stage of its development.

Stitt *et al.* (1938) state that, the segments or ova of *T. solium* having been ingested by the hog, the six-hooked embryo is liberated and becomes encysted chiefly in the tongue, neck, and shoulder muscles as an invaginated scolex ("measly pork"). They point out that the cysticercus of *T. saginata* (*C. bovis*) contains less fluid than *C. cellulosae*, and that, man having ingested the *C. bovis* in raw or imperfectly cooked beef, the adult stage of

T. saginata becomes established in his alimentary canal in about two months. In Abyssinia, they state, this type of cestode infection is said to be universal, and a man without a tapeworm (*T. saginata*) is considered to be a "freak." An important point is the fact that its larval stage scarcely ever appears in man, and it is therefore a much less dangerous parasite than *T. solium*, which readily establishes a larval existence in man if the ova are introduced into the human stomach. If the infection by *C. cellulosae* is not heavy, few symptoms may be observed. It, however, tends to invade the brain, next in frequency the eye, and so cause convulsions, blindness, or death. Instead of being the size of a pea these cysts, when forming in the brain, they add, "may be the size of a walnut or larger. *T. solium* infection is comparatively common in North Germany, but is exceedingly rare in England and the United States." Other references to the condition may be found in works on parasitology and in various Continental reviews and reports. Of actual cases reported in medical journals in this country the following were the only instances I could discover:

- (a) Multiple cysticerci of the brain and epilepsy (J. R. Gilmour, 1902).
- (b) Two cases of cysticercus cellulosae of brain (R. S. Black, 1903).
- (c) A case of cysticercus of brain (W. C. Sullivan, 1903).
- (d) Two cases of cysticercus of brain associated with epilepsy (G. E. Peachell, 1916).
- (e) A case of cysticercus of brain reported at the Bath Clinical Society (Waterhouse, 1911).

Record of a Case

The patient who came under my observation was admitted to the mental hospital certified as a person of unsound mind. He was a well-nourished man aged 31, an ex-soldier who had served in India. He had a history of three months' "behaviour disorder," having become so irritable and strange that he had lost his employment as a machine-man in a factory; he had become unmanageable at home and had threatened to shoot himself. He had no history of psychopathic heredity and none of venereal infection, and had previously enjoyed good health. Physical examination indicated an organic or toxic lesion of the central nervous system; he exhibited a degree of speech impairment with fine lingual tremors, exaggeration of deep reflexes, and Rombergism. Ocular movements were normal, the pupils equal but sluggish (fundi unfortunately not examined), and mental processes retarded, with a degree of confusion bordering on disorientation. He had fleeting visual and aural hallucinations and was unable to converse intelligibly. His habits were neglectful and unclean. The Wassermann reaction of blood and cerebrospinal fluid was negative, and the urine was negative for albumin and sugar. His condition suggested a tentative diagnosis of atypical G.P.I. Within twelve months he developed increasingly frequent epileptiform attacks indistinguishable from true epileptic fits; these were accompanied by a progressive degree of dementia till his death in a series of epileptiform attacks four years after admission to hospital.

P.M. Notes.—The brain unstripped weighed 48 oz.; there was an excess of C.S.F.; the pia arachnoid was congested and thickened, and decortication occurred on stripping it from areas over the cysts. Numerous small cysts were seen scattered over the cortex. They were encapsulated and semi-transparent, ovoid in shape, and varied in size from that of a pea to a little larger. They were mostly single, occasionally in groups of two or three. Their surface distribution appeared to bear a direct relation to the vascular supply, being most numerous in the area of the middle cerebral artery, and this may explain why the brain with its lavish vascular supply appears to be for the parasite a *locus minoris resistentiae*. Most of the cysts made cup-like depressions in the cortex; some were buried in it. They were also present in the sulci and fissures, but were absent on the base. On section of each hemisphere none were observed in the centrum ovale. In the lateral ventricles several of larger size were seen pushing up the ependyma of the floor and sides. In the basal ganglia cysts were present in the region of the lentiform and caudate nuclei and optic thalami. In the midbrain two were located in the right cerebral peduncle in the region of the substantia nigra and in the tegmentum, one below the red nucleus and two pressing into the aqueduct. None were found in the pons or medulla, and only two in the right cerebellar hemisphere.

The spinal cord was not examined. On a moderate computation there were upwards of a hundred cysts scattered throughout the brain. In other organs four were found in the left ventricle of the heart, in the myocardium; none in the liver or other glands. A dissection of the muscles was not undertaken except for those of the right thigh, where one cyst was seen embedded in fibres of the quadratus, which was the only muscle examined. No cestode was found in the alimentary canal. Few of the cysts showed any signs of calcification. On examination under low magnification the cysts had a defined fibrous capsule with some infiltration by small round cells and surrounded by a zone of increased neuroglial fibre growth with an increase of young glial cells. The neurones in close proximity were seen in varying states of degeneration, grading into normal cortex. The vascular elements were dilated, but there was no evidence of cellular infiltration of the perivascular sheaths. On section of some of the cysts the scolex and hooklets of the embryo were easily identified.

As the degree of calcification of the cysts is determined by time and other factors, it would be of interest to know if the radiographic films of the skull taken by Dr. Blyth revealed the presence of cysts in the cerebrum.

The few instances of this condition of cysticercosis I found reported in this country all occurred in ex-soldiers or in persons who had resided abroad. The cases recorded by Dr. Blyth and Sir W. P. MacArthur are opportune in illustrating the importance of considering the possibility of cestode infection as a cause of epileptiform attacks (and I would add all cases presenting anomalous signs of cerebral disturbance, from neoplasm to early atypical G.P.I.), particularly as at present so many of our countrymen are on active service in Africa and the East.

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MASSIVE ADRENAL CARCINOMA WITH PSEUDO-HERMAPHRODITISM

BY

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Sex characters are primarily determined by the sex chromosome, but hormonal imbalance can alter the picture profoundly. A large group of cases is known in which changes in the adrenal glands can be demonstrated, presenting the "adreno-genital syndrome." In these cases the female sex characters regress, being replaced by those of the male. The changes are mainly dependent on the age of onset and the pathological character of the causative lesion.

A tentative classification may be made, following Broster and others (1932).

1. Clinical:

- Adrenal pseudo-hermaphroditism (before onset of female sex characters).
- Adrenal virilism (onset after puberty).
- Multiglandular syndrome (Cushing, Achard-Thiers, associated with anterior pituitary changes).

2. Pathological:

- Tumours: adenoma, adenocarcinoma, undifferentiated carcinoma.
- Simple hyperplasia (Vines's demonstration of the selective staining of the cortical cells by Ponceau's fuchsin (Broster and Vines, 1933).

The following is the record of an interesting example of Type A.

Case History

A female child aged 2 years 2 months was admitted to the Loughborough General Hospital, under the care of Mr. A. Goode, on September 12, 1940. The mother complained that the child had been fretful, and that its abdomen had been swelling during the past few weeks.

On examination the patient was seen to be a thin, puny, wasted infant. Cardiovascular and respiratory systems were normal. The breasts were minute; there was a growth of hair in the axillae and in the pubic region, of male distribution; the clitoris was enlarged, with a small glans, and the rudiments of prepuce were visible. An enormous ovoid smooth hard mass in the right side of the abdomen could be felt and pushed forward from the loin. The swelling bulged out the right flank; it extended vertically from the costal margin above to the false pelvis below, and medially beyond the umbilicus. It did not move on respiration, and was dull to percussion. The diagnosis was massive adrenal cortical tumour with pseudo-hermaphroditism. On account of its size it was decided that exploratory approach could only be made transperitoneally.

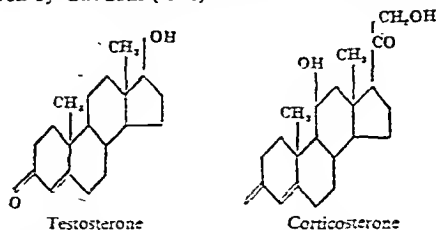
A laparotomy was done by Mr. Goode on September 13. Through a right paramedian incision a very large tumour of the right adrenal gland was seen perched on top of the right kidney, which appeared normal in size but was depressed down into the right iliac fossa. The growth was ovoid in shape, measured 9 in. vertically by 6 in. across, and its surface was covered by a very vascular capsule, fixed superiorly and posteriorly in the region of the portal fissure and inferior vena cava. There were several enlarged para-aortic glands, and the liver was also slightly enlarged. Removal of the main tumour was not attempted. An enlarged para-aortic gland was taken for section, and the abdomen was closed. The child's general condition rapidly deteriorated, and in spite of anti-shock measures she died next day.

Post-mortem Findings.—The vascular capsule over the tumour of the right adrenal gland was incomplete above, where the growth was attached to the diaphragm and inferior vena cava. Para-aortic glands and glands of the portal fissure were infiltrated. The growth itself was of a greasy yellow appearance, was friable, and had large areas of haemorrhagic necrosis. The left adrenal and both kidneys appeared normal. There were no obvious secondaries in liver or lungs. The uterus was very small and the ovaries were represented by two tiny fibrotic nodules.

A portion of the growth was sent for examination, and Prof. G. Haswell Wilson reported as follows: "A cellular malignant tumour with the characters of a carcinoma of the suprarenal cortex. Details are more distinct in the gland specimen, as the tumour itself is the site of extensive necrosis."

Discussion

The formulae of testosterone and corticosterone, the typical substances of the male and cortical hormones respectively as given by Gaddum (1940) are:



and their similarity is apparent. Also to be noted is their close chemical relation to those other sterones oestradiol and progesterone. Clark (1940) states that corticosterone can indeed be synthesized from testosterone.

A further point of interest arises from Broster's (1941) report of a case of "feminism" in the male; this showed

hypertrophy of the adrenals, a positive Ponceau-fuchsin reaction, and clinical improvement following unilateral adrenalectomy. Sterone excretion was reduced following operation.

Perhaps these intersexual changes may be diagrammatized like this:

♀ + excessive or altered sterone → virilism
♂ + excessive or altered sterone → feminism

thus providing a further example of the bisexual properties of the sex hormones when acting on the different biological soils determined by the sex chromosomes.

My thanks are due to Mr. A. F. Goode, honorary surgeon, Loughborough General Hospital, for permission to publish this case, and to Prof. G. Haswell Wilson, University of Birmingham, for the pathological report.

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Medical Memoranda

Local Chemotherapy as a Curative Measure

The prophylactic value of the sulphonamide group of drugs when applied locally in potentially infected wounds is amply witnessed by the numerous accounts published. My experience in this direction has been small, but I have used local chemotherapy from a curative point of view in wounds already infected.

I first used sulphanilamide locally in two cases of tuberculous infection. One patient, a girl aged 14, exhibited a tuberculous osteitis of the third left metatarsal and a cold abscess on the ulnar border of the right hand. Both these lesions eventually gave rise to ulcers which defied treatment until a paste similar to bipp, but with sulphanilamide 5% in place of bismuth, was tried. The ulcer on the hand cleared up in about fourteen days, but that on the foot, although it became much smaller and cleaner, refused to heal completely, presumably because of the underlying osteitis. The second case was one of tuberculous adenitis, with cold abscess formation. This was opened, curetted, swabbed with 6% iodine, and sewn up. This procedure had proved successful in previous cases, but this one became secondarily infected and broke down. Fomentations were applied, and a surrounding crop of pustular eruptions developed. The whole area was treated with the sulphanilamide-iodoform paste, and it healed completely in seven days.

Following these two cases local chemotherapy was tried on a radical mastectomy wound that had become infected and had broken down, leaving a large suppurating area. The first application was a suspension of sulphanilamide 5% in 1 in 1,000 flavine, but it made very little impression on the infection. Since the predominating organism was a staphylococcus a paste of uleron 5%, with equal parts of zinc oxide and paraffin, was used. This cleaned up the wound sufficiently for a Thiersch graft to be made to close the defect.

A similar paste, with sulphanilamide in place of uleron, has been used on a large number of cases, of which the following are examples:

Case 1.—Infected burn over right eyebrow caused by molten aluminium. This had been treated by various applications for ten to twelve weeks without improvement. Daily dressings with the paste cleared it up in seven days.

Case 2.—A woman presented herself with a peculiar black eschar just above the right knee. This looked like a burn treated with tannic acid, but no history could be elicited. Fomentations were applied, and the eschar separated in fourteen days, leaving an ulcer resembling a syphilitic lesion. The Wassermann reaction was negative. The paste completely cleared up the area in seven days.

Case 3.—A case of osteomyelitis which had been operated upon had been in the wards for some time. The upper part of the wound had healed, but the lower part remained open and freely discharged. The paste cleaned it up, leaving healthy granulation tissue.

Several common lesions and small infected wounds have been successfully treated with the paste, and my colleagues at the hospital have used it on several occasions with equally satisfying results. Herpes vulgaris and impetigo seem to respond particularly well.

Following these cases an emulsion of sulphanilamide 5% in cod-liver oil was made up. This has been used as a routine dressing in the casualty department for the past three months, and no case of infection of primary suture of a wound has occurred. In addition, it is most useful where the cosmetic result is of importance. All wounds or incisions of the face and hands are sutured with gossamer silk and dressed daily with the emulsion. Sutures are removed in four to five days, and the wounds heal with only very faint scars. As a curative application the emulsion has surpassed the paste. An infected finger with necrosis of the phalanges was amputated at the metacarpophalangeal joint. The wound was dressed with glycerin and flavine, and when seen a week later it had broken down in three places, was discharging pus, and showed the sloughing end of an extensor tendon. The slough was removed and the wound treated with eusol dressings for five days. It was then clean, but the three sinuses were as large as ever. Sulphanilamide emulsion was used for the daily dressing, and the wound healed completely in ten days.

Several similar cases of grossly infected wounds have been treated with success. The following facts have emerged: (1) If there is free discharge of pus from the wound the emulsion or the paste is not very effective. If, however, the wound is treated with eusol dressings for a few days and then with the emulsion healing is rapid and permanent. (2) Resistant cases should be submitted to bacteriological examination, and the sulphonamide chosen to suit the infecting organism. (3) Many patients with infected burns have presented themselves. A large number had been treated elsewhere with tannic acid, and had arrived with the tan bathed in pus. In all such cases the burn was cleaned up, the coagulum removed, by eusol dressings if necessary, the surrounding skin painted with 1% gentian violet, and the emulsion applied daily. Healing takes place usually in ten to fourteen days. In no case have toxic symptoms appeared, although in several cases very large areas have been treated. It seems possible that the nature of the preparations used may be responsible for the absence of such manifestations.

The following preparations are in daily use at the hospital:

R	Sulphanilamide powder	..	..	..	5%
	Zinc oxid.	..	..	..	} aa partes aeq.
	Paraffin. liq. (sterile)	..	..	..

Fiat pasta.

R	Sulphanilamide powder	..	..	..	5%
	Iodoform	..	..	..	} aa partes aeq.
	Paraffin. liq. (sterile)	..	..	..

Fiat pasta.

(This is used chiefly for tuberculosis lesions, though it has been employed instead of bipp in a few cases of osteomyelitis.)

R	Sulphanilamide powder	..	..	..	gr. 175
	Ol. morrhuae	..	..	..	fl. oz. 4
	Acid. oleic.	..	..	..	m 36
	Aq. calcis	..	..	..	ad fl. oz. 8

Fiat emulsione.

I am indebted to the pharmacists of the hospital for their willing co-operation in making up the various preparations. I also wish to express my gratitude to Mr. J. Elgood, honorary surgeon to the hospital, for permission to publish these cases.

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Newport, Mon.

Dr. Norman Manson has been appointed warden in succession to Lieut.-Colonel Sir John Strathearn of the St. John Ophthalmic Hospital, Jerusalem, who has resigned owing to ill-health after holding the office of warden for twenty-two years.

Reviews

CANCER OF THE RECTUM

Carcinoma of the Rectum, with Special Reference to its Pathology and Treatment: Based on a Survey of Cases at St. Mark's Hospital during the Past Ten Years. By Lionel E. C. Norbury, C.B.E., M.B., B.S., F.R.C.S. (Pp. 66; illustrated. 7s. 6d.) London: H. K. Lewis and Co., Ltd. 1941.

Many will be grateful to Mr. Lionel Norbury for publishing his Hunterian Lecture on carcinoma of the rectum, because it was delivered in January of this year, when owing to war conditions many who would have liked to be present were not able to attend. Summarizing, as it does, present views on pathology and treatment held at St. Mark's and recording the author's experiences over the past ten years, this is a valuable and authoritative statement of what modern surgery has to offer for rectal cancer. Also included are the present views on pathology and method of spread of the disease, and something of diagnosis, management, and the history of various methods of surgical attack. Dealing with only adenocarcinoma or columnar-celled carcinoma, and excluding squamous cancer of the anal canal, Mr. Norbury finds that the disease is twice as common in men as in women, that the upper or recto-sigmoidal region is affected more often than the ampulla, and that the average age when surgical treatment is undertaken is 57. As a rule mucoid or colloid tumours are highly malignant.

In regard to treatment of rectal carcinoma, the author on the whole favours the radical one-stage perineo-abdominal excision with the patient in the Trendelenburg lithotomy position and with two surgeons working simultaneously, as has been practised by Devine in Melbourne and Kirschner in Germany. The perineo-abdominal operation appears to be as radical as the more widely practised abdomino-perineal operation and to produce less shock. He believes that conservative resection is occasionally justifiable and that operations such as those of Hartmann and Grey Turner have their place in treatment, but his general conclusion is that such operations are not often desirable, and he concludes with Ernest Miles that "there is no place for conservatism in the surgery of malignant disease." We would add, however, that in an early and high lesion there is occasionally a strong case for conservatism as the sphincters are thus preserved; particularly is this so since studies of the pathology, here referred to, have shown that downward spreading does not occur until there is a general choking of the spread in an upward direction—that is, until the lesion is rather advanced.

This little book is well illustrated with photographs, diagrams, and tables, and its great value consists in the fact that it is both authoritative and recent.

"THE RELATIVITY OF REALITY"

The Relativity of Reality. Reflections on the Limitations of Thought and the Genesis of the Need of Causality. By René Laforque, M.D. Translated by Anne Jourard. *Nervous and Mental Disease Monographs*, No. 66. (Pp. 92. 52.50.) New York: Nervous and Mental Disease Publishing Company. 1940.

It is curious how often what looks like a discovery turns out to be only a re-formulation in new language of an ancient fact of observation. In this book René Laforque postulates a "super-ego of the species," or a kind of conscience which is inborn and inherited in contrast to the acquired super-ego of parental introjection. What is this but the still small voice of God in new terminology? The main theme of the book, however, is that the scientific stage of intellectual development depends upon attainment of the genital stage

of libido development. The "anal stage" is associated in psycho-analytic theory with projection and psychological animism, whereas the "genital stage" is concerned with relationships between people and objects generally, which is the essential stuff of scientific preoccupation. He describes accordingly an anal and a genital type of intellect, the former limited by failure to make contact with reality, so that it is very prone to develop anxiety; if reality forces itself upon it, magic is called in to redress the situation, and an overbearing attitude designed to reassure its owner is adopted. Hence the intellectual attitude of the anal stage is authoritarian and intolerant. Such people only argue: they cannot discuss. They are described as overbearing, vain, proud, conceited, and opinionated, and, unlike the people of genital attainment, are not co-operative. The genital ego, having overcome its fear of castration, no longer requires magic defences, and by appearing less strong is really stronger, since it is entirely its own master.

These formulations depend largely on a customary mode of psycho-analytic reasoning, which makes analogy very conclusive of identity. For example, the desire to know the why and the wherefore of things which is characteristic of the scientific attitude is considered to be the direct descendant of the earlier anxiety about relationships between the parents. These are all psycho-analytic ways of saying that intellectual maturity depends on libidinal maturity. In so far as the individual has fallen short of genital maturity he is held to be incapable of truly scientific thought, though he may be an intellectual concerned with thought processes and abstractions. But what in the light of these views—which are spun ingeniously for us without case records to support them, and which remain, therefore, airy conceptions founded on analogies—shall be said of the author's own inclinations for a scientific mode of thought?

PHOTOGRAPHY THE SERVANT OF SCIENCE

The Scientific Photographer. By A. S. C. Lawrence, Ph.D. (Pp. 180; 83 illustrations. 18s. net.) Cambridge: University Press. 1941.

The title of this excellent manual might lead one to suppose that it describes a special scientific photography for scientists. But it does nothing of the kind, and there is no such photography. The possibilities and limitations of photography are the same for the scientific worker as they are for the serious amateur. The camera itself is a scientific instrument, whether in the hands of a laboratory technician or a seaside snapshotter, and, as the author says, it demands respect "and sometimes intelligence." This is a treatise on photography as a serious pursuit, an engrossing one in itself, which demands for the purposes of scientific record a knowledge of the theory and an understanding technique.

Dr. Lawrence begins where most of the elementary textbooks on photography leave off. He gives none of the instructions which may be purchased with photographic materials (except that he does include an appendix of useful formulae for solutions), but he discusses the underlying chemistry, the formation of the lens image, the mechanism of the camera, the rules of composition and perspective, and the processes of developing and printing. He adds a chapter on colour photography which gives in a dozen pages as succinct an account of that subject as any ordinary reader would desire. Finally he mentions a number of scientific applications, including the value to medicine of infra-red photography and photomicrography. He insists that photography is inadequately appreciated in the laboratory to-day, that full use is not made of it, that it is left to an amateur whose enthusiasm can be exploited when necessary; but when he goes on to say that no organized attempt has been made to use cinematography either for

research or for serious teaching, the recollection of many educational films we have seen flickers back again in silent reproach. The book is beautifully produced, as it deserves to be at the price, and the illustrations are none of them just thrown in to shew what photography can do, but are necessary to elucidate the text.

Notes on Books

A pamphlet entitled *Discussion Groups for Citizens*, by Mrs. E. M. HUMBACK, has been issued by the Association for Education in Citizenship, 19, Wellgarth Road, London, N.W.11, price 7d. post free. An important quality required by citizens in a democratic community is that of good judgment, based on clear thinking, tolerance of the views of others, and a background of knowledge. One of the best means for encouraging such qualities is the discussion group, which makes a far greater call on the activities of its members than does passive listening to lectures or talks. This pamphlet describes briefly various forms of discussion groups; especially those which aim at bringing in the shy and inexperienced member, thus avoiding the weakness of so many groups where the talking is confined to two or three vociferous individuals. There are also short sections on practical activities which lend themselves to training for citizenship, such as drama—the producing of plays related to contemporary or historical affairs—mock trials, model parliament, social surveys, the uses of films. Nothing is suggested which has not been found to work well in practice. A valuable feature is a book list, on contemporary affairs, graded according to price, each section setting out pamphlets, Penguins, and other books under half a crown, which may be bought by all members of a group, and others over half a crown for consultation by leaders or speakers.

Mr. CHARLES KEOGH, F.R.C.S., has written a small pamphlet entitled *First Aid for Fighting Men* (Sifton, Praed and Co., Ltd.). The pamphlet is printed on four sides of stiff paper, which folds into a convenient shape for carrying in the pocket. The essential first-aid methods which can be applied by "the fighting man" are described in the briefest and simplest fashion under twenty numbered paragraphs. Each paragraph is introduced by a striking phrase printed in bold type, so that the first-aid can immediately find out what he wants to know without any trouble. The possession of this pamphlet by the men in the Forces would, we believe, save many disasters that otherwise would occur. We are informed that neither the publishers nor the author intend to make profit from the sale of the pamphlet, which is priced at 6d. for single copies.

Preparations and Appliances

AN IMPROVED METHOD OF OBTAINING BACTERIOLOGICAL SPECIMENS FROM WOUNDS TREATED BY THE CLOSED- PLASTER METHOD

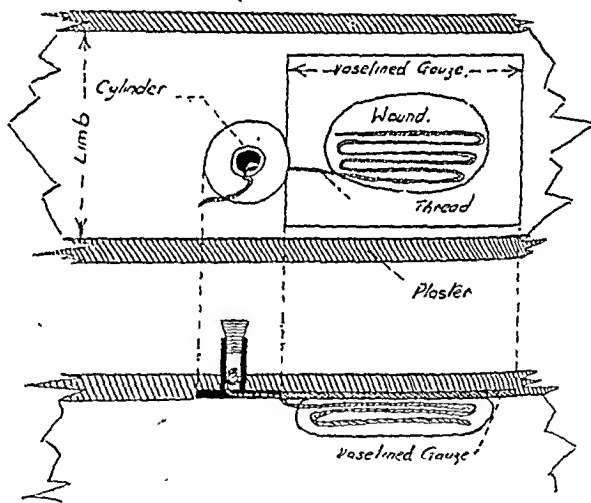
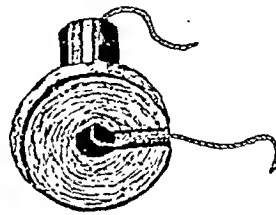
Dr. H. L. DE WAAL (Bacteriology Department, University of Edinburgh) writes:

In an article in this *Journal* (1941, 1, 877) Orr-Ewing, Scott, and Gardner described an apparatus that allowed of access to such wounds. It consists of a "perspex" cylinder with a piston, and is incorporated in the plaster immediately above the wound. Specimens are taken by withdrawing the piston and collecting material from the exposed wound surface. A method similar in principle was used in our earlier investigations.

The main disadvantages in the use of such an apparatus are: (1) the inability to obtain a true representative specimen of the wound flora; (2) the danger of admitting extraneous bacteria to the wound; (3) the tendency for oedema to occur in that part of the wound directly beneath the cylinder base, and at a

later date the formation of granulation tissue into the cylinder base, which tends to interfere with the flow of pus from other parts of the wound into the field of observation; (4), and perhaps most important of all, the fact that the wound surface at the base of the cylinder is aerobic or partly aerobic, whereas under plasters without windows the conditions may be totally different: it may be understood why the bacterial flora of the wound at the base of the cylinder differs but little from that of wounds treated without plaster. The following method has been devised to eliminate these disadvantages so far as is possible.

After the wound has been cleaned, sterile thick absorbent thread is laid backwards and forwards across its surface, starting at the centre and passing to the periphery. The free end of the thread lies away from the wound. The whole of the wound surface is now covered with sterile vaselined gauze. The free end of the thread is passed through a "one-piece" vulcanite cylinder with a flat base and with the sharp edges smoothed



off. (The vulcanite should be of good quality and able to resist autoclaving.) A groove is cut in the flat base of the cylinder, in which the thread lies. This allows for the subsequent easy withdrawal of the thread. A sterile rubber bung is inserted into the upper opening of the cylinder. While the plaster is being applied an assistant steadies the cylinder at the edge of the vaselined gauze (about 1.5 cm. from the wound margin). In taking specimens the procedure adopted is as follows:

The rubber bung is first removed, and with a swab slightly moistened in antiseptic the inside of the cylinder is cleaned and then dried with another swab. That portion of thread which had been within the cylinder and had come in contact with the antiseptic is now withdrawn, cut off, and discarded. A further piece of the thread is pulled out (about 1.5 cm.), snipped off, and placed in a sterile test tube. This portion of the thread has been exposed to air, and should be examined as a control. The next few centimetres are similarly collected, and give a representative sample of the wound flora.

Depending on the length of the thread originally laid on the wound, five or more specimens may be taken at varying intervals. The last portion of the thread comes from the centre of the wound, the part likely to heal last. After each specimen is taken a fresh sterile rubber bung is inserted in the mouth of the cylinder.

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THE FUTURE OF MENTAL HEALTH

The future of medicine is a topical subject for debate at the present time, and the main headings under which it falls are the rearrangement of hospital services, the greater emphasis on preventive as opposed to curative medicine, and the more comprehensive and better-directed training of the medical practitioner. All three of these are dealt with in the report of the Mental Health Committee of the British Medical Association recently published in pamphlet form and summarized in the *Journal* to-day at page 276. The information and suggestions contained in it will unquestionably be of service to the Medical Planning Commission in its deliberations. Perhaps the most important conception that has been brought into prominence since the war is the regionalization of hospitals. The model scheme for the treatment of mental illness set out by the committee should lend itself admirably to the regional idea, for clearly the centres on which outlying clinics are based must not be too big, and they should be made to serve a well-organized area. For purposes of propaganda and education, for instructing the public and therefore avoiding much that is preventable in the field of mental illness, local organization will have obvious advantages, and thus "preventive" work is perhaps the most important task which must be undertaken by "mental medicine."

As with physical diseases the results of treatment of mental illness are not so satisfactory as any of us could wish, nor so brilliant as the enthusiasts would have us believe. This is well brought out in the report, but so also is the very large number of persons who require some sort of psychotherapeutic treatment, and both these considerations emphasize the need for prevention or at least for catching the patient young. An enormous amount of research and intelligent correlation of results is necessary in order to give us more knowledge and therefore better understanding of the nature and cause of mental illness; but here also a certain amount of decentralization, as is contemplated in the regional idea, will be beneficial, for too large accumulations of records simply become unwieldy and impossible of employment to advantage. The role of the voluntary organizations will continue to be an important one, for medicine alone cannot provide for mental health or indeed for any sort of health. Education and the social services are essential partners, and it is in assuring smooth co-operation between these three agencies that the voluntary organizations have their place. The committee responsible for the B.M.A. report is content to endorse the findings of the Feversham Committee, whose report on these voluntary organizations covered the ground very adequately, but it does insist on the proper education, qualification, and organization of the ancillary services which are so necessary in the general scheme.

Perhaps the most important problem of all is the provision of enough medical practitioners trained in mental medicine to deal with the large numbers of patients, both young and old, who require care and treatment, whether to restore them to full health, to ameliorate their inevitable invalidism, or to prevent them from doing harm to themselves or others. The report lays sufficient stress on the need for this, but also dwells on the difficulties that still beset its achievement. The treatment of mental illness is a long and complex matter demanding a wide knowledge of general medicine and very specialized skill in a particular field of therapy. But it seems that success in this treatment depends not only on knowledge which can be more or less readily acquired by anyone, but on a special type of personality of the doctor who practises this branch of medicine. Can such persons be picked out at the appropriate stage of their medical careers so that time and energy are not wasted in trying to train unsuitable persons? Having chosen the right person to train, is it a matter of general agreement how he should be trained and which of the many existing schools of psychotherapy he should be encouraged to espouse? When he has undergone a long and arduous course are there enough posts, full-time or, better, part-time, the emoluments of which will keep the wolf from his door while he builds up a practice in a branch of medicine still looked upon with a good deal of suspicion and prejudice? Unfortunately none of these questions can be answered now with a categorical affirmative.

In fine, the Mental Health Committee has collected and clearly set out much useful information, but in so doing it has perhaps emphasized the uncertainties and incompleteness of the subject of its reference rather than formulated any final conclusions. Nevertheless there can be no question that interest in, understanding of, and care for the mental patient have moved forward at a great pace since the beginning of the present century, and if this report is no final word on the subject it allows us to entertain not only a hope but a confident expectation that the difficulties that confront us to-day will eventually and before too long be surmounted. It is a commonplace that the last war gave a tremendous impetus to advance all along the medical front, and perhaps especially on the mental front. No one should doubt that after this war an even greater stride forward will be achieved; and perhaps, as a result of that progress, there will be no more war.

THE SOYA BEAN

We have it on the authority of the *Times* that after the Polish campaign Nazi official circles were boasting in Berlin that without soya food preparations it would not have been possible for the German Army to advance as quickly as it did. The Germans are undoubtedly making great use of the soya bean, and scientific articles published shortly before the outbreak of the war show clearly the important part it was expected to play in the food economy of the Reich as a source of protein and fat. Before being impressed into the service of total war, the soya bean had a long and honourable history

as one of the main foods of Oriental mankind for more than a hundred generations. It might be instructive to consider the nutritional background of its long-established eminence in Asia, its recent rise on the American continent, and its latest emergence in Europe in the service of Mars.

Glycine hispida, or *Soja max*, to give it its latest name, is a leguminous plant closely related to peas and beans. There are several hundred cultivated varieties, and the composition differs greatly according to the variety and to the conditions of growth. The outstanding nutritional characteristics of the bean are a very high protein and fat content, a large amount of mineral matter, and the almost complete absence of starch. In the Orient its chief uses are as a source of edible fat, as soya bean milk—a fine, stable emulsion of the bean constituents in water—as various cheese-like preparations, and in the form of sauce as a universal condiment. Most of these preparations are unlikely to appeal to the taste of the average European. The bean, as such, does not lend itself readily to cooking, which not only has to be very prolonged to give the necessary softness but in the absence of starch does not yield as satisfactory a product as peas and beans. A most valuable foodstuff can, however, be produced by subjecting the beans to some form of heat treatment, removing the hulls, and grinding the beans to a flour. If untreated the flour quickly becomes rancid, and, moreover, has an unpleasant “beany” taste. Many patents have been taken out for the preliminary treatment. They are largely modifications of the original procedure of Berezeller, in which the beans are treated with saturated steam for 10 to 15 minutes. Such flour has a sweet, pleasant, nut-like taste and may be kept at room temperature for months and even years without spoiling. It is in this basic form that the soya bean is being used in Germany and would doubtless be useful here. A consideration of the composition of the flour rather than of the whole bean is therefore indicated, but the flour has essentially the same composition as hull-free soya beans themselves.

The soya bean, and hence the flour, is outstandingly rich in protein, of which the latter contains some 40%. The protein is of good quality, at least equal to that of whole wheat and superior to the proteins of white flour and to those present in peas and ordinary beans. It is also easily digestible. It is generally agreed that the digestibility and biological value of the protein are improved by cooking. The content of fat, of which soya bean flour has some 20%—that is, much more than ordinary peas and beans, though less than peanuts—is also remarkable for this class of food. In consequence the calorific value of soya bean flour is high—about 470 calories per 100 grammes, as compared with 370 for white flour. The ash is exceptionally high, about 4.7%, or nearly ten times as much as in white flour and almost double that present in whole wheat, peas, and beans. Soya bean flour contains some 1.6% potassium, 0.14% sodium, 0.23% magnesium, and as much as 0.2% calcium (or ten times as much as in white flour). This large proportion of fixed base renders the ash strongly alkaline. The phosphorus amounts to some 0.6%; a large part of it is present as phytin phosphorus, and this may affect the availability of the soya

bean calcium. The iron content is variable but high, from 6.7 to 30 mg. per 100 grammes. This can be compared with 1 mg. present in white flour and 3 mg. in wholemeal flour. Edible flours can also be obtained from the meal left after the removal of the soya bean oil. A press-cake flour still contains some 7% of fat, and the ash and protein contents are naturally higher than in high-fat flours. A product exceedingly high in protein is obtained by solvent extraction, but it is low in mineral matter, and such flour is of inferior value in human nutrition.

β -carotene is present in the soya bean, and a recent study showed fluctuations according to variety from 18 to 243 μ g. per 100 grammes of air-dried beans. As by definition 0.6 μ g. of β -carotene is the equivalent of one international unit of vitamin A, these amounts correspond on paper to 30 to 400 i.u. per 100 grammes; but it must be remembered that carotene is doubtless a less effective source of vitamin A activity for the human being than the preformed vitamin. In any case the carotene content of the soya bean is not very high when compared with green vegetables and carrots. The soya bean flour probably contains less. Moreover, in considering its value as a potential source of vitamin A, it is well to remember the curious observation of American workers that when fed to cows fresh or heated soya beans have a depressing effect on the transfer of vitamin A to milk. There is no vitamin D in the soya bean or flour, neither do they contain vitamin C. Vitamin B₁, however, is present in relatively large quantities, a recent reliable estimate giving nearly 5 i.u. per gramme of dry bean. This is more than that found in whole wheat (0.6 to 3.3 i.u.) and more than ten times the amount (0.3 i.u.) present in an average white flour. There is reason to believe that there is no serious loss of vitamin B₁ in the manufacture of the flour. The riboflavin content is also appreciable—1.6 μ g. per gramme: that is, of the same order as in milk.

In the United States and on the Continent soya bean flour has been successfully used as an addition to wheat and rye flour in making bread, biscuits, cakes and pastries, macaroni and the like, as a constituent of soups and various prepared foods, and as a filling for sausages. The valuable nutritive properties of the bean could undoubtedly be put to good use in this country. Included in “blitz soups,” provided in communal feeding centres, it would contribute its useful quota of fat, protein, and minerals, and form a desirable addition to our wartime dietaries. There is every reason for a serious consideration by responsible quarters of the importation on a substantial scale of this compact foodstuff.

TRAUMATIC LESIONS OF THE HEART

But little attention has been paid to the possibility of injury to the heart after non-penetrating trauma to the chest. Evidence of such injury is especially apt to be missed if there is a long latent period between the injury and the appearance of cardiac signs and symptoms. The chest wall is elastic, particularly in the young, so that when it is compressed the heart is squeezed and in severe cases ruptured. Short of this, pericardial and local myocardial lesions of

various kinds have been described. Rupture of a cusp of the normal aortic valve as the result of extreme muscular effort must also be included under the heading of traumatic cardiac lesions, although here the trauma is indirect: such an event is rare, but there is no doubt that it occurs. E. Warburg, who reviewed 202 cases of traumatic injury in a special monograph,¹ has recently² added a further fifty-nine. Pericarditis, either dry or with serous or haemorrhagic effusion, was a not uncommon sequel to injury. When lung tissue and the pericardium are torn air may enter the latter, and fluid in the sac may then produce a splashing sound as in hydropneumothorax. Traumatic pericarditis usually requires no local treatment unless infection occurs; the prognosis is good. Various disturbances of cardiac rhythm have been noted after trauma, especially auricular fibrillation, which Warburg found in one-fifth of all cases. Heart-block occasionally happens and, if discovered in a young subject, may be wrongly diagnosed as congenital. A few cases of angina pectoris, including infarction angina, have been recorded—mostly in older subjects (probably with atheromatous coronary arteries), but also, rarely, in the young. Partial rupture of the ventricular wall may be followed by aneurysm and complete rupture, this complication being most likely to arise about two weeks after the initial injury, as in myocardial infarction. In any case in which such an injury is possible absolute rest is essential. Changes in the electrocardiogram may confirm the diagnosis of traumatic cardiac lesions, as illustrated by a case reported by R. G. Anderson.³ A man of 30 was trampled on by a horse and suffered shock and pain in the chest. R—ST and T changes in electrocardiograms indicated focal myocardial injury; they developed over a period of one year in a manner comparable to the changes of cardiac infarction. Special attention to the heart in cases of recent injury to the chest, and inquiry as to trauma in the history of heart lesions of doubtful aetiology, may show that traumatic lesions of the type described are less rare than has been supposed.

HOME CARE FOR RHEUMATIC CHILDREN

It is now accepted by public health authorities in this country that children with rheumatic heart disease need prolonged convalescence in special "heart homes" if this can be arranged. Unfortunately there are not, even in peacetime, nearly enough of these homes, and there are certain disadvantages in keeping children in institutions for periods running into months. Recent reports from Boston⁴ on this problem, solved there with apparent success by supervised convalescence in foster-homes or in the child's own home, will therefore be received with interest by those who are concerned with the care of rheumatic children in this country. Dr. Paul D. White, in an introductory article, describes how the method was evolved out of the work of the Children's Cardiac Clinic of the Massachusetts General Hospital. Various other bodies co-operated, and from 1934 to 1939 a special study was made of a group of sixty-four children between the ages of 5 and 15 years who had been recommended for convalescent care from the wards or clinics of the Massachusetts Hospital. Whether home or foster-home care was preferable depended upon the home conditions and the severity of the disease. Dr. E. F. Bland explains that many factors, some only remotely related to the patient's illness, had to be taken into account

when deciding where the child was to convalesce. Throughout the study the tendency was to advocate bed-care at home when it seemed at all feasible. Foster-home facilities were reserved for those children needing more expert supervision and nursing care than they could have received in their own homes. Medical-social workers have kept in constant touch with each patient; all the children were visited at monthly intervals by the physician in charge, and in special cases more often. The assistance of community-health nurses was invaluable in following the progress of patients more seriously ill. After the project was started, it became evident that for the intelligent management of the patient certain minimal laboratory guides (such as the sedimentation rate) were necessary, and arrangements were made for a part-time technician to perform the tests, if necessary in the children's own homes. Miss Edith M. Terry outlines the various medical-social methods employed and the resources available for the children. These include educational aids by home teaching, tutoring by college students, recreational facilities provided through an ingenious "In-Bed Club," and occupational therapy. Further details of the social workers' essential part in the scheme are supplied by Miss Virginia B. Ebert, who points out how essential it is to get a clear idea of the environmental influences in the patient's illness, so that parents and patients may be properly guided and enabled to make the necessary adjustments. The results noted are compared with those obtained from a large group of children who spent their convalescent period in a special home—the House of the Good Samaritan, Boston. It was clear, after allowance had been made for a high proportion of seriously ill children in the institution group, that over the five-year period there was very little difference in the proportion who developed heart disease. The cost of convalescence in foster-homes was, however, a little over half the cost in the special home, and only about a quarter of the daily cost of keeping a child in bed at the Massachusetts General Hospital. It is also pointed out that home or foster-home convalescence probably offers less exposure to respiratory infections; thus there are likely to be fewer recrudescences of rheumatic activity than in a large institution. The social and economic advantages of home and foster-home care of rheumatic children are obvious. The Boston experiment has shown that on medical grounds such children are at no disadvantage compared with those in special institutions. No complete answer to Dr. Paul White's question—"Is all this worth while?"—is yet available. More time must pass before ultimate effects upon mortality and morbidity can be assessed. Meanwhile, for those health authorities in this country who have no special "heart home" or similar institutions available, the Boston work indicates a clear line of approach to the problem.

TREATMENT OF TUBERCULOSIS BY ARREST OF LUNG MOVEMENT

Several factors, including restricted movement of the lung, may contribute toward the good effects of pneumothorax therapy. Nevertheless a considerable excursion of the collapsed lung continues to take place with each respiratory cycle. Complete arrest of such movement with retention of function is, however, no longer merely a therapist's flight of fancy. Alvan L. Barach has recently described⁵ the mechanism of alternating-pressure respiration. He has shown that in patients with pulmonary disease treated in a

¹ *Subacute and Chronic Pericardial and Myocardial Lesions Due to Nerve* (New York, 1938).

² *New Eng. J. Med.* 1941, 284, 602.

⁵ *Amer. Rev. Tuberc.* 1940, 42, 556.

chamber by an alternating pressure of ± 55 mm. Hg twenty-five times a minute, as originally suggested by Thunberg¹ for respiratory paralysis, continuous arrest of lung movement could not be maintained. Moreover, compression and expansion of the chest resulted from the positive and negative cycles of pressure. The failure to arrest lung movement was found to be due mainly to the resistance interposed by the tracheobronchial tree to the passage of air in and out of the lung. By artificially creating a like resistance to the air pressure applied to the chest wall, the pressure on the inner and outer surface of the thorax as well as the pressure on the upper and lower surfaces of the diaphragm were made approximately equal. Adequate ventilation of the lungs then occurred without voluntary breathing and without discernible movement of the ribs and diaphragm. The apparatus employed² was called an equalizing alternating pressure chamber; an equalizing pressure of between 5 and 6 cm. of water was found most satisfactory. Barach now reports³ on the treatment by this method at the Presbyterian Hospital, New York, of five patients with advanced bilateral pulmonary tuberculosis. These patients, after a previous control period of bed rest, were considered unsuitable for any type of collapse therapy. The procedure was found feasible in all of them. One, after failure of a pneumothorax subsequent to the treatment, wished to return; another was glad to come back for a second course. "Despite intermittent boredom with the routine, the co-operation which these ward patients gave was an indication of the practicability of the method." The first patient was treated for two months for about six hours a day; the others were exposed to the local lung rest for twelve or thirteen hours daily, being taken out of the chamber for lunch, dinner, and for milk and orange juice at 4 p.m. The duration of the treatment was arbitrarily set at three months. Complete healing was not expected to take place in this length of time, but it was hoped that a recovery process might be initiated which would then continue with ordinary rest in bed. The detailed case histories leave no doubt about the beneficial effect of the treatment on four of the patients. Moreover, in one of them there was resolution of an extensive tuberculous process characterized by honeycombing in both lungs. The sputum has remained negative for a year, and he is now doing part-time work which calls for mild physical activity. In another patient, who had had a cavity for ten years, there was both clinical and radiological improvement. His sputum and, later, gastric contents have remained negative for two months after discharge. The results of the application of this method in less advanced cases of pulmonary tuberculosis will be eagerly awaited. But as the originator of the method himself stresses: "It should be understood that subsequent treatment must still utilize the measures known to be of value in pulmonary tuberculosis."

THE ROTUNDA TO-DAY

The Rotunda of Dublin is one of our most renowned maternity hospitals, and its long record of distinguished service has been surpassed by none. Like many another it had been growing structurally decrepit for many years, but its work was continually inspired by the love of progress and by the spirit of youth throughout the long series of live and able Masters who have guided its activities. And now a turn of the winged wheel of fortune—or its modern unromantic equivalent, the lottery drum—has furnished it with an environment worthy of its undaunted

spirit. In other words, the Rotunda has been rebuilt and reconditioned by means of an allocation of £160,000 received from the Irish Hospitals Sweepstakes Fund. In this island the intangible force which is described (often inaccurately) as "public opinion" has been opposed to the device of enlisting the average man's love of "taking a chance" in the service of charitable institutions, even of those which are of proven value. It is, however, quite possible that treasurers of hospitals, glooming over empty coffers, would willingly exchange the glow of moral and financial rectitude, which they are entitled to enjoy if they can, for the spate of sterling which has submerged the overdrafts of many of the hospitals of the neighbouring island. No one, we feel sure, will be disposed to cavil at the good fortune which has befallen the Rotunda, for it has enabled that hospital to provide a new nurses' home and students' quarters, new sterilizing, radiological, and operating equipment, and to redecorate and recondition the old buildings. In addition to all this a Social Service Department has been set up which has made a promising start and should do valuable work in developing those intimate personal relations that should exist between a voluntary hospital and the people of the district it serves. A notable feature of the accounts of nearly all voluntary hospitals is the annual deficit. This phenomenon, while it may vary in size, recurs with the utmost regularity and is generally regarded with equanimity by boards of management. For certain purposes the deficit has come to be viewed as an asset and accorded a measure of publicity rather than relegated to the proverbial cupboard. When the time is judged to be ripe for launching the periodical appeal for money the size of the deficit becomes a "bull-point" in its favour, and there may even appear a tendency for one hospital to vie with another in parading financial stringency. From these somewhat undignified devices, which are regretted by many friends of voluntary hospitals, the Rotunda of Dublin is saved, for the annual deficit is regularly liquidated by another turn of the lottery handle. Under such conditions financing a hospital must lack the thrill which approach to the verge of bankruptcy produces in the minds of persons accustomed to pay their way. Substantially, however, the Rotunda and other hospitals in similar case are gainers, for their work is not hampered by inability to meet the rapidly increasing cost of caring for the sick in accordance with changing therapeutic and surgical methods. The Rotunda report for 1940, written by the retiring Master, Dr. Andrew H. Davidson, tells a tale of progress which is truly remarkable and well deserves public attention. During his seven years' term of office the number of deliveries in hospital increased by 40%, and the proportion of patients who received ante-natal care rose from 44% to 79% in the same period. It is not to be supposed that the lure of a modernized hospital was the sole cause of this remarkable advance, and full credit will be given to the outgoing Master and his assistants for the high level of efficiency which characterized their work.

THE HALF-YEARLY INDEXES

The usual half-yearly indexes to the *Journal* and to the *Supplement* are now ready. They will, however, not be issued with all copies of the *Journal*, but only to those readers who ask for them. Any member or subscriber who wishes to have one or both of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Accountant, British Medical Association House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this.

¹ *Skandinav. Arch. Physiol.*, 1926, 48, 80.

² *Amer. Rev. Tuberc.*, 1941, 43, 91.

³ *Ibid.*, 1941, 43, 56.

A SURVEY OF WAR SURGERY*

BY

L. R. BROSTER, D.M., M.Ch., F.R.C.S.

Surgeon to Charing Cross Hospital

The principles of surgery are continually being enriched by new methods which stand the test of time, but in war-time fresh problems are imposed with such insistence as to demand immediate attention, and often hasty improvisation. It has been delightful to see the enthusiastic reception which has greeted the presentation of our difficulties and the genuine desire to get to work on their solution which has been displayed by the profession both in the United States of America and in Canada. At the outset it may be said that the surgical principles laid down as a result of the last war have stood the test of time, and have remained the sheet-anchor of present procedures; but before surgery can be established on a satisfactory basis it is necessary to consider some of the points in its organization.

Medical Organization

The medical organization for this war has been devised on lines different from those of the last. The policy adopted has been the formation of the Emergency Medical Service for the whole country under the Ministry of Health. Hospitals have been decentralized and re-created as sector hospitals in the countryside, and are responsible for the treatment of sick and wounded, both civil and military, although the existing Service hospitals have carried on as usual. Many of these outlying hospitals have been converted into "special hospitals," such as centres for head injuries, chest injuries, plastic surgery, and orthopaedic surgery. Before the war actually started the medical profession had been voluntarily conscripted. This work was undertaken by the British Medical Association. Every member was card-indexed and his wishes for service consulted, with the result that the Central Medical War Committee is able to satisfy from this pool any demand by the State in the way of personnel in any direction. The staffs of the voluntary and larger city hospitals have been used in manning the outlying sector hospitals. Apart from the inconveniences and the dislocation caused by the migration of large numbers of town folk to the countryside, the health of the population, in spite of rationing and overcrowding in shelters, has remained very good, and we have been free from epidemics. One of the anomalies has been that the health of the children who have remained at home has been better than that of those who have been evacuated. Although such a system has its limitations, as a wartime measure which has now become established it is running fairly smoothly and efficiently.

War Wounds

Early and free surgical excision still remains the basic, and most satisfactory, procedure in the treatment of all war wounds, and although the open Carrel-Dakin method is occasionally employed, the most important change has been the adoption of the closed-plaster method of Winnett Orr and Trueta and the use of drugs of the sulphonamide group for combating infection. The consensus of surgical opinion is that the combination of excision, closed plaster, and sulphonamides has proved a great advance in the treatment of war wounds.

Where this method has been used, as at Dunkirk, the wounded have arrived back in good condition and the wounds have been clean. It gives the maximum of com-

fort and eliminates many of the difficulties of transport. Morale is high, and there is practically none of that distressing condition of "shell-shock" which was so prevalent among the wounded from the trenches during the last war. There is no doubt that the closed-plaster method is a boon to the patient; it gives comfort and rest, and eliminates the dread of the painful daily dressings of the open method. Its greatest objection is the obnoxious smell. However, it requires constant supervision, for on the appearance of a raised pulse or temperature, pain, sleeplessness, loss of appetite, oedema, or coldness of the toes, the plaster should be removed. Where this close observation has not been possible some cases have arrived with spreading infection, sometimes anaerobic, and gangrene beneath the plaster. Under such conditions some surgeons prefer to transport their patients with a peeping window cut in the plaster over the wound, or, if the distances are short, to dispense with it altogether—as in such cases as fractures of the lower limb, in which the Thomas splint with traction has again proved its value.

With regard to sulphonamides, these can be employed in two ways—prophylactically, or locally into the wounds: by mouth, starting with 2 grammes followed by 1 gramme four-hourly up to a total of 20 grammes, or by direct insufflation into the wound in doses varying from 5 to 20 grammes. Experience has confirmed that more satisfactory results are obtained with local application. The chief aim is to get the wounded to the nearest surgical unit within twelve hours, and in these days of mechanized and aerial transport this ideal should be increasingly realized. In hospital the primary considerations are the arrest of haemorrhage and the treatment of shock, whether primary or secondary. It is only then that excision should be carried out. This requires the removal, not too wide, of skin, all devitalized muscle and fascia, and detached fragments of bone and foreign material, so as to obtain a saucer-like wound, which is the most satisfactory for drainage. The more urgent call for early excision is in wounds of entry into fleshy parts with retained missile. In multiple wounds the larger ones only need be excised, as also those wounds complicated by fractures or involvement of joints. Although primary suture of the larger wounds after the application of sulphonamides may be carried out within twelve hours, the general impression is against this procedure. On the other hand, some surgeons have reported success from primary suture in wounds two to three days old, but as infection has already taken place in these late cases formal excision is not indicated: the wound should be opened to provide free drainage, necrotic muscle and retained missiles removed, sulphaoilamide introduced, the wound covered with vaselined gauze, and the limb encased in plaster or splinted. When infection has been overcome secondary suture can be undertaken.

Bomb Injuries

Fortunately the number of wounded has not come up to expectation; a higher proportion are mortal, however, and this is reflected in the low percentage of survivals from abdominal and chest wounds in comparison with the more numerous wounds involving the limbs. There is not so much of that extensive ploughing up of the tissues from high explosive and shrapnel as in the last war, for the modern bomb is more destructive than maiming. Its casing is comparatively thin, and its terrific blast breaks this up into numerous small hot fragments which spread out fan-wise in a more or less horizontal direction with low trajectory. Wounding is more common from the secondary effects of the blast, either from shattered glass or from falling masonry. Consequently we may stigmatize this war of aerial bombardment as one of multiple injuries and

* The basis of an address delivered by invitation to the American Surgical Association, at their Annual Meeting at White Sulphur Springs, West Virginia, May 29, 1941.

marked traumatic shock. It is often difficult, therefore, to determine which of these small multiple injuries involve the more important structures, such as vessels, nerves, and viscera; and they cannot be dismissed by their apparent triviality, for severe venous thrombosis may follow from infection driven into superficial veins, and nerve injuries in particular are apt to be overlooked.

Regional Injuries

It is impossible in a short paper of this kind to enter fully into the injuries of the different parts of the body, so a brief summary of the most salient points must suffice.

Head.—Four principles of general application may be cited here: (1) Remove infective material and dead brain tissue. (2) Remove blood clot, extradural or subdural, and aerocoele. (3) Consider whether a retained foreign body should be removed on account of traumatic epilepsy. (4) There is a definite impression that the sulphonamides tend not only to localize infection but to delay the necessity for operation: this is therefore a hint towards the adoption of more conservative methods. The most important fact to be established is whether the dura has been penetrated or not, and every means should be employed to this end. When the dura is opened damage to nervous pathways, spread of infection to the ventricles and basal cisterna, later abscess, and epilepsy must be borne in mind. The dural wound should not be enlarged unless the surgeon is prepared to remove necrotic brain and clot to prevent tension, otherwise fungus of the brain will develop. Forceful irrigation and suction should be used for this, and at the same time all dirt, foreign bodies, and detached bone must be removed. Repair of the dura is unsafe, and tension should be controlled by repeated lumbar puncture. Retained missiles should be left alone, but if the clinical signs spread and the cerebrospinal protein content increases, bold measures for their removal should be undertaken. Compared with civil injuries, concussion is usually slight, but unconsciousness may occur late and be prolonged. Focal symptoms are frequent: they tend to recover, and operation is indicated only when they come on late.

Abdomen.—The mortality rate from abdominal wounds is high, and the principles of treatment remain fundamentally the same as during the last war. All undoubted peritoneal wounds must be operated on, and the mortality depends largely upon how soon this is achieved. Essentials for success are accurate localization of the missile, local patching instead of resections, and end-to-end anastomosis for preference, control of bleeding, cleaning out of the peritoneal cavity, and—rarely—drainage, except in late cases, and then suprapubically. Time and speed, too, are essential. Multiple ileostomies are of no value, but caecostomy may prove a useful outlet for distension. Sulphanilamide dusted on the suture line, and 5% of this powder, given with saline, into the peritoneal cavity, is a procedure that has been recommended by some surgeons. It is gratifying to hear that retroperitoneal haematoma, so fatal in the last war, has shown some recoveries with chemotherapy. Wounds of the liver, spleen, kidneys, and bladder should be treated on conservative lines. Abdomino-thoracic wounds, whether approached from the abdomen, thorax, or both, should ensure repair of the diaphragm. Late cases of peritonitis in which there is reasonable evidence of involvement of the bowel should be operated upon.

Chest.—Like wounds of the abdomen, chest wounds are of low incidence and high mortality. It is probable that a large number of these cases do not reach base hospitals. Operative intervention for haemorrhage from the parietes or lung should be undertaken at once. Open pneumothorax is the bugbear of these sucking wounds, and must

be stopped up at once by vaselined gauze dressings and strapped. Pressure pneumothorax can be gauged by trachea deviation radiologically and relieved by needling. Repeated aspiration should be performed for haemothorax, and, if infected, rib resection with closed drainage. Foreign bodies, unless large and in the dangerous area of the hilum of the lung and pericardium, are better left alone. For shock and loss of blood, plasma and whole blood are given in large quantities, up to 5 to 6 pints, the aim being to maintain the haemoglobin at about 80%. Oxygen given by the B.L.B. mask is invaluable. Local application of sulphanilamide into the wound is good, but the results of employing it in the pleural sac are as yet inconclusive.

Chemotherapy for War Wounds

Perhaps the most fascinating aspect of the treatment of modern war wounds is the advent of chemotherapy as an adjunct to surgery. Though the use of these sulphur compounds must still be regarded as in the experimental stage, there is a general consensus of opinion that where they have been employed wounds are less heavily infected and in a healthier state than corresponding wounds in the last war. Much experimental work has been done with sulphanilamide, sulphapyridine, and sulphathiazole. Colebrook considers that local application is superior to the oral route, and has higher expectations from the use of sulphadiazine. Fleming prefers sulphathiazole. The effects of these drugs have been most notable in the streptococcal infections, especially in the cleaning up of late wounds. The anaerobe group as a whole is less susceptible to their action, but it is fortunate that *B. welchii* is more susceptible than the other members of this group. Antitoxic sera have also given protection against these infections, but at the moment no comparative results, or results from combined sulphur and toxin prophylaxis, are available. It is considered that these substances, of varying solubility, act direct on bacteria and arrest their metabolism.

Burns

One of the curses of the internal combustion engine is the risk of burns, and the war has acutely accentuated the importance of this problem, which calls so much for teamwork and treatment from different points of view. The tannic-acid method, devised by Davidson of Detroit in 1925, so successful before the war, led to neglect in the study of some of its pathological problems. War burns present special difficulties of their own, in which the primary objects are to save life and limb and to preserve function. The main cause of dissatisfaction with the tannic-acid treatment is that in the commonest types of burns—i.e., those involving the face and hands of airmen—it has led to severe scarring and to gangrene of the fingers. There has followed a great deal of ingenuity in trying out new methods of treatment, but as yet no unanimity of opinion as to their respective values has been arrived at. They may be summarized as follows:

1. **The Triple-dye Method.**—This, consisting of gentian-violet 2%, brilliant green 1%, acriflavine 0.1%, is recommended by Rear-Admiral Wakeley, who claims that when sprayed on the burn it produces less scarring than tannic acid.

2. **The Bunyan Bag.**—In this method the burnt surface is isolated in a special watertight envelope, and is irrigated with electrolytic sodium hypochlorite solution (5% milton).

3. **The Edinburgh school** recommends the application of sulphanilamide and glycerin.

4. **Saline baths.**

If tannic acid has been found unsatisfactory for certain forms of burns it must not be concluded that it should be discontinued. Outside the areas of the extremities and

flexures it still has firm and ardent advocates, and is considered by many the best form of treatment when applied over a burn dusted with sulphaniilamide. Whatever method is decided upon, the burnt area should be thoroughly cleaned with saline and dried with hot air. For this purpose gas-and-oxygen, evipan, and pentothal are the most satisfactory forms of anaesthesia. When the tan falls off in the course of a few weeks the part should be rubbed with lanolin, and any cracks in it can be dusted with sulphaniilamide. Tanning has reduced streptococcal infection, but where this is present in late cases the tan should be removed and saline baths given. From the point of view of the plastic surgeon, the school led by Gillies insist that such treatment is satisfactory only for burns of the first and second degrees. For burns of the third degree they recommend surgical excision of the burn, saline baths, and Thiersch grafting as soon as a satisfactory granulating surface has been obtained. By these means unnecessary scarring and deformity are avoided.

Apart from the treatment of the actual burn, it is in dealing with its complications that work is so desirable. Primary shock has a mortality rate of 2% to 3%, whereas secondary shock, which comes on later, has a danger-point during the subsequent twenty-four to forty-eight hours, with mortality as high as 60%. Unless there has been concomitant haemorrhage, blood transfusion is not indicated owing to the concentration of the blood which occurs, and blood plasma must be given to replace protein loss and prevent oedema.

Blast Injuries

The highly explosive force due to the sudden conversion into gases of solid material under great pressure within the modern bomb has given rise to a series of phenomena which have come to be known as "blast injuries." Blast has shown curious anomalies in its direction, distribution, and force. It is probable that these are due to the breaking of the casing at its weakest point and to the waves of pressure being ricocheted or reflected by buildings in the vicinity of the explosion. The effects of blast on animals have been studied by Zuckerman. A wave of high-positive-pressure velocity is created, and this is followed by another of negative decreased velocity exerting a suction-like action. The high-pressure wave falls to atmospheric pressure over a distance of some thirty feet, but proximity to the actual blast does not necessarily determine its effects upon its victims. Usually it gives rise to no surface injury, and is characterized by blood-stained froth at the mouth, which may appear sooner or later, but within ten days. Clinical examination of the chest reveals the signs of pneumonia. Necropsy discloses haemorrhage of varying extent in the substance of the lungs. Similar haemorrhages may also be found in the liver, spleen, intestines, adrenals, kidneys, bladder, and, seldom, the brain. The force of the blast may hurl people against objects and so give rise to secondary injuries, which may cause the blast injury to be overlooked. Fat embolism is also sometimes found at necropsy.

From the surgical point of view these patients give rise to much anxiety. Like pleurisy, the chest condition is often associated with rigidity of the abdomen, and yet due regard must be paid to the possibility of a concomitant intra-abdominal lesion, while in either case inhalation anaesthesia is best avoided.

Crush Injuries

Different methods of warfare either bring new problems or revive old ones in new disguise, and the crush syndrome may well fall into either category. It is characterized by acute renal failure supervening in people who have been pinned down by fallen masonry and have been buried and subjected to pressure for a varying period. There may be

no evidence of any local injury, but, when there is injury, local swelling, oedema, whealing followed by bullous eruption, and patchy areas of anaesthesia appear. A few hours later, in spite of vasoconstriction as shown by pallor, coldness, and sweating, the blood pressure falls and haemoconcentration rises. Later the urinary output diminishes, and albumin and dark brown clots appear in the urine. The patient becomes alternately alert and drowsy, and his blood pressure often rises. Oedema, vomiting, and thirst supervene, the blood urea and potassium become increasingly high, and death takes place about the seventh day. Post-mortem examination shows necrosis of muscle, and cloudy swelling and degeneration of the renal tubules.

Shock

"Shell-shock" to those who knew it during the last war has taken a holiday, and has been replaced by traumatic shock of varying and severe degree; for, apart from wounds, it is a handmaiden to burns, blast, and crush injuries. There is little new to add to the question of shock; but from the observation of cases of uncomplicated shock at Charing Cross Hospital the following points may be stressed. The mental state of the patients, all of whom had received morphine, was quiet and still; very few of them were excited. In general they were pale, dry-skinned, and thirsty; one patient sweated profusely. Some had nausea and vomiting. The pulse was never above 100; its quality varied, being thin, impalpable, or collapsing. In all cases the blood pressure was below 100. A rise of 10 points in blood pressure, and improved temperature and colour and mental state, were taken as indications to warrant surgical intervention. As a rule the need for transfusion was in proportion to the severity of the injuries. Plasma was given, and whole blood if haemorrhage had occurred. In severe shock transfusion may be difficult owing to the collapsed condition of the veins, and local warming of the arm has proved helpful in getting the blood in satisfactorily. The organization of the blood transfusion service has been one of the main successes of our hospital system, and the prompt access to reserves of stored blood has been most helpful and has resulted in the saving of many lives.

HEALTH PROBLEMS IN HONG KONG

According to the report for 1939 of the Director of Medical Services, Hong Kong, the large numbers of Chinese refugees from the neighbouring Sino-Japanese conflict continue to constitute the colony's chief health problem. In July, 1939, the number of persons entering the colony exceeded the number leaving by 327,833. Many of the immigrants are destitute, ill nourished, and diseased, and the overcrowded conditions in which they live are, after malnutrition, the most serious menace to public health. A deputy director of health services was appointed at the end of 1939, and the sanitary inspectorate has been transferred to the direct control of the health officers, so that the much-needed organization of the health services of the colony can now take place. Diseases of the respiratory system (non-tuberculous) caused the largest number of deaths in 1939. Tuberculosis came second, as in 1938, the pulmonary form of the disease being responsible for the majority of the deaths. A blood survey of 1,500 refugees showed a malarial infection of 24%. There were over 9,000 cases of beriberi, 800 cases of cholera, and 3,000 of influenza in Hong Kong during the year under review. In no other part of the British Empire is there more need for active sanitary measures, and, as the report shows, it is only by persistent vigilance that the D.M.S. (Dr. Selwyn Clarke) and his large staff can cope with the problem of maintaining a reasonable standard of public health among the 1,500,000 British and Chinese inhabitants of the colony.

PLANNING FOR MENTAL HEALTH

REPORT OF B.M.A. COMMITTEE

Three years ago the Council of the British Medical Association set up a committee to inquire into the present medical equipment and provision for dealing with mental health, with special reference to the treatment and prophylaxis of psychoneurotic and allied disorders. The chairman of the committee was Colonel R. G. Gordon, M.D., of Bath, and its twenty-two members included a nominee of the Royal Medico-Psychological Association and of the Society of Medical Officers of Health. As an example of the thoroughness with which the subject has been surveyed, 170 persons, organizations, or institutions were drawn upon for evidence or for information furnished in other ways. The committee had virtually completed its work before the outbreak of war; only the consideration of its report remained, and it was thought well to finish this. It has now been published as a B.M.A. "Grey Book" of fifty pages. So far from having been rendered untimely by the war, it derives a new interest on that account, and it will be of first importance to the Medical Planning Commission.

It may be recalled that at the Annual Representative Meeting at Aberdeen two years ago this same Mental Health Committee brought forward certain advance recommendations regarding the "non-medical psychotherapist," setting out the conditions under which he might undertake treatment and those under which a medical practitioner might recommend a patient to him, and calling for a two-years training of such lay people on the basis of an agreed curriculum. After an interesting debate¹ the objections to the recognition of lay psychotherapists prevailed, and the recommendations were turned down. In its report the committee now only makes the comment that if no non-medical psychotherapists are to be recognized by the medical profession it becomes all the more urgent to train enough medical psychotherapists to cope with the demand.²

The Dimensions of the Problem

The inquiry of the committee was chiefly directed to the psychoneuroses, but it could not leave the psychotic cases out of its consideration, nor, on the other hand, could mental deficiency be omitted from any discussion of mental illness, and the same applies to many cases of drug addiction and to epileptic manifestations. The committee found it impossible to define exactly any criterion of mental illness. "It would seem that at present one must depend chiefly on the manifestation of symptoms rather than on more scientific criteria in diagnosing such disorder." Equally, mental illness cannot be divorced from physical illness. In all illness there are psychic and somatic components which must be considered in relation to each other.

The incidence of mental illness is difficult to ascertain. In 1938 there were 158,723 persons suffering from mental disorder notified as under care in England and Wales, and 89,904 mentally defective persons in institutions and under statutory supervision. But the group with which the committee is more concerned is that of persons suffering from mental illness who have not been certified. In many parts of the country there is no one in private or hospital practice to care for such patients. The committee does not seem to have been much helped by its witnesses in this assessment. One witness declared that quite 60% of the population were psychoneurotic; another that while the number of psychoneurotics was larger than generally supposed, the difficulties of many of them were negligible and could be cleared up in a single interview; while another spoke of the "danger that

we may fall into a new fashion of medicine where almost every ill will be attributed to mental factors." The attempt to obtain records of the incidence of psychoneurosis from general practitioners who were known to be interested in the subject did not yield anything of statistical value, but a number of experiences are quoted from clinics and departments. The most informative figures are those for nervous debility and neurasthenia and neurosis in the returns of the Department of Health for Scotland of incapacitating sickness in the insured population, but even these do not show the whole number, for many cases are likely to be included under such headings as anaemia, gastritis, and rheumatism. As for the incidence of psychoneurosis in industrial injuries, the number of compensation cases in the seven great industries in Great Britain is just under 500,000 a year, and if only 2% showed psychoneurosis it would mean 10,000 cases.

The committee concludes that the incidence of mental illness is much greater than can be met by present facilities for treatment, that in any group of sick persons something like 30% will be found suffering from conditions about which it would be helpful to have psychiatric advice if not treatment, that it is important that they should be dealt with by persons well trained in psychological medicine, and that therefore the number of doctors with such training (at present an inadequate number) should be much increased.

The causes of mental illness are grouped under the headings of: (1) hereditary and constitutional; (2) environmental emotional factors in early life; (3) similar factors at the time of the illness. Hereditary and constitutional factors are causal in many cases of mental deficiency and important in the non-organic psychoses, especially in the manic-depressive group, while as to psychoneurosis, the figures show that in families of severely psychoneurotic patients there are two or three times as many psychopathic, psychoneurotic, and psychotic persons as in the average normal family. Economic status in itself is not considered as a very important factor.

Present Means of Prevention, Diagnosis, and Treatment

The greatest preventive measure is public education in mental health, and a survey is given of the work done by the Tavistock Clinic, the National Council for Mental Hygiene, the Central Association for Mental Welfare, the Child Guidance Council, and other bodies. Education of mothers, nurses, and teachers in the management of young children would materially lessen the incidence of psychoneurosis. So would educational measures directed to training the growing child how to live and to manage his instinctive urges. It is important to bring home the need for seeking advice in the early stages of mental illness; the most effective education in this respect is the evidence of good treatment at the psychiatric clinics. Finally, there is the urgent requirement for the better education of the general practitioner so that he may protect and guide his patients from their earliest years.

In-patient provision for chronic psychotic patients is reasonably efficient, but there is great need for specialized accommodation and treatment for patients acutely ill and with a prospect of recovery. Out-patient treatment suitable for slight and early cases is improving; there are now 187 local authority clinics in Great Britain which deal with mild psychotics. But in-patient provision for the psychoneuroses is seriously inadequate, and there is no special provision for chronic psychoneurotic patients, who constitute a serious social problem. Child guidance clinics number fifty-eight, but not quite half of them are (or were, in 1938) employing a full team—that is, a psychiatrist, a psychologist, and a psychiatric social worker. The committee does not regard with favour centres established exclusively for psychoneuroses arising under industrial conditions, apart from rehabilitation for physical disabilities.

The number of local authority institutions for defectives is increasing, but a considerable number of defectives are not "ascertained." Provision for persons addicted to alcohol or drugs is most inadequate, and doctors as a whole are not educated to treat this small but important group of patients. The committee recommends that some compulsory procedure be legally enacted to enable such patients to be effectively treated. Better arrangements are now being made for the treatment of delinquents; prisoners are observed with psychological

¹ Supplement, August 5, 1939, p. 113.

² A "psychotherapist," by the definition in the report, is a specially trained registered medical practitioner who in treatment employs wholly or predominantly methods of mental analysis, suggestion, persuasion, or re-education directed to rectification of abnormal mental states. A "psychiatrist" is a specially trained registered medical practitioner who devotes himself wholly or predominantly to the care and treatment of mental illness, including every form of mental deviation. A "psychologist," in the field of mental health, is a person with a university or equivalent training in psychology, who assesses intellectual capacity, gives remedial teaching and vocational guidance, and treats educational disabilities.

understanding, and facilities for special treatment can usually be granted.

The committee adds that in order to bring out-patient provision for mental illness up to a satisfactory level, many more medical practitioners should be trained in modern psychiatry, and because of the length of time required for psychological treatment it is necessary, if these practitioners are to obtain a livelihood, that paid part-time posts in clinics should be established. It is convinced that treatment, including psychotherapy, increases the number of those who recover or are enabled to make a reasonably satisfactory adjustment. Sufficient evidence has not been obtained to enable the value of various forms of psychotherapy to be assessed, and perhaps Janet's dictum that "the psychologist who understands his patient well and who knows how to use psychological stimulation succeeds with any method he cares to use" cannot yet be superseded. Only a small proportion of patients call for intensive or prolonged analytical treatment, though the committee is satisfied that such cases do exist.

Model Scheme for Treatment of Mental Illness

Seven pages of the report are occupied with a model scheme for the treatment of mental illness. A properly organized Mental Health Service would include the following:

1. Provision for investigating and treating adult patients suffering from psychoneurosis, psychosis, delinquency, drug addiction, and epilepsy, and for the care of mental defectives.
2. Provision for the development and adjustment of children presenting all varieties of psychological and psychosomatic problems.
3. A central advisory committee for each area, to include representatives of voluntary hospitals, medical schools, organizations dealing with mental health and defect, and educational and health representatives from public authorities. County councils should be pressed to form mental health committees in association with, but having a separate organization from, their public health committees.

In-patient services will include:

1. A ward in the general hospital, in charge of a psychiatrist, for psychoneurotics and mild psychotics.
2. Special psychiatric hospitals, which in the larger centres would include hospitals for psychoneurotics and mild psychotics, with attached out-patient units, and also acute units which would receive all police and observation cases, chiefly temporary and certified.
3. Institutions for long-continued and chronic cases, which would include separate hospitals or blocks for psychotic cases, though with staffing and administration under the same control as the provision for acute recoverable cases; also special provision for chronic psychoneurotics and addicts, and, of course, institutions for mental defectives.

Out-patient services will include clinics at the general and special hospitals, and at municipal hospitals where necessary, child guidance clinics, and mental defective training units. Properly organized laboratory services are one of the great needs of mental health, and laboratories, which might be grouped, should have the services of a full-time pathologist, with specialist assistants. All these clinics and units should co-operate as much as possible for organized research and medical teaching and the training of members of the ancillary services. The scheme is represented diagrammatically in the report. In the middle is the central psychiatric unit, including divisions for mild and acute cases. It is fed from the out-patient department, which has three sections—adults, children, and delinquents—and from the general hospital, and cases proceed from it to the rehabilitation and convalescent centre or to the mental hospital with its provision for recoverable cases and for chronic psychoneurotics.

Normally adult diagnostic and out-patient treatment clinics will not be separated. They should be staffed by a psychiatrist paid on a sessional basis and, where possible, a whole-time psychiatric social worker. An occupational therapist, and in some cases a speech therapist, should be attached. At least two sessions a week must be held, as many patients will require to be seen twice weekly. A scheme for diagnostic service and the

treatment of the milder cases will eventually be necessary in the more remote country districts. This might be modelled on existing orthopaedic schemes, with central and outlying clinics, the latter to be visited at stated intervals. Adult in-patient clinics for mild cases might be "central" to a group of diagnostic and out-patient treatment clinics, and the same location might serve for both adult and juvenile cases provided that there were separate children's wards; Maudsley Hospital is cited as a good example. Acute cases and chronic and probably irrecoverable cases should be treated in different institutions, which may be jointly staffed. In the acute block there should be adequate facilities for all modern psychiatric diagnosis and treatment, including psychotherapy, hydrotherapy, occupational therapy, and the various forms of shock therapy.

Other recommendations by the committee are that in view of the large number of patients among the general medical sick who would benefit from psychiatric advice and treatment, every hospital of more than 100 beds should have on its staff at least one physician in psychological medicine with an appropriate status. A diagnosis or treatment clinic conducted by a general hospital should be separate from the neurological department, so that due recognition may be given to the relation between psychological and general medicine. Approved societies and the Ministry of Health should be asked to make out-patient psychiatric treatment an additional medical benefit, and the Ministry to make a grant towards an extension of psychiatric services. The need for special training institutions or colonies for persons of subnormal intellectual capacity, not amounting to certifiable mental deficiency, is pointed out. Often in these cases the only hope of satisfactory rehabilitation is in readjustment of environment. In the case of mental defectives a serious gap in provision is that many defective children who have not been "ascertained" leave school at 14 or 15, and as they have not been to special schools they are not notified and do not come under the Mental Deficiency Act until they may be "subject to be dealt with" after the age of 16. There is also no real provision in the way of institutional accommodation and community care for so-called moral defectives over that age.

Training of Personnel

The doctor is not sufficiently trained in the psychological aspects of medicine, and in this respect Great Britain is considerably behind other countries. The need for increased instruction receives practically unanimous support from psychiatrists. For graduates who wish to take the subject as a specialty the portal of entry is the diploma in psychological medicine, but this should be followed by prolonged clinical experience under supervision and control, preferably in residential appointments in psychiatric clinics or mental hospitals. Eventually psychological medicine should be raised to such a status as to warrant the award of a registrable qualification in the specialty by all medical schools. Many practitioners, however, who do not desire to pursue the subject as a specialty feel the need for further psychiatric knowledge to help them in their practice, and there is a growing demand for postgraduate courses in which the subject may be dealt with at greater length and more elaborately than in those which have been provided for insurance practitioners.

With regard to undergraduate training, the committee feels that the recommendations of the General Medical Council in 1936 are too vague and leave individual schools with too much latitude. The general object should be not to produce specialists in psychological medicine but to make students realize how the subject is integrated with general medicine. The preclinical instruction should be termed "medical psychology" instead of "normal psychology," and should be given by a psychiatrist, with relation to physiology on the one hand and to subsequent clinical studies on the other. Of twenty-two medical schools, nine at present give instruction in psychological medicine during the pre-clinical years. During the clinical years a three-months or six-months compulsory clinical clerkship in a psychiatric out-patient department is recommended. A good deal of teaching in psychotherapy and in other branches of psychiatry is practicable by demonstrations and discussions as well as by direct clinical work. The final examination should include a paper or at least questions on and a clinical examination in psychological medicine, and the examining boards should include psychiatric specialists. An

important part of the student's training should be to recognize the psychological aspects of the cases he meets in the general wards and out-patient departments.

The report concludes with a chapter on ancillary services—namely, mental nurses, psychologists, occupational therapists, psychiatric social workers, speech therapists, and, in children's work, playroom supervisors. General approval is given to the conclusions and recommendations of the Feversham Committee. The necessity that all workers in these ancillary services should have an adequate general education is stressed, together with the need for more facilities for the training of all nurses, especially mental nurses, in the management of psychoneuroses. In all the ancillary services a standard curriculum should be laid down for training and diplomas given to those passing examinations, and the members should be encouraged to form themselves into associations for the purposes of maintaining standards and securing adequate recognition, status, and remuneration.

The report is useful not only as embodying the views of this highly expert committee but also for the information it so concisely conveys.

Local News

SOUTH AFRICA

Health in the Witwatersrand Mines

The Health Department of the Central Mining-Rand Mines Group, of which Dr. A. J. Orenstein, a Vice-President of the British Medical Association, is chief medical officer, has issued a report for 1940 above the name of Dr. H. Q. F. Thompson, Dr. Orenstein being on active service. The average number of natives employed on the gold mines of the group during the year was 109,397, but, of course, a very much larger number were actually at risk for various periods. The number of shifts lost through disease or accident was 4.78 per native employed. The deaths from all forms of accident numbered 252. The mortality rate, 3.38 per 1,000 employed, was slightly higher than in 1939, but is still satisfactory, being much below the figures for earlier years. There was an increase in the number of cases of such respiratory diseases as pneumonia, influenza, and pleurisy, which is ascribed to the large influx of new labour. Pulmonary tuberculosis is also on the increase; silicosis remains stationary.

An Experiment with Sulphapyridine

Sulphapyridine has been used in the mine hospitals on the Rand as a routine therapeutic agent for pneumonia since the end of 1938, and the report states that it has undoubtedly contributed to the reduction in the death rate. The mortality figures for the four most recent years are as follows:

	Pneumonia Deaths	Per 1,000 Employed per Annum	Case Mortality Rate %
1937	308	2.94	11.58
1938	242	2.28	9.43
1939	56	0.55	2.61
1940	69	0.63	2.75

In 1936 pneumonia accounted for nearly 37% of deaths from all causes, whereas in 1940 this percentage was only 11. An experiment was carried out, beginning at the end of 1938 and concluding in 1940, on the treatment of pneumonia in native mine labourers employed at the Crown Mines. There were 200 cases, 100 of which received sulphapyridine and 100 acted as controls, receiving the ordinary symptomatic treatment. About half the cases had been previously inoculated with an auto-genous vaccine, but as these fell half in the treated group and half in the control they may be eliminated. There were two deaths in each group; of the two in the treated group, one of the patients had not responded to the drug at all, and the other, though recovering from the pneumonia, died of diabetes a week later. There was vomiting in only one of the 100 cases, and there were no other untoward effects of the drug. Complications arose in one case in the treated group and in four in the control.

The conclusions are that sulphapyridine does not appear to produce toxic symptoms in native males, even when larger doses are employed (the average dose given was 50.81 tablets or 25.4 grammes); that the period of pyrexia in pneumonia is reduced by the use of the drug, with consequent shortening of the stay in hospital (the average number of days in hospital was 15.20 in the treated group and 16.76 in the control; and it is the custom on the Crown Mines to keep every pneumonia patient in hospital for seven days after the temperature is normal, with a total minimum stay of 14 days); that the general discomfort of the patient is reduced, none of the treated group requiring sleeping draughts; and that pneumonia patients do not lose as much weight when treated with this drug.

Health in the Union

The annual report of the Department of Public Health, Union of South Africa, for 1939-40 deals with a population of over 10,000,000, including more than 2,000,000 Europeans. Among the latter heart disease occupies first place as the cause of death, cancer second, and pneumonia third. The death rate from the last named is the lowest for the past twenty years, possibly as a result of the introduction of sulphapyridine. It is stated that the statistics concerning the coloured population are still woefully deficient, but in the larger urban areas, where they are available, they show a very high infant mortality rate among natives. This is chiefly due to gastro-enteritis and respiratory diseases, in which ignorance and malnutrition are predisposing factors. Forty-seven cases of human plague with twenty-six deaths were reported during the year under review. Most of these occurred in the northern parts of the Orange Free State, but a small outbreak in the Vereeniging district of the Transvaal constituted the nearest approach of the disease to Johannesburg. The majority of the cases were bubonic, a few being septicaemic; one pneumonic outbreak occurred on a farm in the Orange Free State. Field surveys demonstrated the close relationship between mole-rats and gerbilles. All three species of the former were found to be susceptible to plague, so that these animals, despite the difference between their flea-fauna and that of the gerbilles, must be regarded as possible agents in the spread of infection.

Correspondence

British Medical Students' Association

SIR,—In view of the fact that the chairman of the Medical Planning Commission has asked the British Medical Students' Association to produce a memorandum on medical education, it may be of interest to your readers to hear something about the recent council meeting of that body. The main business on the agenda was the production of this memorandum, and a sub-committee was set up to promote study and discussion on the subject in all medical schools, to place previous memoranda of the B.M.S.A. and other relevant literature before medical societies, to prepare curricula, and to draft a representative and yet detailed and constructive document for presentation to the Medical Planning Commission. All students who are interested should communicate with Mr. K. C. Willett at the Middlesex Hospital, who will supply further information.

Student health questions were included in the reports from several medical schools and were discussed by council. It appears that in a few medical schools, notably University College Hospital, some effort is made to apply the principles of preventive medicine to student health. At these hospitals there is voluntary routine medical examination from the time of entry to the university, including yearly radiographic examination of the chest and Mantoux test conducted by the Prophit T.B. Survey. Hospital treatment is free or adapted to the student's means, and operation fees are unknown. Such conditions are too rare. In other schools there is no provision for medical examination at any time, and to request such examination other than on the basis of severe and unmistakable symptoms would be to invite the label "neurotic." In one base hospital it is reported that students are required to pay £4 4s. weekly under E.M.S. regula-

tions for a bed in a general ward. The result of such policy is shown in a report from a London hospital of seven cases of pulmonary tuberculosis, one fatal, occurring in a period of six months.

On the basis of reports and discussion the B.M.S.A. council unanimously passed the following resolution: B.M.S.A. approves the principle of free medical treatment of all medical students; this should include the attendance of doctors and hospital accommodation. Our policy is that every medical student should be examined on entry to the university, but that entry to the university should not be conditional on the examination. This examination should be the individual responsibility of the respective schools. The examination should be at regular intervals thereafter, and should include full radiographic examination of the chest. As an immediate measure it is recommended that schools apply for regular examination under the Prophit scheme for tuberculosis research (Royal College of Physicians).

Delegates drew the attention of council to the recent order of the Ministry of Labour making part-time military training compulsory for all medical students. This order seems to have been subject to considerable variation in application, and the reactions of delegates varied somewhat with the interpretation placed on the order by their respective deans. It is generally agreed that the primary duty of the medical student must be to get qualified as quickly as possible, but there are many students who feel that purely military activities are a waste of both time and equipment for future doctors, and that primary R.A.M.C. training, A.R.P. work, etc., would be a less incongruous form of war work. A great part of the difficulty is the failure of local authorities to utilize students effectively in A.R.P. schemes; and where students have fitted themselves into such schemes it has usually been in spite of the local authority.

Delegates from Scotland drew attention to the position of the students of the extramural colleges in Glasgow and Edinburgh. These students qualifying for the licence of the Triple Qualification Board have twenty-two weeks' holiday every year throughout their course, including a three-and-a-half-months summer vacation. They have been carrying on a vigorous campaign to obtain clinical teaching during the summer, but despite an appeal to the Ministry of Health they are still compelled to spend the summer haymaking, etc. Surely the six calendar years required by the G.M.C. for qualification would be better replaced by a minimum number of weeks' work if this is how the regulations are to be applied.

There was some discussion of the position of students taking house posts before qualification, but this was more in the nature of exchange of information about conditions, salaries, etc., and no specific recommendations were made by council.

The A.R.P. activities of the various medical schools were discussed when council was addressed by Dr. Sinclair Loutit, Medical Officer, Civil Defence, Finsbury, on "A.R.P. and the Student." The intrinsic difficulty in student relations with local authorities is the tendering of effective aid at the right moment without undue waste of time that should be spent in study. Some of the London hospital students combine first-aid work with a three-months casualty post. Students on these posts are required to sleep in hospital and be available at all hours; living expenses are paid, and the student is a unit in the E.M.S. for this period. Dr. J. Trueta addressed council on "The History of War Surgery." The lecture was illustrated by slides of his own cases and was enthusiastically received. The tone of the discussions throughout bore witness to the determination of students to play their part as best they may in present circumstances, at the same time keeping clearly before them ideals to be achieved in the post-war world.—I am, etc.,

C. M. TINKER,
Hon. Sec., B.M.S.A.

Cambridge, Aug. 4.

Hypoprothrombinaemia

SIR.—In their paper on hypoprothrombinaemia and avitaminosis-K in this *Journal* (August 9, p. 190) Drs. Robert Kark and A. W. Souter have given a very comprehensive summary of the present clinical position of this problem. Inevitably, in dealing with such a wide subject in so short a space, they have cited as facts certain observations the import of which is still *sub judice*. Certain statements in their paragraph on hypoprothrombinaemia

in the newborn are open to criticism in the light of other investigations on this subject.

1. Shettles *et al.* (1939) showed that the prothrombin concentration apparently suffered greater reduction in the premature than in the mature infant, but Waddell and Lawson (1940), using Quick's method, were unable to confirm this. In explanation, it has been suggested that there may be some compensating factor present in the premature which facilitates the conversion of prothrombin into thrombin, so that there is but little difference from the mature infant in the "prothrombin time" in spite of a reduced prothrombin concentration. Our observations have shown that, using a method found to be entirely comparable with that of Quick, the only significant difference in the clotting activity (measured as the prothrombin index) in an unselected series of mature and premature infants has been a delayed onset and a slower rate of recovery in the prothrombin index after the initial fall, and seem to indicate that prematurity in itself is not an important factor in the production of "pathological hypoprothrombinaemia" in the newborn.

2. In the full-term infant the clinical and laboratory data obtained in these investigations during the past eighteen months point to the conclusion that it is rarely possible to attribute severe hypoprothrombinaemia in the newborn to post-natal conditions alone. It has been found that the usual methods of feeding or the use of glucose water have no effect on the initial fall, but do influence the occurrence and rate of the ensuing return towards normal.

3. The prothrombin index of the mother has been found to be consistently lower at the time of delivery than before or twenty-four hours after labour, and on two occasions has shown a definite deficiency at that time (Macpherson *et al.*, 1940). This constant reduction at the end of the second stage is probably in part due to the greatly increased katabolism which occurs during labour. Prolonged uncomplicated labour, however, has not been found to be a cause of abnormal prothrombin deficiency in the mother or baby at birth.

These observations have been recorded in greater detail in a report which will shortly be submitted for publication.—I am, etc.,

Edinburgh, Aug. 11

A. I. S. MACPHERSON, F.R.C.S.Ed.

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Shettles, L. B., Dells, E., and Hellman, L. M. (1939). *Johns Hopkins Hosp. Bull.*, 8, 879.
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Air-raid Noises in Psychotherapy

SIR.—In the *Journal* of August 2 (p. 158) an article by Majors F. L. McLaughlin and W. M. Millar calls for some comments. The authors state that the employment of artificial noises is only part of the treatment, but do not sufficiently emphasize this point. They substitute a "conditioning," different from the neurotic reaction, by the employment of noises that startle the patient. They do not specify what they mean by "relaxation." Hysterical cases will always have some degree of dissociation, amounting frequently to a light hypnotic state; obsessional cases will be to some degree tense under any attempt to produce relaxation that stops short of a non-conscious state.

Reconditioning, or the substitution of another conditioning, is an excellent and often necessary auxiliary treatment, but it is only part of the treatment. The authors recognize this in the use of the word "abreaction," but do not give any definition of this term. In all cases falling within the group they designate there is a continual smouldering abreaction declaring itself to some degree. The use of any method to produce further abreaction is not, as was held during the last war, merely to "de-tension" by an escape of psychic pressure, but should have as its aim the gain by the individual of some significance of its causation and its suppression (defence mechanism against consciously knowing). This brings one to the main issue—always the same under any form of treatment that aims at lasting relief and control—namely, that of substituting a new significance or ideation with regard to stimulus and response and the concomitant reasoning of cause and effect. In order to do this it is necessary to employ two factors: (a) some definite psychopathology, and (b) an investigation of the fantasy-life in relation to the experiences of the earlier life-phases and functioning of the individual.

Everyone working with soldiers must have been struck by the difference between the toxic-exhaustive reactions of mere physical and physiological (metabolic) strains and stresses, which were adjusted in a few days, and the delay-action series of explosions which periodically erupt in the group of cases under review. Unless the earlier imaginative ideation or fantasy—a very real psychic phenomenon with potent motivation—is dealt with there is nothing to prevent the result of a purely “reconditioning” treatment from falling to pieces when later danger situations arise under circumstances where the individual realizes he is no longer in the safety-belt zone of a hospital with make-believe dangers. Conditioned states require constant reinforcement to keep them intact.

There appears to be a movement or policy afoot to deny the reality of psychoneurotic conditions. The civilian, who has been praised for his courage in the “front line,” is denied the right to a diagnosis of this condition, though those capable of making such a diagnosis are only too well aware of how many cases exist. Quite recently the *Times* has lent its columns to the movement (witness a leader “Health and Stress,” July 31). It is not a far cry from the civilian to the soldier, and signs are not lacking that the findings of E.M.S. psychiatrists are becoming unwelcome.

To the uninitiated or to those who would like to have it so this communication of the use of air-raid noises might be taken to be the main line of treatment. It would be a catastrophe if we regressed to an orientation to neurosis that prevailed during the last war, and the treatment of anxiety states were held to be only a reconditioning process.—I am, etc.,

Aug. 5.

J. C. MACKWOOD.

Mental Defectives in the Army

SIR,—After reading Dr. Esher's article in your issue of August 9 (p. 187), together with the editorial comment in the same issue, I believe the following remarks may be pertinent.

From experience at this colony of the capacity shown by mentally defective men to assimilate training in the simpler and semi-skilled trades, I should say that the mental age levels suggested for total refusal of enlistment and for enlistment into labour corps only are, each in its sphere, too high, though no one can quarrel with the principle of Dr. Esher's recommendation. It is possible that the use of the progressive matrices test in the Army (I believe this test is officially adopted) may account for the mental age levels of Dr. Esher's recommendation, for, using the progressive matrices test together with the older methods of assessment, I have never known the matrices test give the lower mental age figure, and have often noted that it gives a higher.

Accepting the principle, however, surely it would be good and practicable policy that all men refused enlistment by military service medical boards and those discharged as untrainable by reason of mental deficiency should be at once notified to their local mental deficiency authority. Their subsequent careers could then be supervised and, if necessary, controlled in the interests of social welfare and eugenics.—I am, etc.,

Brentry Colony, Bristol, Aug. 12.

JAMES JOHNSTON MASON.

Home Guard Medical Supplies from Canadian Red Cross

SIR,—You published some time ago (April 19, p. 604) a letter from the senior medical officer, Kent Zone, Home Guard, on a local scheme for the collection of Home Guard casualties in the event of invasion. The following further details, especially the equipment of these casualty collecting posts with medical supplies through the generosity of the Canadian Red Cross, may be of interest.

In that part of Kent with which I am associated a total of 180 posts have been established at farmhouses, private houses, churches, schools, garages, country inns, etc., no one being more than a mile from its neighbour. At the time the scheme was drawn up there was no indication from the War Office that any medical supplies would be forthcoming, and certainly not on the gigantic scale envisaged in those early days when a medical service for the Home Guard came into being. I was fortunate enough to obtain an interview with Colonel Scott, English Commandant of the Canadian Red Cross in this country, who was immediately sympathetic, and said he thought

supporters of the Red Cross in Canada would be more than pleased to know that some of the medical supplies and comforts they had so generously provided would be at the service of Home Guard casualties in this country. There and then he produced long lists of available Canadian Red Cross materials, and together we went through those lists with a view to picking out items most suitable for the collecting posts.

The next thing was the arrival at my headquarters of eighty packing cases full of medical stores, and 100 empty packing cases as well. With several other medical officers and a large working party of officers and men of the Home Guard, Whit Sunday was spent opening the Canadian cases and sorting out the contents so that each of the 180 cases should contain a like amount of first-aid supplies. Each case contained a large sterile tin, hermetically sealed, with several hundred dressings, a generous supply of blankets, triangular bandages, T-bandages, roller bandages, together with socks, pyjamas, pneumonia jackets, mattress pads, and surgical towels.

Each of the 180 crates was securely sealed and two stencils were used to paint on the following messages: (1) “Property of the Canadian Red Cross”; and (2) “Home Guard Dressings—for use in invasion only.” Thus every recipient knows to whom it really belongs, and exactly to what purpose its contents are to be put. They have also been informed verbally and by letter that if the contents are not used for the specific purpose for which the Canadian Red Cross granted them, they will have to be returned in good order to their generous donors. Since then a further small package has been sent to each post, and this contains the following: 10 grains of morphine in tablets (each containing 1/3 grain) suitable for placing under the tongue, a sterile tin containing several yards of vaselined gauze, and a dusting bottle containing a quantity of sulphanilamide powder. We have again to thank Colonel Scott and the generous people he represents for the last of these three items; the first two we were able to purchase thanks to the generosity of Mrs. M. F. Buckingham and a small contribution from each local district battalion fund.

Thus anyone who is wounded or injured or burned by flame-throwers in this part of the country will not have to walk, crawl, or be carried more than half a mile before adequate first-aid comforts will be available at a post, the exact location of which each man will be aware of beforehand. It should work out, then, that all wounded will be collected under one roof in each hamlet or village or district, and while the stress of battle continues wounds will be dressed, fresh clothing applied, pain alleviated, burns will receive antiseptic dressing and given suitable covering, and untold suffering avoided and lives saved, until such time as roads become passable for medical officers or ambulances. Thanks to the generosity of the Canadian Red Cross, the country areas of three hundred square miles of England which might, in time of combat, be quite beyond the reach of any other organization, have now the best-equipped casualty collecting posts for the Home Guard in the whole country. Each man is being taught as much first aid as possible so that he may help his wounded friend, and many of the posts are staffed by housewives who have had considerable nursing or first-aid experience.

I wish to express the warmest and deepest thanks of every member of the Home Guard, from the Commanding Officer and Senior Medical Officer down to the most recent volunteer, to our Canadian friends who, by the generous contribution of their time, their goods, and their money, have made possible this munificent gift, and all that it means to us both now and, perhaps even more, in the future.—I am, etc.,

London, W.1, Aug. 6.

A. LAWRENCE ABEL.

Treatment of Bacillary Dysentery

SIR,—Perusal of recent arrivals of medical journals (*Lancets* and *British Medical Journals*) reveals three communications in which bacillary dysentery is discussed, and which I feel call for comment. One is the annotation in the *Lancet* entitled “Chemotherapy inside the Bowel,” another Sir Philip Manson-Bahr's article “The Prevalent Diseases of Libya,” and the third Drs. Reitler and Marberg's “Note on the Treatment of Acute Bacillary Dysentery with Sulphapyridine” in the *British Medical Journal*. The first two are in some respects misleading, to my way of thinking, and the third requires to be seen in its proper perspective.

Sir Philip Manson-Bahr refers to bacillary dysentery as "this acute and often fatal disease," and proceeds to say: "It is to be hoped that lessons learned in the desert campaigns of the last war will not be overlooked in this—that bacillary dysentery (Shiga, Flexner, and Schmitz infections) will be readily recognized and promptly dealt with by well-accredited remedies." Practically the only accredited remedy he cites is anti-Shiga serum in Shiga infections, while he mentions as modern developments blood transfusions, and the use of "targesin" and of Moro's apple diet. But there is not one word about the most dramatic of all modern developments—phage therapy.

The theme in the annotation is the use of sulphanilamide preparations. Referring to sulphanilyl-guanidine, it is stated that "its most remarkable property is its bactericidal action on the coliform organisms in the mouse intestine." And passing from mice to man it is inferred that "if this activity extends to the intestinal pathogens the drug may prove most valuable in the treatment of infections localized mainly or entirely to the intestine, such as bacillary dysentery and cholera." All delightfully hypothetical! Further, there is the important admission contained in the two sentences: "Acetylation occurs, as with other members of the series, and the conjugated compound is probably concerned in the toxicity of the drug on the kidney. The authors believe from their tests that the toxicity of sulphanilyl-guanidine is of the same order as that of sulphyridine or sulphathiazole, and maintain that with reasonable care the risk of toxic effects will be small because so little of the drug is absorbed."

The third communication stands out quite apart as something concrete and helpful, being a record of results (twenty cases) with sulphyridine treatment, which the authors state to be "so uniformly good even in the severe cases" as to justify publication. The table accompanying the communication certainly tends to establish that sulphyridine can cure acute and chronic bacillary dysentery.

As a convinced adherent of phage therapy, a respect for the opinion of others and the good faith of all leads me to ask. Where does phage therapy really come in and why is it missing from these pictures? It can emphatically be stated that the treatment of acute bacillary dysentery presents no problem whatever provided one has at one's disposal good phage preparations and knows how to use them. That at least is my experience, and that of quite a number of medical practitioners in this city. Why under such circumstances, then, should valuable lives be lost or invalidated among our troops while the ideal sulphonamide derivative is being sought for (vide the annotation), although now possibly found (Reitler and Marberg's communication), when phage preparations rightly used can eliminate all this? Is it because experts at home and their representatives in military guise in the Near and Middle East remain unconvinced about the efficacy of phage therapy mainly because they believe it to be discredited? It is the easiest thing in the world to discredit phage. Bearing in mind its biological and conditional nature, it is easy to foresee that among other ways such a risk will be run whenever (1) the impossible is asked of it; (2) poor or ill-adapted phage preparations are used; and (3) nursing and diet are inadequately attended to.

For instance, it is unfair and rather asking the impossible of phage to expect it to cure other than the early acute case of bacillary dysentery, due to one or other of the classical or recognized organisms, since commercial dysentery phage preparations are prepared as a rule at the expense of classical organisms only. The concomitant organisms, which later often supplant the classical ones when the case has proceeded to gross ulceration and infection of the ulcers by secondary invaders, are not to any appreciable extent covered by many phages. To ensure the best results, phage preparations to cover such supplementary organisms should therefore be available if the case has proceeded at all beyond the initial stage. The simultaneous use, therefore, of phage preparations, based on a selection of representative bacterial substrates that are so far as possible 100% lysed *in vitro*, affords a chance of forestalling and dealing with virulent concomitants by direct lytic action (d'Herelle), by possible antiviral action (Besredka), and by avirulent bacterial transformation action (Compton). That is what is meant by the note of warning about poor or ill-adapted phage preparations. Finally, by attention to nursing and diet

is meant that the acute patient should whenever possible be put to bed to reduce to a minimum his energy and food requirements; so that he can be put on a starvation diet of Vichy, Evian, or other mineral water for twenty-four hours to rest as much as possible the diseased bowel while the phage is carrying out its beneficial action (a 2-cm. ampoule of a good dysentery and meta-dysentery phage preparation, alternating with a like ampoule of a good *Salmonella* and coliform phage preparation every four hours during the first day; with a similar "follow-up" on the second day if required).

The paper by Reitler and Marberg is particularly interesting in that it appears to establish a future for the sulphonamides in bacillary dysentery. Their table of results seems to indicate for cases admitted to hospital on the first and second day of the disease, with treatment beginning on the second and third day, an average reduction in daily motions from twenty-two to six after twenty-four hours' treatment. With the perfected phage preparations now being employed by us we estimate a still more dramatic reduction, without any such qualification as "tenesmus . . . felt for one or two days more by some patients," as indicated by Reitler and Marberg. Tenesmus, in fact, is one of the first symptoms to disappear with phage treatment. This means that good phage preparations act more quickly and thoroughly than sulphyridine. Reitler and Marberg's figures suggest to me that the sulphonamides may find a useful place in the treatment of the chronic case (that may not respond immediately to phage), however satisfied they may at present be with sulphyridine in acute bacillary dysentery. In any case the introduction of sulphonamide therapy lends a reasonable hope to the emptying of wards of military hospitals which have hitherto been needlessly clogged with cases of dysentery because of no phage being available for immediate use at advanced field outposts, and which, I venture to suggest, might more rightly be labelled "neglected dysentery," with all that that may mean in a limitation of the suffering and invalidism from this often fatal disease.

Another advantage of phage therapy is that it is quite harmless, having no deleterious effect, so far as is known, on the kidney or other tissues, as may happen with sulphonamide therapy. In fact, this is one of the strange things about the phage lysis of toxic bacteria. After lysis the soluble lysates rich in bacterial disintegration products appear to be denuded of toxicity and can be injected intravenously with impunity. We at times utilize this property in these laboratories for the initial immunization of rabbits to obtain specific agglutinating serums when the antigens to be injected are at all toxic.

If the Service authorities have any doubt concerning the accuracy of the phage-therapy facts of this letter I am prepared, with the sanction of the Alexandria municipal authorities, to supply perfected phage preparations sufficient to treat twenty acute cases of bacillary dysentery, of not more than two to three days' duration from the onset of blood and mucus symptoms, in any military hospital in Alexandria, and can guarantee perfect results if the dietary instructions are adhered to during the two to three days of cure. With, I should hope, the return of the men to duty on the third or fourth day from the beginning of treatment.—I am, etc.

ARTHUR COMPTON,

Director of Laboratories, Alexandria Municipality.

MAY 24.

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- ² *Ibid.*, 1941, 1, 253.
- ³ *British Medical Journal*, 1941, 1, 277.
- ⁴ *The Bacteriophage and its Behaviour*, 1926, Baltimore.
- ⁵ *Etudes sur l'immunité dans les Maladies Infectieuses*, 1928, Paris.
- ⁶ *Ann. Inst. Pasteur*, 1935, 54, 725.

Unabsorbable Suture Materials

SIR.—A useful point to remember is that linen thread may be boiled in water which is alkaline without becoming rotten, whereas the slightest trace of alkali or even of alkaline earths rots silk with great rapidity. The late Sir Henry Gray habitually used linen thread for his operative work over a period of some twenty-five years with uniformly good results. He gave up using silk for the reason stated and for other reasons about the year 1912.—I am, etc.

London, W.3, July 31.

G. H. COLT.

Deaths on the Table

SIR.—The article on anaesthetics in your issue of August 9 (p. 207) is presumably written by the same gentleman who wrote the excellent letter which was printed in the *Journal* of June 7. This article on anaesthetics appears to be of paramount importance. I am not a professional anaesthetist, but I have given anaesthetics and have seen at close quarters very many given. At an operation I am, rightly or wrongly, always more interested in the anaesthetic than in the operation. I agree with Dr. Elam that some of those cases he mentioned could have been saved, and this applies probably to a good many other "deaths on the table." A case is made out for an immediate and close investigation into the subject of surgical anaesthesia. It is noticeable that in all the cases given by Dr. Elam gas-oxygen anaesthesia is involved. One is prompted to ask why the good old safe open-ether method is relegated to the hoary past to make way for a complicated engineering robot which, for all its battery of bottles and shining chromium, has not yet acquired all the virtues of a knight in shining armour.—I am, etc.,

London, N.W.11, Aug. 8.

L. S. WOOLF.

SIR.—The article on deaths on the table (August 9, p. 207) appears to be rather inadequate. After commenting on the possibilities of avoidance, your contributor then proceeds to give a somewhat confused account of a number of such deaths, with no attempt at differentiation between true anaesthetic deaths and those occurring while the patient is under the influence of an anaesthetic—a very different thing. Unless this is done it is impossible to get a clear view of what, after all, is the principal object—prevention. May I suggest that we should aim to have a clear view of the possible causes of death and a well-prepared plan of prevention, which should come into action at the earliest sign of impending collapse. I seem to remember that Hamilton Bailey emphasizes the necessity for such a plan in his excellent book *Emergency Surgery*.

Most anaesthetic deaths (including the examples given in your article) fall into one of three groups: (1) Deaths due principally or entirely to the anaesthetic. (2) Deaths incidental to anaesthesia—for example, vomiting. (3) Deaths due essentially to the patient's general condition or to the condition for which the patient is undergoing operation.

In Group 1 many deaths are unavoidable, but surely choice of anaesthetic, which calls for the fullest exercise of the anaesthetist's powers of judgment, could be the means of saving many lives. For example, in Case 6 quoted in Dr. Elam's article, the use of a local anaesthetic, which appears to be largely neglected in this country although widely used on the Continent, would seem to have been indicated. Again, correct premedication is of importance. Morphine, for instance, should usually be avoided, since by its depression of the respiratory centre it undoubtedly leads to unsatisfactory induction in many cases, particularly in the hands of inexperienced housemen. This may then be a factor in "ringing about a fatal issue, since there is a temptation to give larger doses of anaesthetic, although the real cause of the "lightness" is not lack of anaesthetic but shallowness of respiration.

In the second group deaths produced by vomiting, etc., can in some cases be prevented, as Dr. Elam points out, by pre-operative stomach washouts and the use of the most suitable means of anaesthesia.

It is in the third group—those cases in which the patient's general condition is adverse—that most can, and should, be done in the way of prophylactic treatment. Most of us now must have seen many air-raid victims who would never have survived successful surgery but for the efforts of the resuscitation squad. Surely the same principles of treatment should be applied to the civilian case. Pre-operative saline, plasma, or blood is frequently life-saving, and every anaesthetist should be able to direct administration before or during the operation. Such preventive treatment is physiological, and is calculated to meet with a greater measure of success than the tardy resort to stimulants, many of which have been shown, experimentally and in practice, to be of doubtful value.

As an example, may I be permitted to mention a patient who came under my care as resident surgical officer in an E.M.S. hospital. An aircraftman was admitted from an R.A.F. sick

bay with right pyonephrosis. The kidney was completely disorganized, and after chromocystoscopy had shown the contralateral kidney to be functioning satisfactorily, nephrectomy was decided upon. His general condition was poor, and before operation his temperature was 103° and his pulse 120. During the operation his condition rapidly deteriorated, and towards the end his pulse was imperceptible and his breathing shallow in the extreme. The wound was rapidly closed by through-and-through sutures, by which time breath sounds and movements could scarcely be detected and pulsation was absent everywhere in the systemic circulation. The apex beat was only just audible with the stethoscope, and the pupils were dilated and fixed. However, the administration of plasma was followed within twenty minutes by an almost miraculous recovery, and after a quantity of blood had also been given the patient was returned to the ward in excellent condition. But how much better it would have been had this collapse been prevented by the earlier administration of continuous physiological fluid!

Particularly in intestinal obstruction and urinary retention is an appreciation of the biochemical changes and their application to pre-operative treatment likely to repay the surgeon. In this group also come those cases where choice of a suitable operation may make all the difference to the patient's prospect of recovery. Included here are the rapid guillotine amputation, two-stage methods where feasible, etc.

It is a pleasure to me to record my thanks for permission to quote the case mentioned in this letter to Mr. Hugh Donovan and Mr. Dudley Marks, advisory surgeons to this hospital.—I am, etc.,

Aug. 11.

F. G. HOLLANDS,
R.S.O. E.M.S. Hospital.

Ether Convulsions

SIR.—I would be grateful if you would permit me to comment on some of the statements put forward by Mr. Hamilton Bailey (July 5, p. 32). The fact that a cerebral depressant, such as evipan, is effective in ether convulsions and convulsions due to novocain does not imply, necessarily, a similar origin to these convulsions. Inadvertent intravenous injection of a local anaesthetic will tend to give rise to syncope or convulsions. Mr. Dickson Wright suggested nembutal in the treatment of ether convulsions some years ago. Evipan has been advocated by many observers.

In 1928 Dr. Hadfield noted that the heat factor appeared to occur in a number of cases of ether convulsions, but the significance of this, if any, was not stressed. I have elaborated on this factor in several papers, and suggested that "these cases may be due to the combination of toxæmia, dehydration, hyperpnoea in a warm atmosphere, together with partial anoxæmia, difficult to avoid in anaesthesia, all tending to produce sufficient electrolytic imbalance to increase muscular and nervous excitability." Anoxæmia as a cause appears to have received special attention in American clinics, and a personal observation of cases deprived of oxygen would tend to make me appreciate the importance of this as a contributory factor.

I append a short bibliography which would apply more especially with regard to the points raised by Mr. Hamilton Bailey.—I am, etc.,

July 7.

F. W. G. SMITH.

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Communal Feeding in Schools

SIR.—I see in the *Journal* (August 9, p. 211) that Dr. Letitia Fairfield advises the medical profession to "think twice before supporting a demand for communal meals as a normal thing for all children in peacetime," though she admits that "under the stress of war conditions school feeding has become a general necessity," and that "all would agree that it should be made an opportunity for teaching the value of good cooking, the wise selection of foods, and a civilized manner of life." Why, then,

does she virtually advise us to oppose communal feeding in schools in peacetime? The reasons Dr. Fairfield gives are approximately as follows:

1. She regards the taking of meals together as a strong binding element in family life, which she fears may be lost or weakened, together with parental authority and family discipline. If these fears were well founded one would expect to see the dire results of communal feeding on those who have "suffered" from it—namely, the children of the middle and upper classes, the majority of whom spend their most impressionable years in communal living at public schools. Yet the disastrous effects which Dr. Fairfield fears have never become manifest under the public school system, whose products are alleged to be the backbone of the nation.

2. She thinks our aim should be to help the mother in her task of feeding her children, but not to take it out of her hands altogether, which she fears would be the end-result. Why the end-result should be considered calamitous even if it came to pass is not clear. However, Dr. Fairfield agrees that the mother should be helped in her task of feeding her children, and I ask, In what better way can we help her and her children than by the provision of properly balanced school dinners? In this way we can make the best of both worlds, for "dad" and "mum" can still preside at breakfast and tea without loss of vitamins and the other essentials of a healthy diet so difficult to ensure when all the meals are taken at home. It is true that man does not live by vitamins alone, but it is also true that he cannot live without them, and suffers from a shortage of them and the other essentials of a properly balanced diet.

According to the figures given by the Chief Medical Officer of the Board of Education in his annual report for 1938, 11.3% of the school children seen in routine medical inspections were slightly undernourished, and as there is no reliable means of detecting undernourishment in its early stages or when the diet is not grossly deficient, the total number of undernourished school children may easily be 20% or more. Therefore the only real solution of this nutrition problem lies in compulsory and universal school dinners. It is too important for the nation as well as for the children to leave to chance any longer. Moreover, there is no reason why school dinners should appreciably increase the taxpayers' burdens, as the parents of all but necessitous cases should be required to pay the full cost, which would probably be considerably less than the cost for which they could provide a similar meal at home.—I am, etc.,

G. W. FLEMING,
Medical Officer of Health.

Gosport, Aug. 12.

Aggregation of Toddlers

SIR.—In Dr. James Kerr's letter in your issue of July 26 (p. 137) occurs the sentence: "Crèches and day nurseries should not be tolerated in any civilized communities . . . except under the inevitable compulsion of war." Since the extension of crèches and day nurseries is one of the urgent requests to local authorities made by the Ministry of Health at the present time, it might be of interest to consider the objections raised more closely, and to try to assess the experiences already gained in this field in peacetime conditions both in this country and in Soviet Russia, where the system has been widely used for many years.

Dr. Kerr appears to be in full support of nursery schools, which he believes to be "the right of every child from 2 to 5 years of age," and records the benefits of the system in the greater freedom from infections, debility, and accidents. Further, he stresses the biological necessity for plenty of space and freedom where children can be fed, exercised, sleep, grow, and educate themselves into the membership of a child community. His objections to crèches and day nurseries appear to be based on the greater risks of infection in younger children, but he points out, nevertheless, "that it is, however, the homes themselves which are the chief distributors of early infections." Further, he makes a plea for the early immunization (at 1 year) of children for diphtheria, which he regards as of much greater value than that of the school child. This surely is something which comes within the scope of the crèches and day nurseries, and could be extended to cover the risks of infection from whooping-cough and measles (pooled adult serum for prophylaxis). My own experience in peacetime crèches and day nurseries in Edinburgh, particularly in slum districts where large

families predominated, was consistently favourable, as evidenced by the improvement in height, weight, and physique of those children attending them. That the mothers were of like opinion was shown by the long waiting-lists for admission. These experiences are borne out by numerous other public health workers in different towns.

In Soviet Russia, where perhaps the majority of women prefer to continue their careers after marriage, the number of crèches and nursery schools is proportionately large—840,000 in urban areas in 1939 and a million in rural areas. These latter include the seasonal nurseries, and also the large caravans in charge of a trained nurse, with all the usual equipment, which follow the mothers out to the fields so that they may feed their babies at the appropriate times. A doctor and trained nurse are always attached to these crèches, and a routine examination of every child is made each morning on admission. Pulse and temperature are taken and the throat examined. In this way it is possible to prevent the outbreak of epidemics of colds, influenza, etc., as well as the more serious infections, and to maintain constant supervision of the health of every individual child. As a prophylactic measure against summer diarrhoea, etc., and tuberculosis many of the crèches and nursery schools move out of the large towns into the countryside for part of the summer. This measure has proved of considerable value in present circumstances, since children and mothers as well as staff have long been accustomed to the idea of evacuation to the countryside and seaside during the summer months. The success of day nurseries and crèches, as well as of nursery schools and kindergarten, is reflected in the health of the child population, the fall in the mortality and morbidity rates of infectious diseases, and in the rate of child mortality in the U.S.S.R., which has fallen by half since this policy was instituted in 1917.

In view of these experiences under peacetime conditions, both in this country and abroad, I believe it should be possible to view the extension of the crèche and day nursery system not as a necessary evil but as a useful and permanent contribution to child welfare and the gradual development of preventive medicine in this country.—I am, etc.,

JOAN K. MCMICHAEL, M.B., Ch.B.
Assistant M.O.H.

Southall, Aug. 17

Malnutrition

SIR.—What are we to think of Lord Woolton, who said breezily at Cheltenham last week that there was no malnutrition in this country? Careful investigations have found that one-third of the children born in this country are born into families that have not enough money to give them adequate food. A great social reformer has said that children are the greatest single cause of poverty in this country. Have our rulers not yet realized that it is self-satisfied short-sightedness of this sort (to call it by its most polite name) which caused Lord Baldwin to deceive himself and us when he said he was keeping our Air Force equal to that of Germany, and poor Mr. Chamberlain to trust in the mesmeric quality of his eye to force Hitler to keep the promises he gave him at Munich, when the latter had already broken all the promises he had made before then.

If there is no malnutrition, why do children from our big cities flourish so radiantly in the country after they have been there a few months? Why are our soldiers so undersized compared with the Australians? As doctors, we must never cease to din into the heads of our rulers that no family of five persons can be adequately nourished unless its gross income exceeds 60s. to 65s. per week. If to enter a State Medical Service is to be governed by such people as these rulers let us remain instead in our present middle.—I am, etc.,

Colchester, Aug. 11.

M. E. LAMPARD.

Diet and Teeth

SIR.—In his letter to you of August 9 (p. 212) Mr. Griffith Evans asks: "Has calcium nothing to do with teeth?" He does not make it quite clear whether he is discussing the effect of calcium on the development of teeth or on the incidence of dental caries. As regards their development, Sim Wallis, Fish, and others have shown that only a diet with an extremely low calcium content will adversely affect tooth structure, for the developing teeth have a priority over the bones and other tissues

in receiving whatever calcium is contained in the diet; so that only in gross cases of rickets are rickety teeth to be found, and while no one imagines that the diet of the poorer classes is perfect to-day, cases of rickety teeth have been very infrequent for years.

Dental caries is a saprophytic phenomenon caused by the penetration of bacteria into morphological crevices and permeable enamel faults. These crevices and faults are common to all mammals, but caries is not, because the bacteria concerned occur to any great extent only in man. A hereditary factor appears to govern the depth of the crevices and the number and extent of the enamel faults, as caries-free teeth often run in families; such families are to be found in all classes irrespective of diet, hygiene, vitamins, sunshine, etc. Because of their shape, which does not easily lead to food lodgment, rickety teeth are often less prone to caries than teeth of a normal dentition. The other main factors controlling the incidence of dental caries are the amount and kind of carbohydrate food eaten because of its bacteria-culturing properties in the mouth, the efficiency of oral hygiene, and an immunity factor sometimes present apparently in the saliva.

Thus, unless the standard of national diet falls to a level that was found only among the very poor in the last century, then the national loaf will have nothing to do with teeth, and even if a generation grows up with rickety teeth it will probably have a lower incidence of dental caries than the present one.—I am, etc..

Berkhamsted, Aug. 9.

JAMES CAMPBELL.

Chronic Sick in Bombed Towns

SIR.—Sir Frederick Menzies has made an eloquent plea on behalf of the "chronic sick" patients in the institutions of our towns that have been subjected to enemy bombing, urging that prompt and energetic measures should be taken for their removal to places of greater safety. I wish to add a plea for the still larger numbers of "chronic sick" patients living in their own homes in those areas. Their danger may not be as great as that of those receiving institutional care, but they are subjected to unnecessary risks and to privations and discomforts due to war conditions. Early in the war you published a letter from me pointing out the fact that no special steps had been taken to minimize the risks they ran. At that time there were no A.R.P. shelters for those unable to make use of the Anderson or the public shelter; no hope of evacuation to safer areas; no respirators available for those unable to use the ordinary civilian one; no special rationing. Nor can we forget the coal muddle during the first severe winter, when many were without coal for several weeks and some were reduced to breaking up their scanty furniture to provide heat for cooking and for warmth. Not till eighteen months had passed was there any alleviation of their lot, and then only in a few directions. At the same time a word of praise is due to many of the air-raid wardens, who gave special care and encouragement to the crippled and bedridden during air raids.

Much still remains to be done before we can feel satisfied that the "chronic sick" are receiving the care that is their due. The general practitioner is, in the main, responsible for their medical care in their homes; war risks are the responsibility of the community, and in these cases of the local authority. A census of the "chronic sick" is needed first of all. As a matter of fact, where there is an efficient A.R.P. service the necessary data could no doubt be obtained from the air-raid wardens. Every individual patient should be visited and assured that his safety and comfort are not being neglected. Many of the sick poor live lonely lives, occupying a single room, often in an upper story, and steps should be taken to persuade them to remove to a room on the ground floor. The provision of indoor shelters for all such sick persons is essential, and where the patient has no friend to help him to get into his shelter during air-raid alarms a warden should be available to help him and to stand by and cheer him.

On no section of the community does the system of rationing bear more harshly than the sick poor; when the rations are obtainable only with difficulty the sick poor may have to go without their share, and they, for various reasons, are often unable to get a fair share of unrationed foods as well. Many of them suffer from impaired appetite and digestion, and it is most unfair that arrangements have not so far been made to increase the amount of some of their rations. I submit that special issues

of such articles as eggs, oranges, tomatoes, etc., should be made available to them as well as to children. For those, too, who are willing—though these are probably a minority—evacuation to a safer area where special care should be provided for their comfort is the best solution of the problem.—I am, etc.,

Manchester, Aug. 10

ARNOLD GREGORY.

Lectures on First Aid

SIR,—I have recently attended a lecture in a country district by a medical officer of the Ministry of Health on what was called "Wartime First Aid." The lecturer divided treatment into four parts—haemorrhage, asphyxia, unconsciousness, and fractures. The tourniquet was mentioned and condemned, compression of the femoral and subclavian arteries being advised. Apart from the difficulty of finding and compressing the femoral artery in a big muscular man, it will be impossible to compress it efficiently while the patient is being lifted on to the stretcher, conveyed to and carried in the ambulance, especially in the upper compartment, while on the stretcher with its slung bed, and finally taken out of the ambulance and carried along corridors to a ward. The same applies to compression of the subclavian, and rather more so, as the patient will be lying down. A rubber tube, or preferably a band three or four feet long, with tape at one end, is all that is required, and it is a pity that the Government cannot see its way to supply every air-raid warden and certain other A.R.P. personnel with one. It is not foolproof, but with proper instructions and careful watching it is the safest thing.

Splints came in for general dismissal, especially the long Liston. Possibly in large towns with many casualties there may be no time to splint a limb, but in scattered country districts the case is different. Fractured femurs, especially if compound, in dirty surroundings are major casualties, as was discovered rather late in the last war, and the mortality and morbidity from them until this was recognized were very considerable.

Shock was included under the head of unconsciousness, but shock should have been recognized and treated before unconsciousness arises, if it does at all; unconsciousness generally means something more serious than shock.

It is to be remembered that roads may be blocked by troops or craters, and cases may have to be brought across country, taking time and causing jolting, and there is no question that the "old-fashioned" methods, as the lecturer called them, of the British Red Cross and St. John will still be carried out and many lives saved thereby.—I am, etc.,

HOWARD M. STRATFORD, F.R.C.S. Edin.

Beckley, Sussex, Aug. 9.

Penetrating Wounds of the Abdomen

SIR,—Having had some experience of penetrating wounds of the abdomen, I was glad to see this straightforward report of a case published by Mr. Geoffrey Parker, though at the same time a little surprised that it should still be thought necessary to point to its lesson.

For the first ten months of the last war I was surgeon to a base hospital at the base in Mesopotamia, and owing to difficulties in transport we seldom got cases in hospital under three days from the time of their being wounded. Of the few abdominal cases we did get, all died (peritonitis, etc.) save one, and he had saved himself by developing a faecal fistula in the caecal region. All the others had died either early from shock or bleeding, or from peritonitis during transit to the base. None was operated on. I am told that something of the same sort has been happening in Africa. At the base hospital it was too late, and, moreover, we were still labouring under the old rule of "Leave 'em alone."

But towards the end of 1915, during the siege of Kut, I had the same equipment but was now in the "front line," and so was able to receive the wounded often within a few minutes of their being hit. Indeed, as soon as we realized the importance of early operation, special arrangements were made to get "abdominals" in quickly, which also gave one a chance of operating at once on some cases of progressive internal bleeding (of which the pulse is the best indicator) and ligaturing the torn mesenteric vessels, apart from the damage to the gut itself.

As regards the point under review, I soon came to realize the danger of abstaining from operating on cases where one could

not be certain that penetration had not occurred, for even the most innocent-looking entrance wounds, without exit wounds, might be accompanied by extensive damage to the gut, and I emphasized this in describing some cases." Fraser and Bates, Russell, Gordon-Taylor, and others have also stressed the danger of leaving such cases alone. Indeed, "when in doubt, do a splenotomy" should be an axiom of surgical practice with those who have to do with these cases.—I am, etc.,

C. H. BARBER,

Lieut.-Colonel I.M.S. (ret.).

Thames, Aug. 5.

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- ¹ *Lancet*, Jan. 20, 1917.
² *British Medical Journal*, Jan. 6, 1917.

Mechanism of Inflammation

SIR,—Your leader (March 1, p. 321) on factors that participate in the process of inflammation has led me to draw attention to the following unconsidered situations. When a tissue is injured, resulting in a haematoma without breach of the skin, a serum can be extracted which greatly promotes the extent of the growth and morphological robustness of bacteria cultured therein, such as streptococci. Serum extracted from a twenty-four- or forty-eight-hour-old haematoma produces this effect when added to tryptic broth or blood agar plates as compared with controls. It appears that the inflammatory lysis which is an essential antecedent to repair promotes a process of autodigestion in the tissues affected, which is, in effect, analogous to that technically adopted in the addition of trypsin to the protein of a broth culture.

Such is a brief for the earliest possible sterilization of wounds before they become homologous culture media. This appears also to account, in part, for the high resistance of immobilized limbs, in that absolute rest entails optimum apposition of the histological elements of wounded tissues. This, theoretically, provides against repeated acts of lysis, which are made necessary by new adjustments called forth by fortuitous movements. A rule might be promulgated that bacterial fixation in wounds is, for lytic reasons, proportional to the time lost in sterilization.

In regard to the determination of protective leucocytosis in wounds, globulin agencies used for promoting phagocytosis have proved in my hands to lead on local use in wounds to a gross leucocytic exudate. This may be associated with a surrounding areola of hyperaemia and turgescence, suggesting that this agent should be diluted with normal saline before application. If an antitoxic serum with polyvalent properties, such as diphtheritic serum, be mixed with the globulin the acute inflammatory reaction is lessened, but the phagocytic process is still active. These recommendations are advanced as of possible value in adjunctive treatment of wounds emerging from the present war. The method just described was first tested in intractable ulcers with heaped-up rims resulting from a mixed infection by haemolytic types of both staphylococci and streptococci. Where these ulcers were confluent or were delayed in healing by the poor "subsoil" over the tibia, healing did not occur until the above measures were adopted. The infection described was caused by multiple sand-fly bites, which were later further complicated by carelessness in washing a purulent eczema of a type regarded as incurable in dogs, and for which the latter have always to be shot.—I am, etc.,

Melbourne, May 25.

FRANK TRINCA.

Sulphapyridine in *Brucella abortus* Infection

SIR,—I think Dr. Whittingdale, in his treatment of a case of *Brucella abortus* infection with sulphapyridine, may be doomed to disappointment unless he takes the precaution of repeating the course of treatment, as described by Richardson (*Lancet*, 1938, I, 495), after intervals of three and six weeks, in order to avoid relapses.—I am, etc.,

Wimfrith, Dorset, Aug. 10.

P. R. BOUCHER.

Sulphonamides and Sulphur

SIR,—The observations made by Dr. A. D. Hodges in your issue of July 26 (p. 139) are of considerable interest to those of us whose clinical observations have not lent support to the widely held views concerning the supposed association of sulphonamide cyanosis with salines or sulphur.

It might be pointed out that the administration of magnesium sulphate is not a means of giving sulphur, as Dr. Hodges appears to suppose, any more than can the phosphorus intake be increased by giving phosphates, glycerophosphates, or hypophosphites. If the administration of magnesium sulphate during sulphonamide therapy increases the incidence of sulphaemoglobinaemia, it must do so in some other way than acting as a source of sulphur, such as by hastening the passage of sulphur-containing foods along the alimentary tract before absorption of the amino-acids has taken place, and so resulting in an increased production of hydrogen sulphide in the gut from bacterial decomposition of the food proteins, where the more liquid contents may provide a more favourable medium for bacterial growth, as suggested by Archer and Discombe. The prohibition of eggs and onions during sulphonamide therapy is irrational, as it would seem doubtful if with normal digestion the production of hydrogen sulphide is decreased by their exclusion, and in any case other articles of diet contain as much sulphur as, or more than, an egg or two.

Sulphaemoglobinaemia is much less common during sulphanilamide treatment than is methaemoglobinaemia, and the latter is transient and may be prevented by the administration of methylene blue. With sulphapyridine and sulphathiazole sulphaemoglobinaemia is so rare that it can be ignored. Moreover, the exact nature of the association between sulphaemoglobinaemia or methaemoglobinaemia and cyanosis is obscure, and the apparent absence of both of these abnormal blood pigments in some cases of sulphonamide cyanosis has led to the view that the formation of a coloured pigment from the sulphonamide may be concerned. I suggest, therefore, that the question of salines and sulphur during sulphonamide treatment is of little importance, and, in fact, the cyanosis itself has received a degree of attention which is undeserved. It is unfortunate that the undue attention paid to cyanosis has been associated with inadequate realization of the importance of other aspects of sulphonamide toxicosis, such as the deposition of crystals in the urinary tract during therapy by sulphapyridine and sulphathiazole, and a fear of agranulocytosis resulting in suboptimum dosage of sulphonamides in the early stages of their administration, leading in many cases not to a lesser but to a greater danger of this form of blood dyscrasia.

In answer to Dr. Hodges's question, the formation of sulphaemoglobin has been studied both *in vivo* and *in vitro*, using, however, sulphur in an available form—that is, as the element or as a sulphide. Among other items which I feel are of practical importance in connexion with sulphonamide therapy are: (1) In proportion to body weight children tolerate sulphonamides better than adults. (2) Whereas all sulphonamides are specific for infections by the haemolytic streptococcus, sulphathiazole or sulphapyridine are the only effective drugs against the non-haemolytic streptococci. (3) Sulphathiazole frequently proves strongly active against staphylococci. My own experience, including experiments on myself, has been entirely consistent with a number of these views.—I am, etc.,

London, Aug. 11.

J. T. S. GIBSON.

Lack of Calcium

SIR,—With regard to the letter by Drs. Graham and Burrows (August 2, p. 176), I should like to point out that osteoporosis is generally considered to be due to a vitamin D deficiency. One of the cases reported by Meulengracht (*Acta med. scand.*, 1937, 92, 584) had actually had a satisfactory calcium intake. The history of these cases frequently reveals an unbalanced diet owing to some stunt dietetic regime. The fifteen to twenty million people who depend on the customary diet and whose calcium intake is supposed to be below requirements should show some "unsatisfactory condition of the bones."

In conclusion I should like to say that Major Lloyd George stated in Parliament on August 6, in reply to a query by Sir Ernest Graham-Little, that the fortified loaf does not contain added calcium. I hope the matter is now finally disposed of.—I am, etc.,

Liverpool, Aug. 5.

I. HARRIS.

SIR,—Dr. Harris in his recent letter defies anybody to produce evidence of calcium deficiency in adults. This is difficult, since minor deficiencies usually cause only slight disturbances, which usually pass unclassified.

During the past few months I have seen eight women in late pregnancy with varying degrees of oedema—five of legs and feet only, the other three more generalized. In all of these cases the blood pressure was normal or subnormal. In none of them was there any evidence of anaemia or of cardio-renal or venous damage or disturbance. Calcium with vitamin D was given by injection to three of them with a certain degree of improvement.

There have also been during the past few weeks quite a large number of patients attending surgery with severe reactions to insect bites—huge blisters and a great deal of swelling and inflammation. There may, of course, have been a particularly poisonous type of midge about, but calcium deficiency may also be a contributory cause. Unfortunately I have no scientific figures to back my contention.—I am, etc.,

London, S.W.16, Aug. 12.

HARRIS AVERY.

Thirst at Sea

SIR,—In Sir Leonard Rogers's letter (August 9, p. 211) there is an obvious fallacy in his suggestion that sea-water might be made potable by precipitating chlorides by chemical means. This would leave the "saline" content undiminished in terms of numbers of molecules present, and increased in terms of percentage of "saline" in solution. Thus, $\text{AgNO}_3 + \text{NaCl} = \text{AgCl} + \text{NaNO}_3$; or 59 grammes $\text{NaCl} = 85$ grammes NaNO_3 . That means that sea-water (approximately 3% NaCl) would now become 4.5% (approximately) NaNO_3 , and I submit that a solution of such strength might well be more harmful to the consumer than the original sea-water.

Nitrates of the alkalis in weak solution are well-known diuretics. Strong solutions of any salt irritate the gastro-intestinal tract, and Cushman (*Pharmacology and Therapeutics*, 1924, p. 300) has stated that this non-specific effect may be reinforced by some specific irritation in the case of nitrates, and that isotonic solutions of nitrates are but slowly absorbed by the bowel. A 4.5% solution of sodium nitrate would be even more slowly absorbed (if at all), and would likely produce nausea, vomiting, or diarrhoea, and thus inaugurate a vicious circle.

Mr. Biske's suggestion to use diluted sea-water to alleviate thirst is more worthy of experiment. But one could argue *a priori* that any addition of salt to the body (oral, rectal, etc.) would lead eventually in those deprived of water to an increased sensation of thirst, since this varies directly with the concentration of the blood. In haemorrhage, extensive burns, severe vomiting, cholera, etc., both salt and fluid are lost, and the rationale of the use of isotonic solutions is sound, as it is also in heat-stroke, where the body is deprived of much salt as well as fluid in sweat. There has been no loss of minerals in cases of thirst at sea unless these unfortunate people are adrift under a tropical sun.

The problem might be solved by the use of a copper or metal still, easily portable, and heated on the principle of a primus stove. The distress of the dry cracked mouth and tongue might be relieved temporarily by glycerin and lemon pastilles, but sugar-containing sweets should not be allowed.—I am, etc.,

Hull, Aug. 10.

R. HARDY.

Peripheral Nerve Injuries

SIR,—As you are no doubt aware the Ministry of Health has established three centres in England and two in Scotland for the investigation and treatment of patients suffering from peripheral nerve injuries: one of the centres is at the Wingfield-Morris Orthopaedic Hospital, Oxford.

Much useful information could be gained from the examination of men who sustained nerve injuries during the last war, but unfortunately the Ministry of Pensions has no separate list of these patients, and it is therefore impossible to get into direct touch with them. It is likely that many general practitioners have among their patients a few who have had nerve injuries. Would any doctor in the Oxford area who happens to come across such a case be kind enough to help us by asking the patient, should he be willing and able to spare the time, to attend here for examination? The best times for attendance are Monday and Tuesday afternoons. A small sum of money is available for paying travelling expenses.—I am, etc.,

Wingfield-Morris Orthopaedic
Hospital, Oxford, Aug. 12.

H. J. SEDDON.

Obituary

SIR ALFRED RICE-OXLEY, C.B.E., M.D.

Sir Alfred Rice-Oxley, who was formerly Physician-in-Ordinary to Princess Beatrice, died on August 10 at the age of 85.

Alfred James Rice-Oxley was educated at Doncaster Grammar School, Balliol College, Oxford, and the London Hospital. He qualified M.R.C.S. and L.S.A. in 1877, and in 1882 proceeded to the M.B. and the M.R.C.P. In 1890 he took the M.D. of Dublin University. At the London Hospital he gained scholarships in human anatomy and clinical medicine, and the gold medal in clinical medicine. After qualifying he was house-physician at the London Hospital and at the Radcliffe Infirmary. He was honorary medical director and acting physician to the Princess Beatrice Hospital for Wounded Officers and the Dorchester House Hospital for Wounded Officers; he was also physician to St. George's and St. James's Dispensary. Sir Alfred was a member of the Council of the British Medical Association from 1910 to 1912. Subsequently he served on the Central Ethical Committee and the Committee on Lunacy Law and Mental Disorder.

Among other public offices Sir Alfred was president of the West London Medico-Chirurgical Society, vice-chairman of the Princess Louise Kensington Hospital for Children, and chairman of the Society of Yorkshiresmen in London. He was a member of the Order of Isabella the Catholic, and in 1927 received the *Légion d'Honneur*. He was three times Mayor of Kensington, and in 1922 was knighted. Sir Alfred was especially well known for his municipal work: he was a J.P., a trustee of the Camden Charities, president of the Kensington Council of Social Services, and chairman of the Leighton House Society. In 1923 Lord Phillimore, on behalf of the Royal Borough, presented him with his portrait in recognition of his many public services.

Lady Rice-Oxley died in January of last year. There were four sons of the marriage, of whom the second, Dr. D. G. Rice-Oxley, is Surgeon-in-Ordinary to Princess Beatrice.

The following is an appreciation from a former colleague:

Alfred Rice-Oxley practised for so many years in Kensington, and was so prominent in local government affairs there, that few now remember that he originally began practice across the river—I think in Clapham or Wandsworth. For all his long experience of public affairs, he retained a certain appearance of diffidence in putting forward his views, both in public and in private; this was probably due not so much to indecision or woolly thinking as to innate courtesy towards other people, though it did give the impression sometimes that he hardly knew his own mind. He had great sympathy with, and a benevolent disposition to, his younger colleagues in practice; and he was often known to offer words of encouragement just when they were most needed. Mayor of the Royal Borough of Kensington for three years (1919-22), he remained a valued member of the Public Health and Maternity Committee there long after he could well have pleaded that he was due for a respite. The list of his public activities is indeed a lengthy one, and it may safely be said that few members of the profession have done so much in local politics and at the same time made so few enemies. He was not a fluent, nor even a good, speaker; but always created conviction of his complete honesty and disinterestedness among his hearers—no slight matter when political feelings ran

high, though as a rule he steered as clear as he could of controversial topics. He was very proud of his Yorkshire origin and ancestry, and especially of Doncaster, where he had his boyhood's education. No account of his career would be complete without mention of the mutual devotion of Sir Alfred and his wife, who died only a year and a half ago after well over fifty years of happy married life. She helped him in his public duties as well as in private life, with a gracious presence and personality which Kensingtonians were not slow to recognize and appreciate.

JOHN MORGAN O'MEARA, M.D.

We regret to record the sudden death on August 10 at Luton, from cerebral haemorrhage, of Dr. J. M. O'Meara. He was 59 years of age.

John Morgan O'Meara was born in Lincolnshire, and received his medical education at University College, qualifying M.B., B.S. in 1905 and proceeding to the M.D. of London University three years later. After holding house appointments at Wolverhampton General Hospital and Tottenham Hospital he started in general practice at Luton, where he was soon joined in partnership by his brother, Dr. Hubert O'Meara. During the war of 1914-18 Dr. O'Meara volunteered for service in the R.A.M.C.(T.). He served in France, Gallipoli, Egypt, and Palestine until the end of the war, and returned home with materially impaired health from which he never fully recovered. He acted for many years as honorary medical officer on the staff of the Bute Hospital, Luton, and was secretary to the Medical Advisory Committee of the hospital. He relinquished this post when he was appointed in 1932 part-time medical officer to what is now known as St. Mary's Hospital. Nearly two hundred in-patients came under his care, and they now became the chief interest in his life. He gave devoted service to the care of these people, among whom there were many old, infirm, and acutely ill. He became a member of the British Medical Association in 1910, and was a regular attendant at divisional and branch meetings. He served on the Bedfordshire Panel Committee from its inception until the time of his death.

Outside his professional career Dr. O'Meara's chief interest was centred in cricket. At one time he played in a local team; he was an authority on the rules of the game and assisted in coaching the Luton Modern School, at whose first-eleven matches he was invariably present. He was a bachelor, and his life was devoted to his patients, who will miss him greatly. He was in harness to the end, being actually out on his professional rounds a few hours before his death.

W. PARRY MORGAN, M.D.

V. Z. C. writes: The late Dr. William Parry Morgan was a man whose modest and retiring disposition tended to prevent the immediate recognition of his many talents. He had an expert knowledge of mathematics and physics, which, at an early stage in his medical career, helped him to devise an improved apparatus for inducing artificial pneumothorax and led him to conclude that it was safe to induce bilateral partial pneumothorax. His work in proving the possibility and safety of this latter procedure did not at first gain immediate acceptance, and now that the technique is well established it is only just that Parry Morgan's pioneer work should be recognized. He was very fond of music, and although almost entirely self-taught was no mean performer on the piano. He was conscientious almost to a fault, was endowed with a fine sense of humour, always proved himself a faithful friend, and was generally beloved.

[An obituary notice of Dr. W. Parry Morgan was published in the issue of July 12.]

SIR FREDERIC STILL

Dr. E. BAINES writes: I only noticed yesterday the obituary notice of Sir Frederic Still. I thought it was most sympathetically done and gave a great idea of the man. Two points which may seem unimportant, but which, to my mind, marked the man, were that he went to Caius hoping to start natural science at once, and was deeply disappointed that, having taken a scholarship in classics, he was required to take a classical degree. Undaunted, he worked at classics and took a first class in his tripos. Then he took a second course and came out in the first class for his natural science.

Dr. MUNGO BRYSON, who died in an Edinburgh nursing home on July 14, had practised for many years at Thornhill, Dumfriesshire. He studied medicine at the University of Glasgow, graduating M.B., C.M. in 1890. At Thornhill he was physician to the district isolation hospital and medical officer to various institutions, including the Scottish Education Department and the Post Office. He had been secretary of the Panel Committee for Dumfriesshire, and in 1924-5 held office in the British Medical Association as president of the Border Counties Branch.

Dr. JOHN ANDERSON SMITH, for fifty-four years a member of the British Medical Association, died on July 16. He had long practised at Willesden Lane, Brondesbury, N.W. Born at Hull in 1862, and educated at Rossall and St. Bartholomew's, Dr. Anderson Smith took the M.R.C.S. and graduated M.B.Lond. (with honours in obstetric medicine) in 1886, proceeding to the M.D. two years later. His early appointments were those of house-physician at the Brompton and the City Road Hospitals, and in 1887 he was appointed surgical and medical registrar at the North-West London Hospital. He was for many years district medical officer to the Metropolitan Water Board, honorary medical officer to the Kilburn and St. John's Wood Dispensary and Edgar Lee Home for Cardiac Diseases, and a member of the medical staff of the Willesden Cottage Hospital and of St. Monica's Home.

Dr. HUGH CAMPBELL FERGUSON, who died on July 28 at Wimbledon, realized in many years of active and successful work his early ambition to serve his profession and the community in the general practice of medicine. Graduating M.B., Ch.B. (with commendation) in 1899 at the University of Glasgow, he proceeded to the M.D. degree in 1903. In the interval he devoted himself to a long course of clinical and pathological study at the Glasgow Royal Infirmary and at the Sussex County Asylum, in both of which institutions he held resident posts. Thereafter his professional record is one of general practice in South London and Wimbledon, and in this he found both an opportunity for service and an instrument of self-development and education. To his professional equipment he added the personal qualities which invite and retain confidence—thoroughness, efficiency, kindness, interest, and good will. Never of robust physique—for the last four years he had suffered from an incurable illness—he was yet capable of much hard work, and he well merited the trust and affection of those who looked to him for help and guidance. He had been chairman of the medical recruiting board, but failing health compelled him last March to relinquish duties which he had carried out with great tact and efficiency. To his colleagues Ferguson cultivated the loyalty and generosity which accord with the best traditions of the profession, and his intimate friends knew him as a man and a brother with a kindly, humorous, and philosophic outlook on life and affairs: he appreciated good talk and made his contribution to it. At home he enjoyed a true comradeship and valued this highly in his life and work. He is survived by his widow, his son, who is a member of the profession, and a married daughter.

We regret to announce the death on July 28 of Dr. FRANCIS GEORGE DOBSON, D.S.O., medical officer of health for Beverley Rural District Council. Dr. Dobson qualified M.B., Ch.B. at Leeds University in 1906, and was for a time house-surgeon and also anaesthetist at the General Infirmary at Leeds. During the last war he was officer commanding the 12nd W.R. Field Ambulance, B.E.F., and held the rank of lieutenant-colonel, R.A.M.C. He had been medical inspector of school children

under the Leeds Education Committee, and at the time of his death was honorary medical officer to Beverley Cottage Hospital. Dr. Dobson was the son of the late Dr. Joseph Dobson, who practised in the Burley district of Leeds for many years.

We regret to record the death on July 31, as the result of an accident, of Dr. WILLIAM MURDIE of Wark-on-Tyne. He was the son of the late Mr. Alexander and Mrs. Murdie of Stronachrie, Sutherlandshire, and was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1907. He was medical officer and public vaccinator for the 5th District, Bellingham, and medical officer to the Post Office. His contributions to medical literature included papers on vaccines in general practice (jointly), observations on infection by bacillus of tubercle (jointly), and a case of camphor poisoning, all of which were published in the *Medical Press and Circular*. He had been a member of the British Medical Association since 1922.

We regret to announce the death on August 1 of Dr. FRANK HAYDON in his eightieth year. He received his medical education at Westminster Hospital, and qualified L.R.C.P. in 1891. He specialized in ophthalmology and for five years was assistant surgeon at the Westminster Hospital; he had held the posts of clinical assistant at the Royal London Ophthalmic Hospital and ophthalmic surgeon to King Edward's Schools. For a time he was secretary to the Court of Examiners of the Society of Apothecaries of London, and for forty-five years he was oculist to the Southern Railway. Dr. Haydon was the author of several books, including an *Ophthalmic Atlas for Recording Pathological Conditions of the Fundus by Means of Superimposed Layers of Colour, Statistical Eyesight Tables, and Railway Test Type Case*. He had been a member of the British Medical Association for forty years.

Dr. HORACE SILVA DRABBLE, who died suddenly on August 4, was educated at Wesley College, Sheffield, and the University of Sheffield; he qualified M.R.C.S., L.R.C.P. in 1921 and started practice in that city. Later he became interested in anaesthetics, and was made honorary anaesthetist to the Royal Hospital, Sheffield, where he gave many years' devoted service. He took the D.A. in 1936. Dr. Drabble was an unusually competent anaesthetist, and was very popular with all his surgical and medical colleagues, as well as with the students under his supervision. He was a very likeable man with a charming personality. A keen golfer, he was one of the oldest members of the Hallows Club. When war broke out in 1914, although only 18 at the time, he enlisted as a private in the Sheffield City Battalion, and later was given a commission and went to France as a combatant officer with the rank of lieutenant in the York and Lancaster Regiment. The sudden death of his father late in 1936 came as a great shock, and precipitated a nervous upset which necessitated a rest from work for some time. He returned to practice, however, and, so far as any of his friends knew, was in the best of health and spirits just before his death. He will be deeply missed by a large circle of friends. He had been a member of the British Medical Association for thirteen years.

We regret to record the death at the age of 75 of Dr. WILLIAM MACCALL BOYD, at Largs, Ayrshire, on August 5. Dr. Boyd qualified M.B., C.M. at Glasgow in 1890, and joined the British Medical Association in 1894. He is survived by his wife, one daughter, and two sons.

Dr. SAMUEL LYLE, C.B.E., whose death took place on August 6 at Stockton-on-Tees, had been in practice in the town for thirty-nine years. Dr. Lyle, who was a native of Northern Ireland, graduated M.B., Ch.B. at Edinburgh University in 1901. During the last war he served with the R.A.M.C. in Gallipoli and Bulgaria, and in this country at the Military Hospital, Grantham. He was Ministry of Pensions Commissioner, East Central Region, and for his work in this capacity was awarded the C.B.E. He was honorary surgeon to Stockton and Thornaby Hospital from 1913 to 1930, and from then until his death was honorary consultant surgeon to that hospital. A keen member of the British Medical Association, he took a great interest in the work of the local Division. He had been a member of the Local Medical War Committee since it was first formed.

Lyle took an active part in the civic life of Stockton, and he was a Justice of the Peace from 1930. He was always interested in the local cricket and football clubs, and was well known in racing circles in the North-East, being chairman of the Stockton Race Committee. By the death of Dr. Lyle, Stockton loses a medical practitioner of sound judgment, a genial personality, and a true sportsman.

Dr. SPENCER VERDON-ROE died suddenly after an operation on August 7. Spencer Verdon-Roe was educated at Cambridge and St. Bartholomew's Hospital, qualified M.R.C.S., L.R.C.P. in 1897, and took the M.B., B.Ch. in 1898. After qualifying he was house-surgeon to the Radcliffe Infirmary, Oxford, and clinical assistant in the department of diseases of the throat, St. Bartholomew's, and in the ophthalmology department of the West London Hospital. He was subsequently assistant school medical officer in the L.C.C.

Miss MARY CAMPRELL HORNER, whose death at Limavady, Co. Derry, was recently announced, was educated at Queen Margaret College, Glasgow, and took the Scottish triple qualification in 1894. Medical missionary work became her life interest, for she served for thirty-one years in the Church of Scotland Mission Hospital at Mukden, Manchuria, before retiring in 1927. She initiated and built up, with Dr. Ethel L. Starmer, the women's hospital, the maternity school, and the babies' home, institutions which reflected her successful work on behalf of Chinese women and children and missionary workers.

Dr. JOHN TOPHAM SPINK, who died recently at Harrogate, was for many years a general practitioner at Otley. He was a student of the Yorkshire College at Leeds, and, after clinical training at the General Infirmary at Leeds, obtained the Scottish triple qualification in 1892. Dr. Spink was for a considerable time medical officer to the Child Welfare Centre at Otley. He was one of the oldest members of the Royal Wharfedale Lodge of Freemasons, in which he held office as Worshipful Master in 1902-3. He had been a member of the British Medical Association for forty-two years.

The following well-known medical men have died abroad: Dr. ALBERT GRAEME MITCHELL, professor of paediatrics at the University of Cincinnati College of Medicine since 1924, co-author with Dr. J. P. Crozer Griffith of *Textbook of Diseases of Infants and Children*, aged 52; and Dr. JULIUS FRIEDENWALD, emeritus professor of gastro-enterology at the Medical School of the University of Maryland, aged 74.

Universities and Colleges

UNIVERSITY OF OXFORD

At a Congregation held on July 26 the following degrees were conferred:

D.M.—A. H. Hunt.

M.Ch.—H. Rees.

B.M.—A. P. D. Montgomery, *R. F. G. Barker, F. G. Beilby, A. G. A. Albers, J. V. S. A. Davies, J. W. Gerrard, J. P. M. Tizard, C. G. Whiteside, *A. J. Wilmot, H. W. Davies, R. T. Campbell, L. T. Scott, J. F. Monk, R. H. Percival, *J. R. Tiller, Pamela M. Blake.

* In absentia.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At an ordinary meeting of the Council of the Royal College of Surgeons of England, held on July 31, with Sir Alfred Webb-Johnson, President, in the chair, Prof. Alexander Primrose was appointed representative of the College at the centenary celebrations of Queen's University, Kingston, Ontario, and Surgeon Rear-Admiral G. Gordon-Taylor was appointed delegate of the College to attend the thirty-first Annual Clinical Congress in Boston, U.S.A., as the guest of the American College of Surgeons.

Diplomas of Membership were granted, jointly with the Royal College of Physicians of London, to the candidates whose names appeared in last week's issue in the report of the meeting of the Royal College of Physicians of London.

Diplomas in Ophthalmic Medicine and Surgery (nine) and in Medical Radiology (three) were granted, jointly with the Royal College of Physicians of London, to the candidates whose names appeared in last week's issue in the report of the meeting of the Royal College of Physicians of London.

The Services

COLONEL COMMANDANT, R.A.M.C.

Lieut.-General Sir J. A. Hartigan, K.C.B., C.M.G., D.S.O., retired pay, late R.A.M.C., has been appointed Colonel Commandant, from August 8, 1941, in succession to Lieut.-General Sir H. B. Fawcus, K.C.B., C.M.G., D.S.O., D.C.L., retired pay, late R.A.M.C., who has relinquished the appointment on account of ill-health.

R.A.F. AWARD

The King of Yugoslavia has conferred the Order of the White Eagle, 5th Class, on Flight Lieut. William Patrick Griffin, R.A.F.O., in recognition of valuable services rendered in connexion with the war.

MENTIONS IN DISPATCHES

The following have been mentioned in dispatches: Temporary Surgeon Lieut. H. A. D. Doyle, R.N.V.R. (H.M.S. *Ladybird*), for courage and devotion to duty during operations in the Mediterranean, and Temporary Surgeon Lieut. M. G. Low, R.N.V.R., for good services in the successful raid on the Lofoten Islands.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

Wounded

Captain John Hortas Jackson.
Captain Bethel Lapedus.
Captain Robert Norman Seed.

DEATHS IN THE SERVICES

Colonel LANCELOT PAXTON MORE, R.A.M.C. (ret.), died in a London nursing home on July 19, aged 72. He was born at Rothwell, Northants, on March 20, 1869, and was educated at the University of Edinburgh, where he graduated M.B., C.M. in 1891, serving as assistant demonstrator of pathology. Entering the Army as surgeon lieutenant in 1892, he became lieutenant-colonel in 1915, brevet colonel in 1917, colonel in 1918, and retired in 1922, having been on half-pay from April to October, 1920, on account of ill-health. He served on the North-West Frontier of India in the campaign of 1897-8, receiving the Frontier medal with a clasp, also the clasp for the Tirah campaign. He had been a member of the British Medical Association for twenty-four years.

Colonel ARTHUR HUGH MORRIS, C.I.E., C.B.E., R.A.M.C. (ret.), died at Boscombe on July 6, aged 69. He was born on February 26, 1872, received his medical education at St. Bartholomew's Hospital, qualified M.R.C.S., L.R.C.P. in 1894, and took the D.P.H. in 1905. Entering the Army as surgeon lieutenant in 1896, he became lieutenant-colonel in 1915, and retired as colonel in 1922. He served in British Somaliland in 1903, in the hospital ship *Hardinge*, receiving the medal with a clasp, and in the war of 1914-18, when he was mentioned in dispatches, receiving the C.B.E.; and in Mesopotamia from 1919 to 1921, receiving the C.I.E. He had been a member of the British Medical Association for twenty-four years.

Lieut.-Colonel CHARLES EDWARD WILLIAMS, I.M.S. (ret.), died at Farnham, Surrey, on July 28, aged 75. He was born on November 1, 1865, and was educated at the University of Cambridge, where he graduated M.B., B.Chir. in 1890. Entering the I.M.S. as surgeon lieutenant in 1893, he became lieutenant-colonel after twenty years' service, and retired in 1923. He served in the North-West Frontier campaign of 1897-8 and received the Frontier medal with two clasps. Most of his service was spent in Burma, where he was appointed a civil surgeon in 1896. He was appointed Sanitary Commissioner in 1898, and held that post until his retirement. He was a member of the British Medical Association for twenty years and was a member of the Central Council in 1904-5.

Dr. J. J. Bittner of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, U.S.A., has been awarded the Alvarenga Prize for 1941 for his studies on cancer. This prize is given each year by the College of Physicians of Philadelphia on the anniversary of the death of Pedro Francisco DaCosta Alvarenga, who died on July 14, 1883, and under whose will the prize was established, to the author of the work in any branch of medicine which is thought most deserving of the award.

Medical Notes in Parliament

Parliamentary Medical Committee

At a meeting of the Parliamentary Medical Committee last month, with Sir FRANCIS FREMANTLE in the chair, Lieut.-Colonel W. S. C. COPEMAN, in an address on rehabilitation, spoke of the work done in the Army in respect of both medical and surgical cases in shortening the period of treatment and convalescence and in counting the treatment as effective only in its single direction throughout to early future efficiency for service. He indicated, further, the application of the same change of view and practice to civil life, especially after the war, and showed the great economy, comfort, confidence, and welfare, individual and general, that should result.

Tuberculosis

Invited by Mr. RHYS DAVIES on August 6 to give statistics showing the increase or decrease in tuberculosis in England and Wales respectively for each quarter since the beginning of 1938, Mr. BROWN replied on August 7 that quarterly statistics were not available. The following table indicated the total numbers of new cases notified to local authorities or which came to notice otherwise than by formal notification during each of the three years 1938 to 1940.

	1938		1939		1940	
	Pulmonary	Non-pulmonary	Pulmonary	Non-pulmonary	Pulmonary	Non-pulmonary
England	40,109	13,759	37,607	12,233	39,363	11,335
Wales	3,096	1,129	2,943	1,000	3,184	1,047

On August 7 Mr. JAMES GRIFFITHS asked if Mr. Brown's attention had been called to the report of the Welsh National Memorial Association, indicating a deficiency of 400 beds for waiting tuberculosis cases in the Principality. Mr. BROWN replied that the Press reported that a statement was made at a recent meeting of the Welsh National Memorial Association to this effect. The question of increasing the number of beds at present available in Wales and elsewhere was under active consideration in the Ministry of Health.

Medical History of Recruits

Mr. BEVIN told Mr. Rhys Davies on August 7 that he had considered the suggestion that approved societies should be asked to supply medical boards with the medical history of men tested for service in the Army. This would not supplement the information already obtained to an extent sufficient to counterbalance administrative difficulties in its adoption. Every man was informed that the board would give careful consideration to medical evidence regarding any serious illnesses or disabilities, and was also asked to complete a questionnaire. Mr. Bevin added that, having administered an approved society, he would not place much reliance on the medical histories which such societies possessed. Arrangements had been made for notification to the medical boards of every man of military age whose name appeared on the register kept under the Public Health (Tuberculosis) Regulations. Every man examined was asked whether he had ever suffered from tuberculosis or received treatment for it or for suspected disease. Where there was reason to suspect tuberculosis the board referred the man for radiological or other special examination by the tuberculosis officer of the area in which he lived. The Medical Advisory Committee under Lord Horder had decided that it was impracticable for the chest of every recruit to be radiologically examined. Equipment and personnel to examine the results were not forthcoming.

British Dispensary at Hankow—On July 29, Mr. LAW informed Mr. NUNN that the British Dispensary at Hankow ceased business last April owing to difficulties arising out of the closure of the Yangtze. Special efforts to help this British firm were made by the British Consuls at Hankow and Shanghai, and some shipments of medical supplies were permitted to Hankow for the dispensary. Owing, however, to great delays and to the fact that no miscellaneous goods were allowed to be shipped, the turnover became insufficient to keep the firm in business.

Condition of School Milk.—Mr. LEACH raised, on July 31, the question of the condition of milk delivered to Southport schools. He said a report of the Southport Health Department indicated that one sample of milk must have been stale before it was pasteurized. Mr. BUTLER replied that the Department of Education had communicated with the Ministry of Food, which had taken up the matter. The conditions prescribed for pasteurized milk included a bacterial standard for the milk after, but not before, pasteurization.

Grant for Soldiers' Wives during Pregnancy.—On August 5 Mr. TOM SMITH asked the Secretary of State for War whether he was aware that cases were arising of wives of Service men continuing to go out to work while in an advanced state of pregnancy in order to supplement their separation allowance; and whether he would consider the desirability of making an additional allowance of 10s. a week to all such cases on the production of a medical certificate and on the condition that the woman refrained from going out to work for a specified period. Captain MARGESSON said he was unable to accept the suggestion for a flat increase of 10s. a week in such cases, but any case in which serious hardship arose would be considered on its merits by the Ministry of Pensions with a view to the award of a war service grant of up to £2 a week. If serving in the United Kingdom the soldier should himself make an application for such a grant through his commanding officer. If he was serving abroad the application might be made by his wife through the regimental paymaster or the nearest office of the Assistance Board.

Diabetics' Food.—Major Lloyd George is advised that no further concession is necessary at present in the diet of diabetics.

Medical News

Mr. E. Rock Carling and Prof. S. P. Bedson have been elected members of the Medical Research Council in place of Prof. G. E. Gask and Prof. W. W. C. Topley, F.R.S.

The name of Dr. Wilfrid Boothby Blandy, firewatcher, Nottingham, has been brought to notice for brave conduct in civil defence.

The seventieth annual meeting of the American Public Health Association will be held at Atlantic City from October 14 to 17. Further information can be obtained from the headquarters of the association at 1790 Broadway, New York City.

The Swedish International Press Bureau reports that a board for the control of incorrect or misleading advertisements of medical preparations has recently been founded, consisting of representatives of the Royal Medical Board of Sweden, the Swedish Medical Association, the Federation of Swedish Industries, the Advertising Association, and the Newspaper Publishers' Association.

In view of the difficulty in wartime of maintaining or replacing the plant required for pasteurizing milk by the "Holder" process, the only process hitherto recognized under the various milk Regulations, licences are to be granted for "high temperature short time" pasteurization. It is understood, states a Ministry of Health circular (No. 2423), that provided the apparatus is suitable and is worked with proper care, this method will effectively destroy any disease-producing organisms in milk. The chief modifications are that the milk must be kept at a temperature of not less than 162° F. for at least fifteen seconds, and that there must be an automatic device on the apparatus to divert the flow of any milk which has not been so treated. Local authorities may obtain advice about any proposed apparatus from the National Institute for Research in Dairying, Shinfield, near Reading.

Although the money collected by the British Red Cross Society and St. John Fund has now reached a total of some £6,500,000, five-sixths of this has already been spent, and an additional £1,500,000 is necessary if the Fund is to meet the ever-growing demands that are made upon it. It is therefore proposed to develop the penny-a-week scheme, which has been so successful in organized industry, by house-to-house collections throughout the country. In an appeal for active help from women in carrying out this new scheme, the Duke of Gloucester pointed out that there were ten million houses in this country, and if only one occupant in each gave a penny a week the Fund would benefit by a further £2,000,000 a year.

Private generosity and the enterprise of the Royal Sussex Hospital, Brighton, have combined to provide what amounts to domiciliary massage and electrical treatment for those patients of the hospital who, because of physical infirmity or the expense of the journey, are unable to attend at the hospital. A motor-van equipped with all the apparatus necessary for electrical treatment, with the exception, owing to the war, of portable diathermy apparatus, has been presented to the hospital by Mrs. Herbert Latilla (founder of the Latilla Department of Physical Medicine) and her two daughters. This van, which is staffed by masseuses from the hospital department and driven by members of the W.V.S., is in daily use for visits to country districts. The hospital authorities have provided that to avoid overlapping and abuse of the service all new patients shall, in the first instance, attend at the hospital and pass through the almoner's department.

Eight residential nurseries for children who have suffered in air attack have already been established in various parts of Britain through the generosity of the Save the Children Federation of New York, and allowances have been made to some 80,000 similar children. Mr. Henry J. Allen, a former governor of Kansas, and chairman of the British Children's Aid Committee, who has been on a visit to this country, hopes to extend the help now being given, and, by increasing by another £175,000 the £75,000 already contributed, to provide at least 100 additional nurseries, where children may have a permanent home and medical treatment when necessary. It is also hoped to endow a training school for matrons and superintendents.

As promised in Circular 2395 (*Journal*, June 28, p. 979), the Ministry of Health has issued further information about the Fracture Clinics "C," which are being established under the Emergency Hospital Scheme for the out-patient treatment of fracture cases. The Ministry now states in Circular 2395A that certain hospitals are to function as Fracture Clinics "C," as well as special clinics which are to be recognized for the purpose. The arrangements for the latter are not yet complete, but the Ministry has issued a list of the hospitals within the Emergency Hospital Scheme which are to be Fracture Clinics "C." The list, which is attached to the circular, has been sent to local authorities and their medical officers of health and to all voluntary hospitals in the scheme. It is pointed out that hospitals designated as Fracture Clinics "C" should claim for the treatment of fracture cases in the same way as they claim for out-patient treatment of any other cases under the Emergency Hospital Scheme.

On production of a certificate from the doctor or midwife who has been booked to attend a confinement, or, in the case of a woman attending an ante-natal clinic, from the medical officer of health, expectant mothers will be supplied by welfare authorities with fifty coupons to buy materials for garments which should be made before the baby is born. The certificate, which should be given as soon as the diagnosis is made (usually the sixth month of pregnancy), should state the mother's name and address, her National Registration number, and the approximate date on which the confinement is expected. Double the number of coupons will be issued where a positive diagnosis of twins has been made and confirmed.

In memory of the late Sir Frederick Grant Banting a maple tree was planted on May 1 in mingled soil from several Canadian hospitals in the grounds of the Richmond Memorial Hospital, Prince Bay, Staten Island, as a part of National Hospital Day ceremonies.

According to the *Dagens Nyheter* of Stockholm one hundred cases of typhus are registered in Warsaw monthly. All of them are in the Ghetto.

Dr. Eugene M. K. Geiling, professor of pharmacology at the University of Chicago, recently received the Mendel medal of Villanova College "for his articles on the knowledge of the pituitary gland, its relations to other glands, and for his assistance in the crystallization of insulin."

The Rumanian Government has announced that the gas-masks which it is distributing free to the population are not for Jews. Should any be left over after distribution to the non-Jews the Jews may buy them at a fixed price.

The June issue of the *Annals of Internal Medicine* contains an interesting article by Dr. Thomas Parran, Surgeon-General of the United States Public Health Service, entitled "Medicine in England Now," in which he states that "we doctors in the United States should be inspired by the example of our British medical colleagues."

It has been announced that eye-shields used for industrial or A.R.P. purposes are not subject to purchase tax.

The German academy for naval doctors, which had been moved from Kiel to Danzig, has again been moved to Tubingen until its building in Danzig is ready.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Acute poliomyelitis, dysentery, and scarlet fever have all increased in incidence during the week; that of the enteric fevers and cerebrospinal fever has declined. In Scotland a like trend has been observed, except that scarlet fever also has declined.

Acute Poliomyelitis

Since the previous week notifications of poliomyelitis have risen from 10 to 29, and the number of administrative health areas involved in England and Wales has risen from nine to sixteen. In the Slough area, although only 7 cases fall within this week's return, reports have been received that there have been 12 confirmed cases in addition to the 9 already recorded. Of these new cases 7 are in Slough itself and 5 in Eton Rural District. As regards age, 2 patients are under school age, 8 are school children, and 2 are older, one of whom is 30 years of age. The new cases have appeared in five other schools in the district. Avoidance of travelling and meeting in public places, and the use of gargles, are suggested by the public health authorities as the best means of checking further spread. Details of the incidence and distribution of the cases notified are: Buckinghamshire 7 (Slough M.B. 3, Eton R.D. 4); Radnor 3 (Presteign U.D. 1, Rhayader R.D. 2); Lancaster 2, in Manchester and in Denton U.D.; Lincoln Kesteven 2, in Grantham M.B. and in Stamford M.B.; Lincoln Lindsay 2, in Lincoln City and in Gainsborough U.D.; Stafford 2, in Stoke-on-Trent C.B.; and 1 each in Berkshire (Maidenhead M.B.), Durham (Whickham), Hertford (Hertford M.B.), Kent (Bromley M.B.), Middlesex (Staines), Norfolk (Blofield and Felgg R.D.), Oxford (Oxford C.B.), Shropshire (Shrewsbury M.B.), Yorkshire, East Riding (Kingston-upon-Hull C.B.), Yorkshire, North Riding (Stokesley R.D.), and Yorkshire, West Riding (Leeds). In Scotland cases occurred in the counties of Aberdeen 1, Ayr 2, and Stirling 1, and in the burghs of Kirkcaldy, Glasgow, and Edinburgh, 1 each.

Dysentery and Paratyphoid Fevers

Although nearly one-half of the total notified in the week occurred in one district, the number of areas affected by dysentery has risen from eleven to twenty-two; in only four were single cases recorded. The areas reporting more than 4 cases were as follows: Brecknock 69, all in Brecknock M.B.; Lancaster 23 (Blackburn C.B. 1, and R.D. 10. Whiston R.D. 5, Warrington R.D. 2, Southport 2, Manchester 1, Lancaster M.B. 1, Preston R.D. 1); Essex 7; and Surrey, Yorkshire, West Riding, and Durham 5 each. The disease is relatively more common in Scotland, involving ten areas, notably the counties of Lanark 26, Aberdeen 4, Clackmannan 4, Kincardine 2, and Orkney 4 (return for preceding week included), and the burghs of Dundee 10, Glasgow 3, Aberdeen and Edinburgh 2 each, and Airdrie 1.

More than one-half of the cases of paratyphoid fever in the whole country were recorded in Lancaster, 133; of the twenty-seven other counties affected, only seven recorded more than 4 cases—namely, Chester 43, Northumberland 10, Glamorgan 10, Warwick 8, Northampton 7, Yorks, West Riding, 6, Stafford 5. In Scotland eleven areas were affected, in five of which a single case occurred: there were 10 cases in Glasgow, and in Dundee 9, Stirling 2, and in the counties of Lanark 3, Angus 2, and Ayr 2.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 26.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	147	8	34	1	5	153	9	35	1	3
Deaths	1	—	—	—	—	—	—	—	—	—
Diphtheria	821	38	126	20	23	912	38	245	23	17
Deaths	20	—	2	1	—	18	—	5	2	4
Dysentery	149	4	—	—	—	29	3	61	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Enteric (typhoid) fever ..	24	—	2	8	3	77	7	15	2	1
Deaths	—	—	—	—	—	—	—	—	—	—
Erysipelas	—	—	43	5	1	—	18	38	6	5
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	50	2	13	9	1	31	5	6	5	7
Deaths	—	—	—	—	—	—	—	—	—	—
Measles	3,320	96	63	152	1	9,623	40	777	—	22
Deaths	2	—	—	—	—	7	—	4	—	—
Ophthalmia neonatorum ..	73	2	16	—	—	99	5	21	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid A and B ..	254	1	33	—	—	—	—	—	—	—
Deaths	5	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† ..	455	15	6	1	—	425	15	2	3	8
Deaths (from influenza) ..	8	16	1	2	4	7	1	1	—	1
Pneumonia, primary ..	—	—	127	17	—	—	23	122	7	8
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute ..	29	—	7	—	—	31	—	5	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	1	1	20	1	—	6	6	11	—	2
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	104	7	16	1	—	155	13	22	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	895	34	99	42	28	1,360	41	116	34	41
Deaths	—	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	4,369	259	41	99	24	829	5	47	—	—
Deaths	22	2	4	—	—	5	—	3	—	—
Deaths (10-1 year) ..	299	23	62	18	7	270	41	59	33	15
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths)	3,554	465	560	165	128	3,863	669	555	173	112
Annual death rate per 1,000 persons living	—	—	12.2	11.0	—	—	—	11.5	11.5	9.8
Live births	4,507	736	832	399	184	5,925	971	804	327	230
Annual rate per 1,000 persons living	—	—	16.9	26.5	—	—	—	16.3	21.8	20.1
Stillbirths	167	11	33	—	—	278	35	41	—	—
Rate per 1,000 total births (including stillbirths)	—	—	38	—	—	—	—	49	—	—

* Includes paratyphoid A and B for Eire and Northern Ireland.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Owing to examination schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Tests for Glycosuria

E. A. d'A. writes: Is there any exact method known for testing the urine for sugar which needs no heating and yet is accurate enough that a negative result excludes with certainty the presence of any reducing substance, and thus glucose?

Income Tax

Change in Partnership: Cash Basis

A and B are in partnership, A taking two-thirds and B one-third of the cash receipts. As from April, 1940, the shares became equal, but any debts outstanding at April, 1940, were divided in the old proportion. How should the assessment for 1940-1, which is on an earnings basis, be divided between the partners?

* * On the basis applicable to 1940-1—that is, one-half each. The fact that A may be receiving cash to a greater extent is not material. Those receipts are the ingathering of earnings of years the income of which has already been assessed. It is true that the assessments for those years did not specifically take those receipts into their calculation, but their absence was compensated for by other receipts, the fundamental assumption being that at that time gross cash receipts and gross earnings were about equivalent.

Keep of Assistant—Assessability

"H. P. N.'s" firm employs an assistant on terms that he shall receive £420 per annum and all found. The firm pays £3 3s. a week to the lady with whom he boards. Is tax payable by the assistant on this £3 3s. a week?

* * It is common ground that if the assistant's board and lodging were provided by one of the partners it would not be assessable, and we do not see why a distinction should be made because that accommodation is provided elsewhere and at a definite, and not an estimated, cost. We assume that the liability to pay the £3 3s. is on the firm and not on the assistant; if, on the other hand, the assistant has in law made a contract with her, so that the partners are discharging his liability, then we fear that money so paid can be regarded as paid to the assistant, and we could not advise an appeal on these special facts. If the contract is between the firm and the landlady, we advise the assistant to appeal, though it might be well as a preliminary to put the facts before the Board of Inland Revenue, Somerset House, W.C.2.

Whole-time E.M.S. Appointment

N. W." points out that the assessment of an E.M.S. salary as a separate item of income may involve payment of tax on the earnings as a whole at an excessive figure.

* * The illustration suggested is a case where the amount of the 1939 earnings, and therefore of the 1940-1 assessment, was £1,500, and the E.M.S. salary of £550 began as from April 5, 1940. In such a case the earned income will be assessed at £1,500 (Schedule D) plus (three-quarters of £550) £412 (Schedule E)—an aggregate of £1,912. If for the year to April 5, 1941, the practice earnings to which "N. W." is entitled fall by £383 or more, then his actual aggregate earned income will be less than the amount assessed by more than one-fifth, and in that case he will be entitled to have the assessments reduced to the "actual" amounts. There will be no hardship, but, on the other hand, a probable ultimate gain when he resumes his practice work and benefits under the previous year's

rule of assessment. But that depends on the actual figures, and the reduction may not be enough to enable the claim for the "actual" year's basis to be made, and it is suggested that in such circumstances it should be permissible to treat the E.M.S. salary as part of the practice income. Unfortunately that is not legally correct, and the Inland Revenue Department are very unlikely to concede the point. It will be appreciated that the one-fifth test is of general application and has statutory force, and any departure from the correct legal position would create difficulties—for example, as regards R.A.M.C. pay.

Assessment of Property

E. F. W. has been assessed in respect of his house on £122 for War Damage contribution and income tax, Schedule A. The property is rated at £117.

* * Normally the gross value of property is the same for taxation as for rates, but a difference arises in the net value owing to the fact that the deduction made for upkeep is not always calculated at the same percentage of the gross value. In any case the taxation authorities are not bound by the rating valuation.

LETTERS, NOTES, ETC.

Corneal Ulcers cured by Sulphapyridine

Dr. SYDNEY TIBBLES (London) writes: In May last I was asked to see a woman aged 60 who was suffering from recurrent corneal ulcers of her right eye, which was intensely inflamed as she had in addition keratitis and an iridocyclitis. As we could discover no reason for these latter complications the ulcers were twice cauterized with carbolic and she was put on atropine drops, a perchloride lotion, and a mercury and iodide mixture internally. As the ulcers recurred the lids were painted with silver nitrate, but no progress was made in spite of all treatment, so she was put on sulphapyridine, one tablet thrice daily, and immediately responded. Ten days afterwards the vision was 6/12 with that eye, which was perfectly normal except for a slight scarring due to the ulcers.

Attending a Colleague

Mr. W. McADAM ECCLES, M.S., F.R.C.S., writes: In reference to the correspondence relating to the above it may be stated that there is in existence already, and has been for many years, all the machinery necessary for carrying out "payment to specialists" for treatment of professional colleagues. It exists in the British Provident Association, and all interested—and it should be the whole profession—may write to the Manager, B.P.A., 30, Lancaster Gate, London, W.2, for full particulars.

Accommodation for Doctor's Family

Dr. "A. B." whose family have been evacuated from London, offers accommodation free of charge to a family, preferably medical, who would attend to his own domestic needs. Letters addressed to Dr. "A. B." c/o the Editor, will be forwarded.

Shortage of Glucose Preparations

Dr. J. J. BROWN (Hackney, E.9) writes: The difficulty and in some areas the apparent impossibility of obtaining sufficient quantities of glucose preparations, especially in pleasant liquid form, is presenting medical practitioners with an awkward problem. Is the shortage due to transport difficulties, or is it because glucose is rationed to the makers of these very useful products? In either case a serious effort should be made to ease the situation. Glucose finds numerous applications, and in many circumstances there is no satisfactory substitute.

First Aid for Horn-rimmed Spectacles

Dr. K. E. D. DAUNCEY (Yeovil) writes: At the present time it is difficult to get repairs to horn-rimmed spectacles carried out without considerable delay. There is an effective and easy method of temporary repair which can be made by anyone at the cost of a farthing by using half a length of ordinary cycle valve rubber. The break usually occurs near the centre of the bridge, but the same method can be used for the sides. The edges of the break should be moistened and then the rubber pushed on, one end on one side and then the other end on the other. Care must be taken that when not finished the fractured ends are in apposition. The splinting is not rigid, but is hardly noticeable and is comfortable in wear. The rubber perishes after about three weeks, but it can easily be replaced should the new spectacles be delayed longer than that time.

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CLINICAL OBSERVATIONS ON AIR-RAID CASUALTIES

BY

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The Clinical Research Unit, Guy's Hospital

The following paper contains the substance of a report prepared for the Medical Research Council's Committee on Traumatic Shock. It is based on 100 cases, 41 of them from the series observed at this hospital and 59* from case records supplied to us by the committee. Observations have not been confined to air-raid casualties, but have also been made on other cases of injury. Accident cases display the same varied features as air-raid casualties; they have the advantage that their observation is easier, since they are not as a rule admitted in large numbers in a short time and since the disturbing features of a bomb attack are absent. We have omitted cases of the so-called crush syndrome and of severe burns, which are being dealt with by others.

With these exceptions, and according to our own experience of many more cases than are here dealt with, this series illustrates the variety of the general reactions to injury shown by air-raid casualties and accident cases. The series, however, is not a random sample. The case reports received from the Committee on Traumatic Shock record for the most part examples of multiple and severe injuries associated with a low blood pressure and receiving transfusion for resuscitation. Our own cases were chosen in the first instance from those described by our colleagues as being "shocked" on admission, and later because they presented features of interest apart from a diagnosis of "shock," though this was applied to the great majority.

General Features

Some of the general features of the cases are summarized in the accompanying table. They are divided into three main groups, according to the level of systolic blood pressure when they first came under observation: in most cases this happened within a short time after admission to hospital; in few was it delayed more than an hour. The groups are those with (I) a raised systolic pressure, over 140 mm. Hg (9 cases); (II) normal pressure, 100 to 140 (28 cases); and (III) low pressure, under 100 (63 cases). The group with

Table showing General Features of the Cases

		I	II	IIIA	IIIB	IIIC	
		Low Blood Pressure (under 100 mm. Hg.)					
		Raised Blood Pressure (over 140 mm. Hg.)	Normal Blood Pressure (100 to 140 mm. Hg.)	Slow Pulse (under 70 per min.)	Moderate Pulse (70 to 100 per min.)	Rapid Pulse (over 100 per min.)	
Totals		9	28	9	27	27	Tot
Age in years	10 to 19	1	6	1	3	3	12
	20 to 29	1	1	1	3	3	10
	30 to 39	1	1	1	3	7	19
	40 to 49	1	1	1	3	5	19
	50 to 59	1	1	1	1	1	14
60 and over	1	1	5	6	2	19	
Time seen after injury	Within 1 hour	4	12	12	8	4	31
	" 2 hours	1	4	5	5	9	25
	" 3 hours	1	1	1	1	1	5
	" 6 hours	1	1	1	1	1	5
	Longer	1	1	1	1	2	6
Unstated	1	1	1	1	1	5	
Injuries {	Minor	2	12	2	1	1	5
	Moderate	1	1	1	4	1	7
	Severe	1	1	1	11	17	21
	Internal	1	1	1	1	16	20
Ulcerae {	Little or none	7	3	12	3	17	35
	Moderate	1	1	1	1	1	5
	Severe	1	1	6	17	22	26
	Unknown	1	4	1	12	3	19
Survived as far as known {	At least 24 hours	2	1	1	2	3	10
	" 48 "	1	1	1	1	1	5
	" 72 "	1	1	1	1	1	5
	3 days or more	7	18	1	9	3	38
Deaths {	Within 24 hours	1	1	1	10	13	27
	" 48 "	1	1	1	1	4	11
	" 72 "	1	1	1	1	1	5
	After 3 days or more	1	1	1	1	1	5

low pressure is subdivided according to the initial pulse rate: (A) slow, under 70 beats a minute (9 cases); (B) moderate, 70 to 100 (27 cases); and (C) rapid, over 100 (27 cases). It will be seen that this classification, originally adopted for convenience, serves to separate the cases into groups differing in certain other respects also; but we regard it as provisional only, and seek a better.

The series includes persons of all ages from 8 to 71, 30 being females. About one-third of them are under 30 and one-third over 50. It is of interest to note that of the 37 patients with initially raised or normal pressure (Groups I and II) only 8 (22%) are aged 50 and over, while the number 25 (40%) of the 63 cases with low pressures (Group III). Again, of those with low pressures, 7 of the 9 with slow pulses (Group IIIA) are aged 50 and over, but only 3 of the 27 with pulse rates over 100 are of this age (Group IIIC). These findings suggest that in injured subjects the

* For these records thanks are due to:

Army Blood Transfusion Service, 19 cases
Dr. Helen Brown, N.W. London Blood Supply Depot, 5 cases
Dr. J. McMichael, British Postgraduate Medical School, 7 cases
Dr. James Dow, St. George's Hospital, 5 cases
Dr. P. W. Mollison and Dr. Van der Walt, S.W. London Blood Supply Depot, 5 cases
Dr. T. S. Gavey, Westminster Hospital, 4 cases
Dr. R. F. Ball, Royal Free Hospital, 2 cases
Prof. W. Wilson, Aberdeen University, 2 cases
Mr. J. Ledingham (student), Hackney Hospital, 2 cases
Dr. G. A. R. Miles, St. Thomas's Hospital, 1 case
Dr. J. K. Denham, Western Fife Hospital, 1 case
Dr. R. D. Blackford, Charing Cross Hospital, 1 case
Dr. C. Wilson, Billericay Hospital, 1 case
Dr. E. E. Pochin, University College Hospital, 1 case

Thanks are also due to all those at our own and other hospitals whose co-operation made these observations possible.

HERPES LABIALIS AFTER SULPHAPYRIDINE AND T.A.B. THERAPY

BY

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Although herpes labialis is clinically a harmless infection its causal agent has been the subject of much research. The condition is often seen in soldiers, and a Swiss regimental physician (Mayer, 1921) has described a spontaneous outbreak of 30 cases among 70 soldiers who slept in one barrack-room. Five of the 6 officers attached to the same unit were also involved. Last winter we observed 33 cases among hospital patients and investigated them from the laboratory point of view. Two classes of persons suffering from herpetic eruptions were studied—namely, normal healthy nursing orderlies, who developed it spontaneously, and a larger group comprising patients treated for gonorrhoea.

Before beginning our description of the clinical-pathological findings and animal inoculation results we should like to present a summary of modern conceptions regarding the aetiology and pathogenesis of herpes. The disease was first proved to be infective by Vidal (1873), and thereafter the classical researches of Levaditi, Doerr, and others showed that the causal agent was a filterable virus which was highly pathogenic to the rabbit, and which produced violent keratitis if implanted upon the scarified cornea of that animal, occasionally followed by meningitis and death. Individual strains of virus differed in their neurotropic affinities for the rabbit; consequently attention turned to herpes simplex virus as being a possible cause of encephalitis lethargica, and Levaditi and Harvier (1920) claimed to have isolated the virus from such cases. Unfortunately, independent confirmation of Levaditi's researches was lacking and the work fell into disfavour, but it may still prove that his investigations were made in advance of the times. The clinical nomenclature employed for the designation of the various manifestations of herpetic infection in man is unsatisfactory. Thus the usage of terms such as "herpes simplex," "febrilis," "labialis," "recurrent herpes," and "idiopathic and symptomatic herpes" indicates that the classification is inconsistent, and not based on anatomical, clinical, or aetiological grounds. For the convenience of readers over-seas the following account contains a summary of the facts respecting the clinical types of herpes and their aetiology. At the outset it should be understood that all forms of herpes affecting man, *other than herpes zoster*, are due to one and the same virus, which is pathogenic to the rabbit, whereas the virus of herpes zoster is a separate entity which is non-pathogenic to the rabbit and probably related to the virus of varicella. Both herpes and zoster viruses are particulate and visible organisms which occur in the form of minute virus elementary bodies, and Elford *et al.* (1933) have succeeded in measuring herpes simplex virus, estimating it to be 100 to 150 m μ in diameter. Herpes virus also produces specific histological changes, and acidophilic intranuclear inclusion bodies have been described in human corneal epithelium (Fuchs, 1933) and in the large epithelial cells present in human vesicle fluid (Da Fano, 1923).

Clinical Varieties of Herpes

Herpetic infection may appear in a variety of forms, as follows:

Herpes febrilis is the term applied to herpes arising during the course of a pyrexial disease, such as pneumonia, malaria, influenza, and other febrile disorders. The usual situation is on the lip, the term "herpes labialis" then being popularly used; but when other areas of the face are involved it is called "herpes facialis." Aphthous stomatitis is another disease which has been proved to be due to the herpes virus (Dodd, Johnston, and Buddingh, 1938; see also Gottton, 1938; Burnet and Lush, 1939). Herpetic vesicles are seldom bigger than a large pin-head and develop on a reddened base, being usually filled with clear fluid, although suppuration may occur. The commonest site for vesicles is on the lips, inside and around the mouth, the cheeks, and the auricles.

Herpes simplex is the designation applied to herpetic eruptions, unassociated with pyrexia, which may arise spontaneously, or secondarily to a variety of causes, such as after the injection of vaccines, milk, and colloidal metals (see Fischer, 1927); or the ingestion of certain foodstuffs followed by gastric disorder.

Herpes Genitalis.—Herpetic eruptions are not uncommon on the genitals, being found on the glans or body of the penis, and, in the female, on the labia. It is frequently associated with syphilis (Cranston Low, 1939).

Herpes Cornealis.—Herpetic infection of the cornea may assume a variety of forms, of which the dendritic ulcer is the best known (see Duke-Elder, 1938). The inflammatory reaction may be severe and result in serious scarring of the cornea.

Recurrent Herpes.—Certain persons are very susceptible to herpes, and why this should be is not clear. It is possible that they carry the virus in their saliva or elsewhere in the body, and Burnet and Lush (1939) have suggested that in such instances the infection is contracted in infancy, as an aphthous stomatitis, and persists throughout life. Some particular recurring susceptibility of the tissues may allow the virus to exert its pathogenic action from time to time, and, for instance, recurring genital herpes is apt to occur in cases of irritation due to chronic gleet and prostatitis (Avit-Scott, 1931). In women recurrent herpes is often associated with the menstrual period (Blum, 1926). Apart from the question of variations in the host as the predisposing factor in recurrent herpes, it is possible that the strain of virus itself may possess unusual tenacity. Thus Nicolau and Banciu (1924) inoculated a number of persons with strains of virus from cases of recurrent infection and found that two of these persons themselves developed recurrent herpes.

Nervous Manifestations.—Although herpes is usually regarded as a mild local lesion, more serious manifestations may arise from time to time. For example, French authors (e.g., Levaditi, 1922, 1926) describe *herpès névralgique de Mauriac*, with symptoms of severe pains, crises of hyperaesthesia in the perineum, tenesmus, sphincter spasm, and sciatica, all preceding the appearance of the eruption. In less severe cases herpes may be accompanied by pruritus, backache, and neuralgia. Doubtless these are due to the fact that the virus involves the corresponding ganglia, producing an inflammatory reaction (see Howard, 1905).

Herpetic meningitis is a distinct clinical entity, with sudden onset, rapid course, favourable outlook, and a lymphocytosis in the cerebrospinal fluid (see Abiteboul, 1936).

The Common Aetiology of Herpetic Eruptions

To-day all herpetic eruptions (always excepting, of course, those of zoster) are regarded as due to one and the same virus, based on the following evidence:

Vesicle fluid from all varieties of herpetic eruption can be inoculated into the human skin, with consequent production of a typical crop of "simplex" vesicles (Vidal, 1873; Lipschütz, 1921b; Teissier *et al.*, 1922b; Frei, 1931; Zurukzoglu and Hruszek, 1933).

Vesicle fluid from herpes febrilis produces a severe keratitis when applied to the rabbit's eye (Löwenstein, 1919, 1920; Grüter, 1920). Herpes cornaealis yields a virus with the same characteristic effect (Doerr, 1920; Doerr and Vöchting, 1920; Luger and Lauda, 1921).

Herpes labialis yields the same virus, and will produce typical herpes cornaealis when suitably applied to the human cornea (Doerr, 1920; Doerr and Vöchting, 1920; Fuchs, 1921, and see Fuchs, 1933).

Vesicle fluid from herpes genitalis also produces keratitis in the rabbit, and man can be reinfected with material taken therefrom (Fontana, 1921; Blanc and Caminopetros, 1921).

Herpes occurring in such diseases as cerebrospinal meningitis, pneumonia, diphtheria, influenza, catarrhal jaundice, erythema, and secondary syphilis yields a virus showing the same characteristics as does that obtained from cases of primary herpes (Teissier *et al.*, 1922a).

Similar intranuclear inclusion bodies have been reported in human herpes febrilis, cornaealis, and genitalis, and in experimental lesions in animals (Lipschütz, 1921a, 1921b, 1921c; see Fuchs, 1933).

Distribution of Virus in Infected and Healthy Persons

Herpetic Vesicle.—The virus is abundantly present in the vesicular stage, but disappears after the crust forms (Teissier, Gastinel, and Reilly, 1926a).

Blood.—The agent may be found in the blood of persons suffering from herpetic eruptions, although this is rare (Löwenstein, 1919; Bastai and Busacca, 1924b; Teissier, Gastinel, and Reilly, 1926a, 1926b).

Cerebrospinal Fluid.—Flexner and Amoss (1925a) examined the cerebrospinal fluid of 100 persons, including some suffering from epidemic encephalitis, but in only one case were they able to isolate herpes virus, and this from a syphilitic patient with no herpetic eruption. This is an important observation, and indicates that the virus may, although rarely, be found in the cerebrospinal fluid of patients who at the moment do not suffer from herpes. Zurukzoglu (1937) has also isolated two strains of herpes virus from the cerebrospinal fluid of healthy persons. With regard to the cerebrospinal fluid of herpetic patients, the consensus of opinion is that the virus may be found on occasions (Ravaut and Rabeau, 1921; Bastai and Busacca, 1924a; Zurukzoglu, 1937), but a number of competent investigators have been unable to detect it (for example, Doerr and Zdansky, 1924; Levaditi, 1925; Teissier, Gastinel, and Reilly, 1926a, 1926b).

Saliva.—Herpes virus has been found in the healthy saliva by a number of workers (for example, Levaditi, Harvier, and Nicolau, 1921; Doerr and Schnabel, 1921; Teissier, Gastinel, and Reilly, 1926b). The virus is attached to the salivary epithelial cells and is probably associated with the buccal mucus, because suspensions of salivary gland tissue are avirulent (Levaditi, Harvier, and Nicolau, 1921). The presence of the virus has usually been detected by its ability to produce keratitis in rabbits. Levaditi and his collaborators have stated that 80% of normal specimens of saliva produce experimental keratitis, but only in 15% is keratitis severe enough to be followed by cerebral involvement (see below). These high figures have not, however, been generally accepted by other workers, who

have failed to find any virus in normal saliva (for example, Flexner and Amoss, 1925b). Nevertheless there seems no doubt that the virus can on occasion be found in this site, as described below. Several workers have investigated the saliva of persons suffering from herpes and have, though rarely, been successful in demonstrating the presence of the virus (for example, Isaicu and Telia, 1922; Flexner and Amoss, 1925b; Nicolau and Poincloux, 1922, 1924). Thus it has been found in the saliva of patients suffering from labial and facial herpes and herpes of the finger. The saliva of persons predisposed to herpetic eruptions contains the virus more often than that of other persons, and it may be found in the intervals between attacks (Levaditi, 1926).

Conjunctival Sac.—The virus can apparently be carried in a latent form in the conjunctival sac, but if the cornea be injured it may produce keratitis (Grüter, 1924; Busacca, 1925). It may also cause severe unilateral conjunctivitis, developing without obvious reason (Granström, 1937).

Other Skin Lesions.—The agent of herpes has been recovered on rare occasions from zoster vesicles and sycosis pustules (Naegeli and Zurukzoglu, 1935).

Our present article deals with the condition of herpes labialis which developed in healthy (often perfectly fit) male adults or, as in the majority of our cases, in patients under treatment for gonorrhoea. Below we describe our own work, which is subdivided into clinical data, laboratory findings, and animal inoculation experiments (performed by Dr. Rhodes), followed by a discussion on the aetiology of the condition.

The Present Research: Clinical Data

Altogether 33 cases of herpes labialis were studied by us: 6 occurred spontaneously in healthy nursing orderlies and 27 in patients suffering from gonorrhoea who had received a full course of sulphapyridine and subsequently developed herpes labialis after a provocative dose of T.A.B. The dosage of sulphapyridine administered was that employed before the latest Army instructions, and consisted of 9 grammes on the first day, 6 on the second and third, and 4 on the fourth, the total quantity given being 25 grammes in four days. The clinical results of such therapy were excellent, and in the majority of instances the urethral discharge had abated by the fifth day, so that on the sixth day patients underwent a test of cure consisting of a 0.2 c.cm. dose of T.A.B. vaccine injected intravenously. It was following this provocative dose of T.A.B. that herpes frequently manifested itself. In the first batch of subjects 22 patients received 0.2 c.cm. of T.A.B. vaccine intravenously, and forty-eight hours later it was noticed that all the men developed herpes labialis. Sixteen showed only a slight eruption, which cleared up spontaneously without any treatment: but in the remaining 6 the lesions were severe, and a 50% absolute alcohol dressing was applied with good effects.

Following these results Captain J. A. Scott, R.A.M.C., decided to reduce the dose of vaccine, and the next batch of 6 cases received 0.1 c.cm. of T.A.B. intravenously. Once again herpes was observed, and 3 persons were affected. Subsequently one of us (A. C. E.) decided to dispense with intravenous T.A.B. as a provocative measure, and thereafter hypertonic saline solution (instilled and retained in the urethra for a short time) was substituted as an alternative, following which no further cases of herpes appeared. The obvious conclusion to be drawn from such results is that if herpes labialis is to be avoided, intravenous T.A.B. vaccine should not be given to persons immediately after they have received a course of sulphapyridine. This is particularly so during the winter months, when, as we shall mention later, the herpes carrier rate is relatively high.

A CASE OF PUERPERAL TETANUS

BY

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Cases of tetanus occurring in the mother following child-birth have been recorded in many parts of the world, but after careful study of the literature at our disposal we are unable to find any reference to such in the British Isles. Obstetrical textbooks discuss the possibility of its arising from imperfectly sterilized catgut used in suturing lacerations, and of tetanus neonatorum from infection of the umbilical cord. Because of the above facts we consider the following case should be recorded.

References in the Literature

We find that post-partum tetanus has been described mainly in America, France, China, and Germany. Some interesting points might be cited from various articles.

Milnor (1928) states that tetanus is prevalent in the Hawaiian Islands, and, though difficult to assess, he estimates the mortality to be in the region of 92%. Most cases arise from puncture of the skin, and a few from operative abdominal wounds, but puerperal tetanus is uncommon. He records two cases affecting both mother and infant in which there were no recoveries. Mattson and Starkey (1931) state that tetanus following induced abortion is very rare in America. The mortality is high—91% according to statistics compiled by Schneider. They record the case of a white woman aged 33 who developed tetanus fourteen days after induced abortion and three days after having a splinter in her finger. They consider the abortion the likely aetiological factor, taking into account the shortness of the incubation period from the injury to the finger and the fact that the latter showed no inflammatory reaction. The woman recovered, following treatment with antitetanic serum, 272,000 units being used in ten days by all routes—intrathecally, intravenously, and intramuscularly.

Byrne (1928) describes a case of puerperal tetanus, and states that he could find no record of a similar one in the district of Loyuan, although he knows it to be common in other parts of China. Knight (1933), referring to the appalling hygienic conditions in India attendant on childbirth, remarks that tetanus is a notable complication; the former he attributes to religious custom and superstition, and he recommends the use of patience, tact, and kindness in circumventing the latter. He considers "that the marvel is not that so many die, but that so many live under this Spartan treatment! It is truly a case of survival of the fittest." Rossi (1936) states that tetanus neonatorum is a frequent complication in Dakar, but reports only two cases of tetanus in the mother. Houël, Lesini, and Morand (1928) describe two cases of post-partum tetanus, one having generalized spasms, the other localized spasms confined to the jaw and the cervical and dorsal spine muscles.

Case History

A woman aged 25 was admitted to the North Staffordshire Royal Infirmary on October 16, 1940, complaining of spasms of the masticatory muscles and aching of the neck and back muscles. Fifteen days previously she had been delivered of a normal baby by forceps, and the perineum had been repaired with fine silkworm-gut sutures. Five days before admission she noticed stiffness of her jaw muscles, with the onset later of definite spasms which gradually increased in severity. On October 15 aching of her neck and back muscles began. The patient could not recall any recent trauma, and she was obviously a woman who took good care of her person.

The patient was well nourished and of healthy appearance, and she was obviously in pain. It was impossible for her

to open her mouth more than a quarter to half an inch; her tongue was swollen and discoloured, and her speech slurred. The masseters were in tonic contraction, entering at intervals into severe spasm of variable duration. She was found to have cervical rigidity.

Central Nervous System.—Cranial nerves: Nothing abnormal discovered. Limbs: Motor and sensory responses normal, but all reflexes exaggerated; muscle tone not abnormal, plantar responses flexor. Abdominal reflexes were not elicited.

Cardiovascular System.—Pulse: Good volume and tensile regular; rate 90, rising to 130 during the paroxysmal spasms. Heart: Normal position and sounds.

Respiratory System.—Lungs: No impairment of percussion note; broncho-vesicular breath sounds; no adventitious sounds.

Alimentary System.—Abdomen: Lineae atrophicae; fundus of uterus 2 inches above symphysis pubis; liver and spleen not palpated 2 inches below costal margin.

Genito-urinary System.—No discharge per vaginam.

Special Examinations.—Vaginal swab: Direct smear and culture—no tetanus bacilli. Stool: Direct smear and culture—no tetanus bacilli. Urine: Trace of albumin; 1.7% sugar (lactose). Cerebrospinal fluid: Fluid clear, under pressure of 225 mm. H₂O, rising during spasms; a few lymphocytes and red blood corpuscles; sugar 166, chlorides 693, proteins 30 mg. per 10 c.cm.; no increase in globulin content. Serum calcium: 9 mg. per 100 c.cm. Blood count: R.B.C., 4,500,000; Hb 75% slight anisocytosis; W.B.C. 15,000—polymorphs 79%, lymphocytes 18%, eosinophils 1%, basophils 2%.

Progress of Case

Admitted one evening, the next day is taken as the first in this description.

1st Day.—Severe and frequent spasms of masseters, on an average at quarter-hour intervals; cervical rigidity, complaining of backache.

2nd Day.—Marked cervical rigidity, occasional spasm of back patient developing opisthotonos position; facial expression typical risus sardonius. Onset of foul-smelling sanguineous discharge from vagina.

3rd Day.—Marked cyanosis. Severe and frequent spasms of the back muscles; also of the jaws, causing the tongue to become extremely swollen and discoloured.

4th Day.—No change.

5th Day.—Spasms more severe than they had ever been before. Complaining of right-sided earache. Auriscope examination—nothing abnormal.

6th Day.—Spasms less severe than yesterday, but frequent.

7th Day.—No change.

8th Day.—Spasms still severe. Vaginal discharge much less.

9th Day.—No change.

10th Day.—Urticarial serum rash developed; itching intense aggravating the spasms. Discharge from vagina had almost ceased.

11th Day.—Rash still present, itching less intense following treatment with lotion. Spasms less severe and frequent—on an average at half-hourly intervals.

12th Day.—Rash disappeared. Spasms only of jaw muscles aching of neck and back muscles. Taking semisolid diet.

13th Day.—Slight and infrequent jaw spasms.

14th Day.—Occasional jaw spasms. Tenderness of neck and back muscles on palpation.

15th Day.—No spasms. Tongue swollen and discoloured.

16th Day.—Patient put into general ward. Sitting up in bed taking almost full diet; tongue almost normal.

19th Day.—Massage instituted.

21st Day.—Allowed up a little.

24th Day.—Discharged from hospital.

Special Points

Pulse: Volume and tension never gave cause for worry; the rhythm was constantly regular, the rate 90, rising to 130 during the spasms. Blood pressure 130/75, rising during spasms.

Temperature rose to 99° F. on the third day, remaining for four days at that level, and then dropping to normal. The woman was an ideal patient; her morale was at all times high, and her

mind was lucid throughout the illness. She could always put the spatula in her mouth during the spasms to prevent damage to her tongue.

Treatment

General.—Special points to be emphasized: separate and darkened room; quiet enforced; special day and night nurses.

Specific.—Serum: 200,000 units concentrated A.T.S. intravenously the first day; 40,000 units intramuscularly the second, repeated on the third and fourth days.

Sulphonamide Chemotherapy.—Soluseptasine 10 c.cm. 5% solution four-hourly from admission for twenty-four hours, then 1 gramme sulphapyridine by mouth with an occasional injection of the former if the tablets could not be taken. Sulphonamide therapy stopped on the third day owing to the patient being markedly cyanosed.

Sedatives.—(1) Evipan sodium 0.5 to 0.75 gramme; intravenous and intramuscular injections enabled the patient to obtain four to five hours' repose. (2) Avertin, given in a dosage of 0.1 gramme per kg. body weight, provided lengthy and adequate rest. (3) Paraldehyde, 5 to 6 drachms rectally, was of little value. (4) Nembutal, 4½ grains by oral and rectal routes, gave very short periods of rest. (5) Chloral hydrate, 60 grains orally, gave much comfort during the day, two doses usually being sufficient. (6) Hypodermic injection of morphine 1/3 grain appeared a beneficial substitute for the chloral hydrate.

Diet.—We were always able to feed the patient by mouth with fluids, small and frequent quantities being taken through a straw. Fluids given: Horlick's, ovaltine, glucose fruit drinks, meat broths, bovril; egg, milk, and brandy beaten up together; also cream brought in by the patient's relatives. From the eleventh day she was able to take soft solids such as fish and vegetable purées, jellies, etc.

Oral hygiene: Mouth cleansed with glycothymolin swabs.

Back: This was treated daily.

Bowels kept open by gentle enema.

Rash: Calamine and carbolic lotion employed for this.

Vaginal discharge: Gentle hydrogen peroxide douches daily.

Differential Diagnosis

The conditions to be excluded in the diagnosis were tetany, strychnine poisoning, and local oral disease. Tetany is distinguished by the presence of hyperexcitability of the motor nerves and typical spasms of the limbs, all of which were absent in our patient. It is interesting to record the case of a woman, admitted two days after the one under discussion, who twenty-four hours after childbirth developed trismus and risus sardonicus, associated, however, with carpopedal spasm, and who responded satisfactorily to calcium therapy.

Strychnine poisoning was excluded by the fact that the woman's muscles did not relax between the paroxysmal spasms, and local trismus by the absence of oral sepsis, etc.

Despite our inability to isolate the tetanus bacillus, confirmatory evidence of the diagnosis is implicit in the successful issue of the case following antitoxin therapy.

Discussion

It has been assumed in this case that infection with the *B. tetani* entered via the lacerated vaginal tissues. No positive evidence, however, can be offered to substantiate this assumption, smears and cultures being negative. We believe that we are justified in accepting the patient's statement concerning the absence of any other traumatic lesion that might have given rise to her condition. The presence of a foul sanguineous discharge per vaginam two days after admission is in our opinion strong evidence supporting our theory regarding the site of infection. Should the above conclusion be correct, whence did the offending tetanus bacillus originate? Here again we are faced with the lack of certain evidence.

We have no knowledge as to the aetiology of the obstetrical procedures, and were unable to obtain any of the material

used in suturing the perineal lacerations. What importance can be attached to the fact that the baby did not develop tetanus? It is probable that the mother inoculated herself from the rectum, remembering that the bacterial flora of the human body can include the tetanus bacillus (Gardner, 1938; Mackie and McCartney, 1938). It is strange, therefore, that infection does not occur with greater frequency.

The long incubation period, slow development of symptoms, absence of marked pyrexia, and survival of the patient after ten days from the onset were all favourable points in assessing the prognosis.

Treatment consisted in providing adequate nourishment, assuring sufficient rest with a variety of sedatives, and the institution of tetanus antitoxin therapy, as recommended by Paterson of Australia (Price, 1937), an initial massive dose of 200,000 units being employed intravenously. It is probable that the intramuscular doses were unnecessary. No antitoxin was given intrathecally, one of us (B. M.) having seen cases of aseptic meningitis following the introduction of serum by this route.

Summary

A case of tetanus following childbirth is described, and the possibility of infection via a lacerated vagina or perineum discussed.

The merits of various sedatives employed are noted.

The success of antitoxin therapy along the lines suggested by Paterson of Australia is emphasized.

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SAND-FLY FEVER AND BENIGN LYMPHOCYTIC MENINGITIS

BY

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During my period of service from May, 1940, to February, 1941, as acting medical specialist to the Naval patients at a general military hospital a number of cases of benign lymphocytic meningitis were admitted. It was observed that the symptomatology of this disease closely simulated that of sand-fly fever, and in a certain number of cases the diagnosis was established only after lumbar puncture.

The Army medical specialist—Major E. H. Evans—and I decided to investigate this similarity further. It was considered unreasonable and inadvisable to submit all cases of sand-fly fever to lumbar puncture. This form of investigation and treatment was therefore reserved for (1) cases sent in as meningitis; (2) cases sent in as sand-fly fever or pharyngitis, with a complaint of occipital headache or pain in the neck; (3) cases sent in as sand-fly fever, pharyngitis, or with any other diagnosis in which there was neck rigidity, head retraction, Kernig's sign, or other indication of a possible meningitis. Unfortunately before our investigations were completed I received a fresh appointment. It was therefore decided that I should publish my findings on the cases under my care, and that Major Evans should report his further investigations at a later date.

From August 7 to December 12, 1940, 15 patients were admitted who gave the necessary indications for lumbar

puncture: 8 proved to have benign lymphocytic meningitis and 7 had sand-fly fever. The season for sand-fly fever officially ends on November 18, so that the case admitted on December 12, which proved to be one of benign lymphocytic meningitis, would appear to disprove the association of the sand-fly with this form of meningitis. However, a sand-fly was killed in the medical mess a few days after this case was admitted. The patients were, of course, all men; 14 were 31 years of age or under, the other was 44. Major Evans demonstrated to me that the incidence curve of the cases of benign lymphocytic meningitis followed almost precisely the incidence curve of cases of sand-fly fever admitted during 1940.

With the exception of 2 cases the duration of the disease on admission was forty-eight hours or less. One of these exceptions was a case of sand-fly fever and the other of benign lymphocytic meningitis, and the duration was four and five days respectively. Progress in the two conditions was equally satisfactory and recovery was rapid. The treatment consisted of lumbar puncture and the four-hourly administration of a mixture of aspirin, phenacetin, and caffeine citrate. Sulphapyridine was not used.

Symptoms and Physical Signs

The following is an analysis of the symptoms and physical signs of the 15 cases:

	Benign Lymphocytic Meningitis (8 Cases)		Sand-fly Fever (7 Cases)	
	No. of Cases	%	No. of Cases	%
Symptoms				
Orbital pain	8	100	5	71.4
Photophobia	4	50	2	28.6
Frontal headache	8	100	7	100
Occipital	5	62.5	2	28.6
Vomiting	6	75	1	14.3
Pain in neck	7	87.5	5	71.4
Spontaneous	3	37.5	4	57.1
On flexion	7	87.5	4	57.1
Pain in joints	1	12.5	2	28.6
" " muscles	1	12.5	4	57.1
" " back	4	50	2	28.6
Slight sore throat	1	12.5	—	—
Mild rigor	1	12.5	2	28.6
Diarrhoea	—	—	3*	42.8
Temperature on admission	98.8°—101.8°		100.2°—103.2°	
Pulse	50—90 (Av. 75)		80—104 (Av. 93)	
Physical Signs				
Conjunctival congestion	2	25	3	42.8
Congested fauces	1	12.5	3	42.8
Bronchitis (slight)	1	12.5	1	14.3
Tenderness in right hypochondrium (slight)	1	12.5	—	—
Neck rigidity	1	12.5	2 (1 slight)	28.6
Retraction of head (slight)	1	12.5	—	—
Reflexes:				
Sluggish pupillary light reaction	1	12.5	1	14.3
Biceps absent	5	62.5	6	85.7
Triceps absent	2	25	4	57.1
Supinator absent	4	50	6	85.7
Knee-jerk absent both sides	1	12.5	2	28.6
" " " right side	—	—	1	14.3
" " " left side	—	—	2	28.6
" " " sluggish both sides	—	—	1	14.3
" " " right side	1	12.5	—	—
" " " left side	2	25	3	42.8
Ankle-jerk absent both sides	—	—	1	14.3
" " " left side	—	—	1	14.3
" " " right side	—	—	—	—
Plantar reflexes	Normal		1	14.3
Extensor right side	—	—	1	14.3
Not elicited left side	—	—	—	—
Abdominal reflexes:				
Absent both sides	—	—	2	28.6
" left side	1	12.5	—	—
Sluggish both sides	—	—	1	14.3
Positive Kernig	4 (2 slight)	50	(left side)	
Brudzinski	Normal		Normal	
Lumbar puncture:				
Normal pressure	4	50	6	85.7
Slightly increased pressure	2	25	1†	14.3
Moderately	2	25	—	—
Cells: Lymphocytes	74—332 per c.mm. (Av. 183)		1—5 per c.mm.	

The cerebrospinal fluid was clear in all cases and reactions normal except for slightly increased protein content in the benign lymphocytic meningitis cases. This increase was in proportion to the number of cells present.

* One case two days before onset of sand-fly fever.
† Patient had right extensor plantar, which became normal after lumbar puncture.

Commentary

Analysis reveals that the cardinal symptoms and signs of sand-fly fever—namely, frontal headache, orbital pain, photophobia, pains in the back, fever, and conjunctival congestion—are duplicated in benign lymphocytic meningitis. Symptoms that may occur in both conditions but are more commonly present in sand-fly fever are diarrhoea, muscular pains, and to a lesser extent pains in the joints. Symptoms which may occur in both conditions but which are more commonly present in benign lymphocytic meningitis are occipital headache and vomiting. Pain in the neck, especially on flexion, was more frequently met with in benign lymphocytic meningitis, but was surprisingly common in sand-fly fever.

It will be observed that the temperature and pulse rate are higher in sand-fly fever and that congestion of the fauces is more common. Head retraction was not seen in any case of sand-fly fever and was most uncommon in the type of meningitis under discussion. Neck rigidity, however, was a fairly constant sign in benign lymphocytic meningitis, but was present also in 28% of the sand-fly fever cases. (It will be remembered that only cases which presented possible meningeal symptoms or physical signs are dealt with here.)

Abnormal ocular reflexes were equally rare in the two conditions. As regards peripheral nerve reflexes, it will be observed that without exception they were absent slightly more often in sand-fly fever than in benign lymphocytic meningitis. The only case showing a definitely abnormal plantar reflex proved to be a case of sand-fly fever. That patient also had cerebrospinal fluid under slightly increased pressure, and his plantar response returned to normal on the day after lumbar puncture. Kernig's sign was positive in only 50% of the cases of meningitis, and occurred in one case of sand-fly fever.

As a result of these experiences it was customary to suspect the case to be one of benign lymphocytic meningitis if the patient complained of occipital headache, pain in the neck, or vomiting. Moderate fever, comparatively slow pulse rate, neck rigidity, retraction of head, and any abnormal reflexes were also suggestive of this condition. Head retraction alone excluded sand-fly fever; and vomiting, slow pulse rate, moderate pyrexia, neck rigidity, and a positive Kernig were strong presumptive evidence of benign lymphocytic meningitis.

It is nevertheless true that several cases thought to be benign lymphocytic meningitis proved to be sand-fly fever, and vice versa, the examination of the cerebrospinal fluid producing an unexpected report. It would therefore appear that benign lymphocytic meningitis is made up of a group of diseases, and that the virus of sand-fly fever is capable of producing the condition.

The annual report for 1939 of the Director-General of Public Health, New South Wales, deals with a population of more than 2,700,000. The low death rate of 9.75 per 1,000 was nevertheless 5% above the average for the preceding five years; the birth rate was 17.46. The report states that the incidence of typhoid fever was the lowest yet recorded. Diphtheria shows some increase on the previous year, despite a widespread scheme of immunization, in which the State Government co-operates with local authorities. Satisfactory progress is recorded in the field of maternal and infant welfare. A consultant service is provided for the poorer patients; a mobile blood transfusion unit is also available. Every maternal death is reviewed by a medical committee. At the pre-natal clinics attendances increased by 40% over the figure for the previous year. This compares most favourably with the increase of 2% recorded in the preceding report.

PERSISTENT LACTATION WITH A NOTE ON CHIARI AND FROMMEL'S DISEASE

BY

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The purpose of this brief communication is to draw attention to a case in which lactation had been established for the extraordinarily long period of fifteen years. Little is known of the pathology of this condition. The literature on the subject is mostly related to the association of persistent lactation with utero-ovarian atrophy. From this aspect the condition has been studied by Chiari, Braun, and Spaeth (1852-5), Frommel (1882), and more recently by Sharp (1935).

Between 1848 and 1855 Chiari, Braun, and Spaeth contributed a series of gynaecological articles from the Vienna clinics; in these Chiari discussed at some length the association of genital atrophy with prolonged lactation, and it appears that Simpson (1872) and Schroder were familiar with the syndrome. Chiari discusses two cases of puerperal utero-ovarian atrophy accompanied by persistent lactation. Frommel investigated a series of 3,000 labours and puerperia, and arrived at the conclusion that the incidence of uterine atrophy was not more than 1%. In his series the ages of the patients exhibiting the syndrome varied between 19 and 40 years, the average age being 29.6 years. Frommel believed the condition to be most common in women who had had numerous pregnancies, but it may arise after first babies.

The association of persistent lactation with utero-ovarian atrophy is known to some writers as Frommel's disease, but it would appear to be more correct to call it Chiari and Frommel's disease in view of the early writings of the elder Chiari.

Clinical observations indicate that persistent lactation and utero-ovarian atrophy coexist as described by Chiari, Frommel, and others; in some cases lactation may persist for longer periods than usual without evidence of genital atrophy, whereas in others genital atrophy may take place in the absence of prolonged lactation. Frommel records the case of a young woman who after her first pregnancy failed to lactate, but whose genital organs showed marked atrophy.

In Chiari and Frommel's disease atrophy of the uterus is always present, but the degree of atrophy varies from case to case. In some cases the uterus is very small and thin, the length of the cavity in one of the recorded cases being reduced to no more than 4.5 cm. The atrophic process also attacks the cervix, this organ having the appearance characteristic of senile women. In the majority of women suffering from this condition the ovaries are small and atrophic. Of Frommel's 28 cases only 3 had ovaries of normal size.

Menstruation does not always appear after weaning in cases in which this disease develops. It would seem that the development of amenorrhoea depends upon the degree of atrophy which has been attained.

The essential features of Chiari and Frommel's disease are therefore two in number—namely, utero-ovarian atrophy of variable degree, and persistent lactation which also varies in degree as demonstrated by Frommel's case; some women may have amenorrhoea as an additional feature.

Record of a Case of Persistent Lactation

The patient was a married woman 35 years of age. She had one child, aged nearly 16 years. Hospital advice was sought regarding the discharge of blood-stained milk from the left

nipple which had been noticed at intervals during the previous three months. Further inquiry elicited the information that she had lactated continuously since she had weaned her baby—namely, for a period of fifteen years.

Examination revealed mammary glands which were rather voluminous, and it was found that milk could be expressed from each of them with the greatest ease. A few red blood cells were present in the milk first obtained from the left breast. Nothing abnormal could be palpated in the substance of the breast. At the time it was thought that the presence of blood might be due to a duct papilloma or possibly to the rupture of small varicose veins within the breast.

Pelvic examination showed that the uterus was rather smaller than one would expect, firm in consistence, and normal in position. The menstrual losses lasted about four days and occurred at intervals of about a month. The menstrual periods had reappeared about six months after the birth of the baby, and had been constant since that time. Other than the features already mentioned, no evidence of disease of the pituitary gland was discovered.

It was apparent that the patient believed it to be perfectly natural for a woman who had borne a child to lactate for the remainder of her reproductive life, and she did not deny that it was her custom to stimulate the production of milk by expressing it manually every day.

Commentary

This case is of interest in so far as it is one of those rare examples in which lactation persists for many years—in this instance for fifteen years after weaning the baby. It is hardly to be regarded as a case of Chiari and Frommel's disease, as the degree of utero-ovarian atrophy is of a minor nature—certainly not so profound as to cause any menstrual changes. Nevertheless other writers have pointed out that the degree of atrophy varies from case to case, and it is possible that this patient is an example of the mildest variety of genital atrophy associated with prolonged lactation.

It is of especial interest to note that daily manipulation of the breasts had been practised by the patient, and it is possible that this may have been just as influential in prolonging lactation as it is in the case of certain well-known domestic quadrupeds.

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Medical Memoranda

The Blood Supply of Human Heart Valves

Accurate knowledge of normal structure is important in clinical medicine, as anatomical characteristics often throw light on or suggest explanations for some of the mechanical components concerning the localization of disease processes within the body or a tissue. The structure of normal human heart valves, for example, must be properly understood before the histological basis of the pathogenesis of valvulitis can be appreciated.

In view of the importance of such knowledge it is unfortunate that three recent textbooks (Baitsell, 1940; Grant, 1940; Maximow and Bloom, 1939) depict normal human atrio-ventricular valves as containing a richly anastomosing network of blood vessels extending from their bases to the free margin. All quote the authority of Bayne-Jones (1917), and all reproduce the drawing made for him by Max Brödel. It is a semi-diagrammatic figure based on the injection of several specimens and purporting to give a "composite picture of the typical vascular anatomy of a completely injected human mitral or tricuspid valve." The reason for the production of such a composite figure is in itself puzzling, as Bayne-Jones laid no claim to have succeeded in making a complete injection in any valve or cusp.

WORK OF GROSS

The question of the presence or absence of blood vessels in normal human heart valves was for long of a controversial nature, but the final report by Gross (1937), in which he summarizes in admirable fashion the various difficulties that have hindered the true solution of the problem, leaves no doubt as to the non-vascular nature of these structures. Gross's final contribution is of particular significance in view of the fact that he and his collaborators had previously adduced evidence which favoured the belief that blood vessels may exist in a small percentage of normal human heart valves (Gross, 1921; Kugel and Gross, 1926; Ritter, Gross, and Kugel, 1928). Re-examination of their material and of many hundreds of additional specimens, however, led them to express doubt as to the normality of any human heart valve possessing blood vessels (Gross and Friedberg, 1936; Gross and Kugel, 1931). Dow and Harper (1932) reached a similar conclusion.

The presence of blood vessels in heart valves the site of an inflammatory process is undoubted, and it had been shown that they ramify for the most part in the subendothelial zone of the affected cusps. The most probable explanation for their presence is that they have been formed in response to toxic or bacterial injury of the cellular elements of the cusp. The exact nature of the injury is not completely understood, but the work of Gross (1937) clearly indicates that rheumatic fever which had completely regressed clinically is responsible for their formation in many instances. He states: "The supposedly normal vascularized series owes the presence of blood vessels in the valves to a previous mild and in most instances completely healed rheumatic process." Harper (1940) described the reaction of valvular tissue and its relation to the formation of new blood vessels in a case of early rheumatic valvulitis.

DISCUSSION

In the subendothelial zone of normal human valves there are several cell types, many of which under normal circumstances are probably non-motile elements playing an important part in the general metabolism of the cusp. In valvulitis they are activated and produce other cell types. This reaction is primarily one of local defence, but it is also evident that it is secondarily associated with the establishment of new blood vessels within the cusps (Harper, 1940). In the light of these observations it is clear that primary embolism cannot be considered a factor in the genesis of endocarditis in man.

With reference to work on experimental endocarditis it must be emphasized that the significance of the presence or absence of blood vessels in the normal cusps of the animals used has not been sufficiently appreciated. Blood vessels occur normally in the heart valves of certain species—for example, cat, dog, sheep, goat, pig, ox, and horse. These cannot be regarded as analogous to those sometimes occurring in man, which, as explained above, are of inflammatory origin. Rabbit heart valves conform to the human type (Harper, 1938).

These observations have obviously a direct and important bearing on the interpretation of experimental results, and indicate also the care that must be exercised in the comparison of results of experiments on different mammalia. Thus it is essential that statements on details of normal structure should be accurate not only from the purely histological point of view but also from their bearing on the interpretation of disease processes.

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Reviews

MODERN SCIENCE AND THE LEGACY OF
ANCIENT LEARNING

A Short History of Science to the Nineteenth Century. By Charles Singer. (Pp. 400. 8s. 6d. net.) Oxford: The Clarendon Press, 1941.

To inquire why men thought what they did when they did is always an engaging enterprise, and this is the keynote of Dr. Charles Singer's *Short History of Natural Science*. Well known as a most learned authority on the subject, he has in this book so presented the facts as to fascinate anyone interested in the history of ideas. The final exposition of an individual discovery is very different from a description of the steps by which it was reached, but by taking a more extended view of the sequence of ideas, Dr. Singer labels each epoch with its leading motive in a manner which is helpful and impressive.

Thus we start with the emergence of mental coherence in the Greek world when philosophy became based on natural science to the neglect of ethics; then Plato and Aristotle sought to adjust their rival claims, with a preference for ethics, while repudiating the popular religion of the day. This he calls the Great Adventure. Next Alexandrian thought developed separate departments for science, ethics, and religion, and ended with definite scientific deterioration. Intellectual nerve was failing. Under the Roman Empire, the prevalent schools of thought were largely indifferent to science, which deteriorated still further. Scientific inspiration waned to nothing. The vision of the Stoics "was very different from that given by the spacious claim of modern science. . . . It was an iron, nerveless, tyrannical universe . . . in which the Roman thinker must have felt himself fettered, imprisoned, crushed. He had abandoned the faith of his fathers and . . . found himself embracing a machine. . . . It was reaction against this pessimism which led to the great spiritual changes in the midst of which antiquity went up in smoke." And so followed the Dark Age characterized by the Failure of Knowledge just because to the mediaeval mind the world seemed completely knowable in both space and time—and thus not worth knowing. Without curiosity there can be no science, and if the whole scheme of things is regarded as having been revealed once for all, what basis for curiosity remains? Then came the Revival of Learning: seeking to penetrate the dark shadows the humanist tried to discern the antiquity that was beyond. And as he strained his eyes, another vision, a reflection perhaps of himself, came sometimes to him. Then "the vision would be clouded over by that terrible erudition which in the absence of general ideas has been and is one of the enemies of science." Leonardo, Vesalius, and Galileo were more truly the heirs of Plato and Aristotle than were the editors of their texts. For it is living literature, art, and science and not classical scholarship that inherited the legacy of ancient wisdom. That was where the revival of learning failed until the Insurgent Century (that is, the seventeenth) made new attempts at a synthesis aided by the weapon of the experimental method.

The eighteenth century, using the Newtonian key to the mathematics of the heavens, enthroned determinism. And so we are led on to the development of modern science, and the change of thought produced by the doctrine of evolution, in itself a return to the Greek idea that everything is in a state of "becoming." In conclusion Dr. Singer sees the dawn of a stage in which an adequate scientific equipment will involve some regard to the world

as an interconnected whole, in which science and philosophy will dwell less apart, though science must of necessity restrict itself to phenomena. But for science merely to quote authority is useless. The demand for evidence, for tangible data, for experience that can be repeated at will, has created science as we know it.

"Everyone is by nature a disciple either of Plato or of Aristotle," and one might add as a corollary, is either an introvert or an extrovert. Yet surely no one is entirely one or the other, for "our minds, as much the product of evolution as our bodies, have in the ages developed as mirrors of the world in which we dwell; they are attuned to Nature. The mathematical thought of ages on the nature of certain curves elaborated a knowledge which Kepler and Newton fitted into the phenomena of planetary movements. The minds of the pre-Keplerian mathematicians . . . were working on Nature's lines, though they knew it not." With which pregnant saying we must leave this book, which it has been an intellectual pleasure and stimulus to read.

BACILLARY AND RICKETTSIAL INFECTION

Bacillary and Rickettsial Infections: Acute and Chronic. A Textbook. By William H. Holmes, Professor of Medicine. Northwestern University Medical School. (Pp. 676. 25s. net.) New York and London: The Macmillan Company. 1940.

To the series entitled "Orientations in Medicine" Dr. William H. Holmes of Chicago has contributed a volume on *Bacillary and Rickettsial Infections: Acute and Chronic*. Actuated, as many of his predecessors have been, by the belief that the present can be perfectly comprehended only by a knowledge of the past, the author endeavours to trace the history of each disease so far as it is known from the earliest times to the present day. Symptomatology, epidemiology, and bacteriology are closely intermingled. Pages are spent on quotations from ancient writers. History is enriched by anecdote, and references to the Bible are numerous. Our modern knowledge is sometimes given very fully, sometimes but briefly. Long chapters are spent on typhus, typhoid, and tuberculosis; anthrax is dismissed in a few pages. The result is, as the author admits, unconventional. The volume cannot be regarded as a systematic treatise of either the history of medicine, clinical medicine, bacteriology, or epidemiology, but it comprises a mixture of these, along with some immunology and treatment, which are likely to afford more pleasure to the casual reader than to the earnest seeker after knowledge. The book is supposed to be for students, but rightly or wrongly we doubt whether students in this country would welcome a mode of presentation in which so much stress is laid on the historical method of approach, especially when the history is apt to be incomplete and to be neglectful of the German literature. To write so fully on typhus fever and its diagnosis without describing the original observations of Weil and Felix, or on tuberculosis without mentioning the work of the Royal Commission, leads inevitably to the feeling that the author's own knowledge is imperfect or his judgment of doubtful validity.

For the qualified man and for the interested lay reader the book presents much that is attractive, and it is likely to command a wide circle of readers. Its subject-matter is confined strictly to diseases caused by bacilli and rickettsiae. Other bacterial diseases, such as those due to coccid, spirochaetal, or protozoal organisms, are reserved for another volume. There is a good deal of carelessness over the spelling of authors' names, especially in the text, which is frequently at variance with the bibliography. Greater attention might be paid to this defect in a subsequent edition.

HAEMORRHOIDS

Haemorrhoids and their Treatment: The Varicose Syndrome of the Rectum. By Kasper Blond, M.D. Vienna. Translated by E. Stanley Lee, M.S., F.R.C.S. (Pp. 140. 15s. net.) Bristol: John Wright and Sons, Ltd.: London: Simpkin Marshall, Ltd. 1940.

A specialist's general outlook is bound to be influenced more or less by the nature of his specialty. The author of *Haemorrhoids and their Treatment* sees much disease from a proctological point of view; thus many cases of so-called prostatic hypertrophy, he tells us, are really cases of acute congestion or oedema of the prostate brought about by impairment of its venous return, and many prostaticectomies could be avoided if a proper examination were made with a proctoscope. At the same time, and to do him justice, he does bring a general view to bear upon his own specialty, and asserts that the rectal varicose syndrome is not a localized disease of one organ but rather an indication of the dysfunction of the whole alimentary tract. This is essentially sound, and he will no doubt find many to agree with him that in the apparently healthy person haemorrhoids are usually due to overeating. If this contention is correct in these days of rationing, fewer should be troubled with so-called attacks of piles and their complications.

Dr. Blond's thoughtful book is refreshing from the fact that it does not closely follow the beaten track of current opinion. But such a departure from custom as to call anal fissures "thrombophlebitis marginalis recta chronica" may savour of a striving after effect, which is really quite needless since there is so much in the book that is good. A novel view put forward is that pruritus is a toxic manifestation of portal blood in the peripheral systemic venous circulation caused by a backflow where the two venous systems anastomose—between the superior and inferior haemorrhoidal plexuses. The author suggests that scrotal, vulval, and even anal eczema are all due to a retrograde flow of portal blood into the pelvic veins, and, in the case of the crural lesion, downwards into the incompetent saphenous system also. This explanation is ingenious, to say the least of it, and there is much in the monograph that is well worthy of study by general surgeons, proctologists, and practitioners. Mr. Stanley Lee has done a service in translating Dr. Blond's work for us, and the publishers have produced a very readable and well-illustrated volume, attractive in appearance and convenient in size.

Notes on Books

In producing an 84-page booklet, *Canteen Catering*, the Ministry of Food has shown forethought in taking into consideration a variety of needs and tastes. A feature of the booklet is its division into sections for (a) dishes suitable for England and Wales; (b) menus, including broth and black puddings, more acceptable to the Scottish palate; (c) light summer meals; (d) subsidiary dishes for night workers; (e) square meals, easily cooked in an emergency; (f) special vegetable recipes; and (g) sandwich spreads. Stress is laid on the need for "protective foods" to counteract the deficiency in the average diet, and it is particularly advised that raw vegetables should be used when fruit is deficient. Sound advice is given on the introduction of innovations of this kind: make no sudden change, introduce unfamiliar foods into dishes which are known and liked, serve raw vegetables first as a garnish and gradually increase the quantities to form a salad, and so on. It is pointed out that the catering staff should appreciate the value of the foods served in order that they may help in popularizing them. This valuable book is being distributed free to industrial canteens, British Restaurants, Londoners' Meal Services, and to other large-scale catering organizations. It is also available, price 8d. post free, at H.M. Stationery Office, Kingsway, W.C.2.

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SULPHONAMIDES AND THE NERVOUS SYSTEM

The two most alarming reactions associated with the sulphonamides are agranulocytosis and acute haemolytic anaemia. Toxic effects on the nervous system have, however, been recorded from time to time. Headache is not infrequently encountered, associated in some cases with such diverse symptoms as drowsiness, loss of memory, dizziness, palpitation, paraesthesia, loss of taste, tinnitus, and lack of orientation, while there is evidence to suggest that vomiting may be central rather than peripheral in origin. More serious have been persistent hiccup (Wyman¹), difficulty in speech, severe abdominal cramps, and in at least a few cases the onset of definite psychoses. A point of importance is that the nervous symptoms may not appear until some days after the withdrawal of the drug. In this connexion it should be remembered that mechanical judgment is often impaired after taking sulphonamide drugs. It is doubtful, for instance, whether any pilot should be allowed to fly for at least four days after taking sulphonamides, while at least one railway accident in which a number of people were injured has been ascribed to the fact that the engine driver was taking sulphanilamide. Still more serious reactions to sulphonamides are the cases of demyelination of the spinal cord after sulphanilamide, recorded in two patients by Fisher and Gilmour² and in one patient after uleron and disethyl B by Schubert.³ Roseman and Aring⁴ also have recently described what at present is a unique case of haemorrhagic encephalitis after the administration of sulphamethylthiazole. This condition, associated with perivascular haemorrhages and in some instances focal perivascular areas of necrosis, is most frequently produced by heavy metal compounds, such as the arsphenamines, and by some of the alkaloids, particularly the opiate group. In the patient who was given sulphamethylthiazole, 112 grammes in six days, both perivascular haemorrhages and focal necroses were present, together with changes in the endothelium of the blood vessels, leading at times to complete occlusion with resulting anoxaemic damage to the neurones: the lesions, however, were found in the grey matter of the cerebral hemispheres and brain stem rather than in the white matter, as is usually the case in typical haemorrhagic encephalitis. Johnstone and Forgacs⁵ have in these columns called attention to the fact that symptoms resembling those of meningitis may be produced by sulphapyridine in persons with meningococcal meningitis: in five cases, though the cerebrospinal fluid became quite normal, the symptoms continued or, if the drug was

still administered, became intensified; but if therapy was stopped the meningeal symptoms promptly disappeared.

Whereas severe reactions involving the central nervous system have fortunately been extremely rare, those involving the peripheral nervous system have been not infrequent. In 1938 Long and Bliss⁶ noted two cases of peripheral neuritis associated with sulphanilamide therapy, but very few instances have been reported. Waugh⁷ observed foot-drop in a man who had taken 40 grammes of sulphanilamide in nine days, while Ornsteen and Furst⁸ reported toxic neuritis in both lower limbs associated with progressive muscular dystrophy. Albucid has also on rare occasions given rise to peripheral neuritis: in one patient with ulnar neuritis due to this compound Matzdorff⁹ found that vitamin B₁ was of considerable value. Peripheral neuritis has not been reported with sulphapyridine, but with disulphanilamide (DB 32, sulphanilyl sulphanilamide), the dimethyl derivative (uleron), the monomethyl derivative, and with sulphamethylthiazole, many cases have now been described, more especially in Germany. With disulphanilamide and its methyl derivatives the distribution of the neuritis is symmetrical, affecting more especially the flexor muscles of the wrists, the interosseous, adductor, and opponens pollicis muscles of the hands, the flexors and occasionally the extensors of the ankle-joints. The paralysis is often of long duration, and an incomplete reaction of degeneration may be given by some of the muscles.

Sciatica may also occur, together with dysaesthesia and disturbances of the autonomic system. Mahoney and his colleagues¹⁰ reported pains and cramps in the muscles of the arms and legs after sulphamethylthiazole therapy, and Brown and Herrell¹¹ observed three instances of peripheral neuritis among 106 patients treated with this compound. Two cases of nervous involvement after administration of sulphathiazole have been recorded by Bieter and his colleagues¹²: one patient developed foot-drop and deafness in one ear, the other tingling and numbness of the fingers of both hands. No data are yet available for sulphaphenylthiazole and other recently discovered sulphonamide derivatives. A single case of optic neuritis has been recorded by Bucy¹³ after sulphanilamide treatment. The sight became defective, and on examination absolute scotomata for red and blue and relative scotomata for white were discovered: the disks were swollen and reddened. After cessation of treatment it took about a month for normal vision to be restored.

The toxic action of the sulphonamides on the nervous system in man has been very fully confirmed by animal experiments. Doses of 1.5 to 2.0 grammes per kilo of body weight given to rabbits were found by Hawking¹⁴ to cause weakness of the legs, dyspnoea, a rigid extension of the limbs and contraction of the head resembling decerebrate rigidity: in a few animals degenerative

¹ *The Clinical and Experimental Use of Sulfanilamide, Sulfapyridine and Allied Compounds.* Long, P. H., and Bliss, E. A., 1939, New York.

² *Amer. J. Syph.*, 1939, 23, 745.

³ *J. Amer. med. Ass.*, 1938, 111, 2103.

⁴ *Klin. Wschr.*, 1939, 18, 1161.

⁵ *Amer. J. Syph.*, 1940, 24, 613.

⁶ *Amer. J. med. Sci.*, 1940, 200, 618.

⁷ *J. Amer. med. Ass.*, 1941, 116, 2231.

⁸ *Ibid.*, 1937, 109, 1007.

⁹ *Lancet*, 1937, 2, 1019.

¹ *South. med. & surg. J.*, 1938, 100, 15.

² *Lancet*, 1939, 2, 301.

³ *Derm. Wschr.*, 1938, 107, 1361.

⁴ *New Engl. J. Med.*, 1941, 224, 416.

⁵ *British Medical Journal*, 1941, 1, 772.

changes were present in some of the anterior horn cells of the spinal cord and in some of the cortical neurones. In mice there were incoordination and paralysis. In dogs, sulphanilamide in doses of 1 gramme per kilo produced salivation, vomiting, diarrhoea, hyperpnoea, muscular weakness, ataxia, and, finally, spastic rigidity of the limbs with loss of sensation. Blindness came on, and placing reactions associated with an unimpaired cerebral cortex were absent (Marshall *et al.*¹¹). Rosenthal¹² and Nelson¹³ also studied the effects of sulphanilamide and disulphanilamide on rabbits and chickens, while more recently Bieter and his colleagues¹⁴ have compared the effects of sulphanilamide, sulphapyridine, sulphathiazole, sulphamethylthiazole, uleron, and sulphaphenylthiazole on chickens, which on the whole are far more sensitive to the sulphonamides than the rabbit or man. Varying degrees of injury to the myelin sheaths of peripheral nerves and to the myelin sheaths and axones of the spinal cord were noted: sulphanilamide and sulphapyridine were found to be the least injurious, followed in ascending order by sulphathiazole, sulphamethylthiazole, uleron, and sulphaphenylthiazole. Under certain conditions, which are at present obscure, and after repeated doses, some accumulation of the drugs occurs in the sciatic nerves.

In view of these effects on the central nervous system the results of the local application of sulphonamides to the brain are of much interest. Russell and Falconer¹⁵ found that local application of solid sulphanilamide and solid sulphapyridine to the rabbit's brain did not cause any appreciable damage, although excess of either substance caused a foreign body reaction. Since sulphanilamide is more soluble than sulphapyridine it is to be preferred for local application. Hurteau¹⁶ also found in cats that the local application of sulphonamides to the brain caused a mild focal leucocytic response which rapidly disappeared from the meninges, while the actual focal reaction was much less than from the implantation of silk sutures or silver clips. The drug could, however, be seen either microscopically or macroscopically in the brain tissues as late as twenty days: chemically, sulphanilamide could be detected up to eleven days, sulphathiazole up to seventeen days, sulphapyridine up to thirty-four days. There was no constant evidence of neuronal destruction or glial reaction from application of drugs to excised wounds of the brain, while the ultimate results of the healing of wounds to which the drugs have been applied does not suggest that they increase the extent of scarring.

INTERRELATIONS OF THE THYROID GLAND

When in 1891 G. R. Murray first successfully treated a case of myxoedema by injections of thyroid extract he not only initiated a rational endocrine therapy but proved that the thyroid was an organ of internal secretion and was not excretory in function, as had previously been believed. We now realize that this gland and other

endocrine structures have complicated interrelations, some of which are not easy to interpret. The influence of the anterior pituitary on the thyroid is fairly well defined. The presence of some thyrotrophic principle in the pituitary could be deduced from its tendency to enlarge when thyroid function is depressed, and from the involution of the thyroid which follows ablation of the pituitary in tadpoles and rats. Anterior pituitary extracts cause hypertrophy of thyroid cells even *in vitro*, and that this is an attempt at compensation is shown by the presence of a thyroid-stimulating substance in the blood of thyroidectomized animals and in myxoedematous patients. As for relations with the gonads, it has long been known that the thyroid may enlarge at puberty, menstruation, pregnancy, and the menopause, but the mechanism is not so clear. Oestrone seems to depress thyroid activity, while androgens may stimulate it. From a number of rather confusing observations Marine¹⁷ concludes that thyroid enlargement is most likely to take place at the point in the menstrual cycle when oestrogens are at their lowest level; yet myxoedema is apt to occur at the menopause. It is to be hoped that further research will result in a more consistent story.

The relation between the thyroid and adrenals is complex but more intelligible. It is important to distinguish between cortex and medulla in this connexion. The evidence is that the cortex and the thyroid are antagonistic in action. Indeed the total picture of Graves's disease, with its creatinuria, loss of hair, muscular weakness, achlorhydria, pigmentation, and persistent thymus, implies adrenal cortical insufficiency. On the other hand all recent work supports the original view of Asher and Flack that the thyroid hormone increases the response to adrenaline of the sympathetic nervous system and the tissues innervated by it. Some such interrelation is further indicated because thyroxine and adrenaline are both derivatives of tyrosine and each is a powerful activator of metabolism. In Graves's disease, then, we find antagonism with the cortex and synergism with the medulla of the adrenals. The persistent enlargement of the thymus in Graves's disease is well known, and Hoskins has found that feeding guinea-pigs with thyroid causes the thymus to enlarge. This is a corrective antagonism, for as long ago as 1912 Gudernatsch observed that feeding tadpoles with thymus retarded metamorphosis and offered some protection against the effects of thyroid. Moreover immature animals are less sensitive to thyroxine than adults unless their thymus is removed. Therefore thymectomy, as once recommended for Graves's disease, is clearly contraindicated. Although the independent functions of the thyroid and parathyroids, once fiercely contested, are now universally accepted, it would appear they are complementary in respect of calcium and phosphorus metabolism. Aub has shown that in Graves's disease calcium excretion is greatly increased, while in myxoedema it is decreased. The well-known osteoporosis of the former condition recalls the bony changes of hyperparathyroidism. A considerable but conflicting literature has accumulated on the relation of the various vitamins to thyroid function, but, as Means has pointed

¹¹ *J. Amer. med. Ass.*, 1938, 110, 252.

¹² *Publ. Hlth. Rep. Wash.*, 1939, 54, 95.

¹³ *Ibid.*, 1939, 54, 106.

¹⁴ *Lancet*, 1940, 2, 100.

¹⁵ *Canad. med. Ass. J.*, 1941, 44, 352.

¹⁷ *Bull. N.Y. Acad. Med.*, 1939, 15, 790.

out, there is no evidence that their administration gives appreciable benefit either in Graves's disease or in myxoedema.

In the same journal as Marine's paper there is an interesting and important communication by Lichtwitz² on hypothalamic-pituitary syndromes. It supports the views recently expressed in these columns.³ An observation of some topical interest is that the last twenty-five years have produced a larger number of tall individuals with long limbs and a relatively short torso on which is perched a small head with a long face. In 1930 Harvey Cushing called attention to the increased height of American undergraduates which occurred during his lifetime: whereas when he entered his university only 5% of the students were six feet or more in height, forty years later 20% reached this stature. This points to a change in pituitary-hypothalamic activity, linked with a eunuchoid type. Its somatic characteristics are paralleled by a definite mental pattern. These individuals are emotional rather than rational; they have little stability, lack self-confidence, and dread to assume responsibility. Hence they are easily herded by a man who claims to be their leader and holds out prospects of greatness. It is interesting that in the present Germany this infantile gigantism is portrayed, in the statue of Siegfried, as the ideal of manhood. Here is an evolutionary change fraught with the dangers that beset us to-day.

PENICILLIN: AN ANTISEPTIC OF MICROBIC ORIGIN

We seem to be at the beginning of a new antiseptic era, and not the least promising of the anti-bacterial agents awaiting clinical trial are substances produced by bacteria themselves. Although examples of antagonism between bacteria have been noticed for many years, the thorough investigation of this phenomenon was neglected until the work of Dubos, whose method and results we described briefly not long ago.⁴ Starting with a mixture of soils calculated to contain a great variety of bacteria, he fed it for two years with nothing but a particular bacterium, thus selectively breeding out from the original flora those species which could attack and subsist on the bacterium added as pabulum. Thus he isolated a sporing Gram-positive bacillus now recognized as *B. brevis*, which is highly antagonistic to staphylococci and many other Gram-positive bacteria. An extract of this organism proved to be an antiseptic of astonishing potency, not only active *in vitro* but capable, for example, of curing experimental pneumococcal infection in mice. This substance, now known as "gramicidin," has properties well worthy of therapeutic trial. Dubos and Hotchkiss⁵ have recently isolated from *B. brevis* another agent, "tyrocidine," which acts also on Gram-negative bacteria but only *in vitro*, and in this and its more toxic properties for mammalian cells rather resembles the older sort of antiseptic.

Another example of antagonism, known for many years, has now been restudied with remarkable results. This story goes back twelve years to the accidental contamination of a plate in Fleming's laboratory by the spore of a mould, a trivial and commonplace occurrence which was to

have immense consequences. The original colony of this mould, which proved to be *Penicillium notatum*, inhibited the growth of staphylococci in its vicinity, and fluid cultures of it contained a substance, since known as "penicillin," which was strongly inhibitory to the growth of various mainly Gram-positive bacteria. It came to be used at St. Mary's Hospital and elsewhere as an ingredient in selective culture media, and does not appear to have been considered as possibly useful from any other point of view. The wider possibilities of penicillin have been explored at Oxford by a team of workers directed by Prof. H. W. Florey and E. Chain,⁶ who now present an extensive report on their various studies. Earlier observations briefly reported last year suggested that penicillin might be of use as an antiseptic, and the first further step was to provide for its production on an adequate scale. This was not an easy matter, for the larger the scale of cultural work the greater is the risk of contamination, and it appears most unlikely that supplies of penicillin for general use will be available for some time to come. It was found possible to purify the substance to a degree hitherto unattempted and to store it; an arbitrary unit of potency has been adopted, and a simple method devised for assessing potency. The purified product inhibits the growth of *Staphylococcus aureus*, *Streptococcus pyogenes*, and certain other bacteria in a dilution of 1 in 1,000,000 or more. Serum, blood, and pus do not interfere with this effect, and it is exerted on a large as well as a small inoculum, a feature of the action of penicillin in which it is superior, at least in *in vitro* performance, to the sulphonamides. High concentrations relative to those which should be needed to secure antiseptic action were found to be innocuous to leucocytes and to fibroblasts in tissue culture. Penicillin can be given to animals and man intravenously without evident toxic effect, and continuous administration by this route maintains a bacteriostatic concentration in the blood. It is excreted mainly in the urine, but also in the bile and saliva; it was not found in pancreatic juice or cerebrospinal fluid. Acid and the action of insusceptible bacteria destroy it; hence it needs to be protected by alkali if given by the mouth, and is decomposed if given by rectum. The culmination of all these studies was the administration of penicillin by intravenous drip to several cases of staphylococcal pyaemia with evident favourable effect. Given by the mouth with sodium bicarbonate it also served to clear up a staphylococcal infection of the urinary tract; local application to the eye in conjunctivitis was also successful.

These are only the main facts emerging from a very comprehensive study in which a large team of workers is engaged. Laboratory investigations have been carried from every possible aspect to a point amply justifying clinical trial; but the few cases studied—few because the production of penicillin could keep pace with no more—serve only to show that there is one infection at least, and that among the most resistant to all other forms of chemotherapy, which can be favourably influenced even in its gravest form. The list of bacteria susceptible *in vitro* to the action of penicillin is a long one, and includes such various micro-organisms as the meningococcus, the anthrax bacillus, and *Actinomyces hominis*. The wider possibilities of this form of treatment will doubtless be explored as far as possible by the method of local application, if only for the sake of economy in material. Continuous intravenous administration, though consuming large amounts, can be made less wasteful by extracting penicillin from the urine and using it again; that this novel proceeding was actually resorted to and worth while makes it appear that at the moment penicillin is to other antiseptics not unlike what radium is to other metals.

¹ Bull. N.Y. Acad. Med., 1939, 15, 773.

² British Medical Journal, 1941, 1, 755.

³ Ibid., 1939, 2, 1193.

⁴ J. exp. Med., 1941, 73, 629.

⁶ Lancet, 1941, 2, 177.

FATALITY IN A BLOOD DONOR

Since the outbreak of war thousands of pints of blood have been withdrawn from donors all over the country without the report of any serious mishap. In the majority of cases blood is taken by simple gravity, but in some instances suction is applied to the bottle either by an electric pump, a Higginson syringe, or an electric rotary pump such as was described by Biddle and Langley in 1939 in this *Journal*.¹ Recently a fatal case of air embolism has occurred due to a pump of the latter type reversing its action. An expert from the factory who had made the pump was not aware that such a thing could happen. There was a valve in the pump which was unfortunately out of action due to a piece of foreign matter, but this valve was not placed in the pump for the purpose of preventing such an action but only to stop surges if the pump failed. The pump works on alternating current, and reversal occurs only if the rotor is in a certain position and the pump is switched on from the wall plug and not from the switch on the pump. On the occasion of the disaster, suction had proceeded satisfactorily until an assistant under a misapprehension switched the current off for a moment. The motor of this type of pump can be made safe by the installation of a condenser to prevent reversal. Additional safeguards are a safety valve in the suction current and careful directions as to switching the current. It is hoped that any hospital making use of the rotary suction pump will take steps to have the necessary alterations made in the apparatus. At the moment, when the good will of donors is so essential to the welfare of both Service and civilian casualties, no expense is too great to ensure that the health of the donor is safeguarded.

RECOVERY FROM CRUSH SYNDROME

Respite from air raids has given opportunity to examine more closely the data on the casualties of the winter and spring and to follow more thoroughly the trains of thought that these suggest. The syndrome associated with crush injury occurring in patients hurried under the debris of a bombed house has been the point of departure of several hypotheses. On the theory that the syndrome is due not to the liberation of toxic bodies from the crushed tissues into the general circulation but the reverse—loss of blood constituents into the injured limb—Patey and Robertson² suggest the use of intermittent positive pressure with a Pavaex apparatus. Of the two cases they treated thus, however, one was already past the danger period (the first week) and the second showed no signs of shock or renal impairment except a few red corpuscles in the urine. The surgical problem of gangrene so often encountered in these crushed patients has also been tackled by using fascial-splitting incisions, on the theory that pressure in deep fascial compartments itself produces tissue damage. This has been made the main subject of an extremely careful and detailed case-study by a group of workers at the London Hospital.³ Observations were made on the contractility and appearance of the individual muscles exposed by this procedure: biopsy specimens were taken, both at the time and later in the patient's recovery. Two muscles in strong fascial compartments were non-contractile and showed severe necrosis thirty-three hours after release. Other muscles not so confined, though pale and watery, contracted normally and showed only moderate necrosis. This

selective damage was thought to be not the direct result of localized trauma but the result of tension inside strong fascial sheaths. This type of intervention is designed to save the limb and prevent ischaemic muscle damage; it may equally increase resorption from already damaged tissue, an action not to be desired if renal damage is due to tissue breakdown products. It has been shown that such substances do enter the blood, and the pigment in the urine of such patients has been identified as myohaemoglobin.⁴ As has been more recently pointed out,⁵ this was put forward as a possibility as long ago as 1923 by Minami, working on material collected by the Germans during the war of 1914-18. Efforts directed towards combating this systemic result of injury may perhaps be of major importance in the coming winter: comparison of the possible therapeutic value of cortical hormone, alkalization, and diuretic measures is urgently needed, and will call for thorough observation and unremitting attention if any convincing proof of benefit is to be obtained. In this connexion the case recorded in these columns by R. G. Henderson⁶ is of interest: glucose and isotonic sodium sulphate were given intravenously on the seventh and following days. This was followed by diuresis and recovery. A more complete study of a similar case is recorded by Longland and Murray.⁷ In spite of potassium citrate (grains 360) by mouth daily from the third day, the urine became alkaline only on the sixth day, but the output increased and recovery ensued despite a blood-urea level of 375 mg. per 100 c.cm. This case was unusual since it presented obvious signs of haemolysis, to which, in the presence of acidosis, the authors ascribe the renal lesion. Further careful studies like this are needed. The mechanism by which the local lesion produces the systemic disturbance (if it does so) must be clarified before we can integrate in any rational way the treatment of the local and that of the systemic condition. This will demand that complete and effective co-operation between surgeon and physician, pathologist and physiologist, which we may hope and expect as one of the few, if indirect, benefits of these unhappy times.

THE SPREAD OF POLIOMYELITIS

The view that human poliomyelitis is a disease of the nervous system alone has never been wholly acceptable either to clinicians or to epidemiologists. Up to a short time ago, however, it was generally held that the epidemiology and pathogenesis of the disease in man were essentially similar to those in monkeys, the usually accepted view (cf. Faber⁸) being based chiefly on the work of Fairbrother and Hurst,⁹ who worked with the rhesus monkey *Macaca mulatta*. In this species poliomyelitis appears to be a disease strictly confined to nervous tissues, the only "natural" route of infection being by the olfactory nerves. The view that in man also this was the usual portal of infection was supported by the fact that, from 1911 to 1937 (cf. Kramer *et al.*¹⁰), of 535 attempts to recover poliomyelitis virus from the nasopharynx of persons either suffering or convalescent from poliomyelitis sixty-four yielded positive results. During the last few years, however, there has been a tendency to look for primary infections of poliomyelitis virus in non-nervous tissues, thus going back to suggestions made many years ago. In 1911

¹ *Lancet*, 1941, 1, 643.

² *British Medical Journal*, 1941, 2, 29.

³ *Ibid.*, 1941, 2, 197.

⁴ *Lancet*, 1941, 2, 152.

⁵ *Medicine*, 1935, 12, 83.

⁶ *J. Path. Bact.*, 1930, 33, 17.

⁷ *J. exp. Med.*, 1939, 69, 49.

¹ Biddle, E., and Langley, G. F., *British Medical Journal*, 1939, 1, 555.

² *Lancet*, 1941, 1, 780.

³ *London Hosp. Gaz.*, 1941, 44, 126.

Lovett and Richardson¹¹ reported that of 419 cases of poliomyelitis observed from 1908 to 1910, 105, or rather more than 25%, had been swimming, wading, or paddling in more or less heavily contaminated water shortly before the onset of their attack. In 1912 Kling, Petterson, and Wernstedt,¹² working in Stockholm, attempted to isolate the virus by inoculation into monkeys: in this way they claim to have isolated the virus from the intestinal tract of human beings thirty-six times out of fifty. No more passages were made, however, though in 1915 Sawyer¹³ obtained one strain of virus from the stools of a convalescent. This was given further monkey passage. Recently, groups of workers in America, Sweden, and France have independently isolated poliomyelitis virus from the faeces, particularly of non-paralytic cases. In Trask, Vignec, and Paul's¹⁴ case the virus was isolated two, eleven, and twenty-five days after onset, while Lépine and Sedallian¹⁵ reported its isolation from the faeces forty-one days after an apparently abortive attack of the disease. On two occasions Paul, Trask, and Gard¹⁶ succeeded in isolating poliomyelitis virus from sewage in cities where the disease was epidemic. These results suggest that at least in non-paralytic cases large quantities of virus are present in the intestinal contents, and that multiplication of the virus takes place in some tissue closely related to the intestinal tract. Burnet and Jackson¹⁷ have recently found that in the monkey *Macacus irus*, infected orally, the mesenteric lymph nodes almost always contain the virus in such large amounts that it could hardly have been conveyed by centrifugal spread along nerves from the central nervous system. Since multiplication within lymph nodes seems unlikely, though it cannot be ruled out, it is probable that the virus increases in and is liberated from some tissue within the field of drainage of the mesenteric lymph nodes, either in the intestinal epithelium or in the associated nervous elements. In any case, however, since virus can pass into the faeces and can contaminate the patient's environment, the question arises of the possible portals of entry of the virus into the body and its method of spread from the portal of entry to the central nervous system. Barber,¹⁸ in an account of an outbreak in a school, was impressed by its resemblance to an outbreak of food-poisoning and suggested that the infection might have been by the gastro-intestinal route. A number of observers (cf. Frey¹⁹) have drawn attention to the association of trauma and poliomyelitis, and Howitt,²⁰ Trask and Paul,²¹ and others have pointed out that recently isolated strains of the virus readily infect monkeys if injected intradermally. These findings explain the frequency with which, as reported by Leake,²² children inoculated subcutaneously with partially inactivated virus developed the disease. Thus the skin, if slightly traumatized, may be one point of entry in man. There are other possible portals from which the virus of poliomyelitis may reach the central nervous system. There is already some evidence that instillation into the conjunctival sac may result in infection. Sabin²³ has drawn attention to the tonsil and the possible role of tonsillectomy in providing a portal of entry, and Burnet and Jackson¹⁷ have found that after oral administration the virus can exist at an early stage in the superficial pharyngeal tissues. The findings of these workers after oral administration to *Macacus irus* also serve to confirm the penetration of the

intestinal mucosa by the virus of poliomyelitis, a fact originally demonstrated by Kling, Levaditi, and Lépine.²⁴ How exactly virus reaches the central nervous system from these various possible portals of entry is still not certain. However, the fact that the concentration of virus in the cervical-thoracic vagus and in the sympathetic trunks is high suggests that the autonomic nervous system is responsible for a centripetal spread of the virus.

THE I.L.O. IN THE NEW WORLD

The International Labour Office has been rudely uprooted from the lakeside of Geneva and sent across the Atlantic. It had continued its work very much as usual during the first eight months of war, and was planning its annual conference to be held in June of last year. Then Belgium and Holland were invaded, Italy entered the war, and the barricades on the Swiss frontier symbolized its sudden physical and moral isolation from its chief sources of democratic support. Thanks to generous help by the Canadian Government and McGill University, a new working centre was organized in Montreal, and thither by way of Lisbon, the one open port of exit from the Continent, some fifty members of the staff were after various adventures transferred. No sooner had the organization found its feet in the New World than its director, Mr. John G. Winant, resigned on becoming United States Ambassador to Great Britain. His deputy, Mr. E. J. Phelan, an Irishman, is acting director until the governing body can meet to make a permanent appointment. The resignation of Mr. Winant, however, was the occasion for the reaffirmation by thirty-one States of their whole-hearted support of the I.L.O. These States include Great Britain and all its Dominions, nine European countries (all but one of them occupied, and that one Turkey), the United States, and twelve countries of Central and South America. In a pamphlet entitled *The I.L.O. at Work* a pictorial account is given of the organization in its new environment. Its Economic and Social Security Sections are busily at work on studies of the economic and social background of the changes wrought by the war; the Employment Section is engaged on many problems of wartime labour supply and methods of co-operation between Governments and employers' and workers' organizations; and all concerned are re-establishing the I.L.O. as an international clearing house of information on labour questions, social insurance, and industrial health. It is felt that the I.L.O., in spite of the restrictions within which it has to function, can do a great deal to avert or temper the depression which may seize the world after war is over, and to that end it is preparing itself to help in the orderly demobilization of military forces and defence industries and the setting up of a better social structure in the immediate post-war years.

The annual report for 1940 of the research departments of the College of the Pharmaceutical Society shows that they have managed to maintain their activities in spite of evacuation and depletion of their staff. They are to be heartily congratulated on this achievement. Certain problems of special importance in war have been examined: for example, the influence of cooking on the vitamin content of foods, and the relative antiseptic values of acriflavine and proflavine. In addition the departments have continued their routine testing of vitamins, hormones, and certain galenicals.

¹¹ *Amer. J. Dis. Child.* 1911, 2, 369.

¹² *Communications Inst. Méd. Etat*, Stockholm, 1912, 3, 5.

¹³ *Amer. J. trop. Dis. prev. Med.*, 1915, 3, 164.

¹⁴ *J. Amer. med. Ass.*, 1938, 111, 6.

¹⁵ *C. r. Acad. Sci., Paris*, 1939, 208, 129.

¹⁶ *J. Bact.*, 1940, 38, 63.

¹⁷ *Austral. J. exp. Biol. med. Sci.*, 1940, 18, 361.

¹⁸ *British Medical Journal*, 1938, 2, 1137.

¹⁹ *Schweiz. med. Wschr.*, 1938, 68, 491.

²⁰ *Science*, 1937, 85, 268.

²¹ *Ibid.*, 1938, 87, 44.

²² *J. Amer. med. Ass.*, 1935, 105, 2152.

²³ *Ibid.*, 1938, 111, 605.

²⁴ *Bull. Acad. Méd., Paris*, 1929, 102, 158.

TREATMENT OF MAXILLO-FACIAL WOUNDS

The following memorandum on the preliminary treatment of maxillo-facial wounds has been issued by the War Office.

Only first-aid treatment is practicable until the patients arrive at the main dressing station, which may be some hours after the receipt of the wound. Early treatment is directed to saving life, the two main aims being to prevent suffocation and to control haemorrhage. General treatment to prevent shock is given by rest, warmth, and sedatives.

Respiratory Obstruction.—As a result of the injury, loss of control of the tongue and/or displacement of bony tissue may occur to such a degree that the air passages become obstructed. Attention should be paid to the possible presence of foreign bodies—for example, fragments of teeth, dentures, etc.—which should be carefully removed. Posture is of vital importance, and the patient should be placed on the stretcher in the prone or semi-prone position to prevent the tongue falling back. If sitting, or if he is able to walk, the wounded man should do so with his head bent forward and downwards. It is most important that stretcher-bearers should be trained in the transportation of men in the prone or semi-prone position (see *R.A.M.C. Training*, 1935, paras. 73 and 86 (i)).

Haemorrhage.—Correct posture will help to control haemorrhage by keeping the tongue forward. Ligation of visible bleeding vessels may be practicable at the advanced dressing station.

Bandaging.—The ordinary four-tailed bandage should never be used unless applied under the chin, as it is likely to increase the displacement of the fragments by backward pressure. The "barrel" and "Hamilton" types are very suitable and are easily and rapidly applied. A useful external support is elastoplast—a good grip can be obtained in the shaved temporal areas and the scalp left free. In all cases the bandage should be applied under the chin in such a way as to give gentle upward support (see *R.A.M.C. Training*, 1935, para. 589, as amended by Amendments No. 4 of 1939).

Preliminary Operative Treatment.—The main dressing station or the casualty clearing station is the first place where a dental officer will be available, and his co-operation and assistance will be sought in every case (see War Office urgent postal telegram 24/General/554, dated June 8, 1940). After due attention has been given to shock, haemorrhage, and respiration, x-ray examination (both lateral and antero-posterior) should be made at the earliest opportunity, and the following principles of preliminary operative treatment are recommended.

The operation should be carried out as a rule under general anaesthesia, the surgeon and the dental surgeon working together. The throat should be packed with one piece of 6-inch roll gauze during intratracheal anaesthesia until the jaws are ready for intermaxillary wiring, when the packing should be removed. A long stout stitch may usefully be passed through the dorsum of the tongue and the ends secured. This stitch must not be removed until the reflexes have fully returned after the operation. Owing to mobility of the fragments great care is necessary when manipulating any form of gag. Debridement should definitely be more conservative than in the limbs and trunk, and is seldom necessary.

Injuries to Hard Tissues

(a) *Without Loss of Tissue.*—So far as possible accurate apposition of fragments should be carried out. A tooth in the actual line of fracture should be extracted (except when there is only one tooth on the distal fragment and its retention might temporarily assist in control). Fragments carrying teeth should be immobilized by interdental wiring with malleable stainless steel wire. When, in cases of fracture of the mandible, intermaxillary interdental wiring is impossible—for example, where the superior maxilla is edentulous—the principle of maxillary wiring may be adopted. One or more thin stainless steel wires are passed through the alveolar process and looped to furnish fixed points to which the interdentally wired fragments of the mandible can be attached to reduce and immobilize the central fragment. When teeth in the mandible are absent or have been destroyed it may be possible to modify the patient's denture or to

use impression composition or gutta-percha moulded inside the mouth, or in a Kingsley splint, to control the fragments.

(b) *With Loss of Tissue.*—Only the smallest bony fragments which are completely separated from periosteal attachments should be removed. The main fragments should be fixed in normal occlusion with the opposing jaw. If their ends are exposed they should be covered with mucous membrane by the suturing of mucous membrane to mucous membrane or skin. If necessary any jagged ends of exposed bone may be removed to relieve tension. Even if the whole dental region is lost the molar fragments should be held in normal occlusion. Never allow bone fragments (with intervening loss) to fall together, as great deformity and loss of function will result. Surgical wiring of bone fragments is absolutely contraindicated in all compound fractures of the mandible.

Injuries to Soft Tissues (Skin, Muscle, Mucous Membrane)

(a) *Without Loss of Tissue.*—Make a careful primary suture with accurate apposition of skin edges, using fine stitches placed as close to the edge of the wound as possible.

(b) *With Loss of Tissue.*—Only such primary suture of the wound as can be done without any tension or closure of the mouth should be undertaken; thus a loss of one-third of the upper or lower lip, without subjacent fracture, may safely be sutured without detriment to subsequent treatment. It cannot be too strongly impressed upon surgeons that suture of a lip when there is a compound fracture of the mandible should not be attempted until complete control and repositioning of the fragments have been obtained. As a result of the neglect of this rule many cases have been admitted to special centres with an encroachment on the oral opening rendering the subsequent repositioning of the bony fragments extremely difficult. It is far better in these cases to pay all attention to the repositioning of the bone fragments and to leave the suturing of soft tissue and plastic treatment for later attention. In connexion with this, the suture of skin to mucous membrane around the margin of the defect is a procedure of great value in preventing infection and contraction of the soft tissues, either of which will vitiate both hard and soft tissue replacement.

Drainage.—Experience has shown that there is a high frequency of abscess formation after injuries of the lower jaw, and the advisability of providing submandibular drainage at the outset by the insertion of one or more tubes at likely sites should be considered.

Feeding.—The drinking cup with about 3 inches of free rubber tubing is a suitable method of presenting fluid diet well back in the throat.

Mouth Washing.—A solution of sodium bicarbonate is especially recommended as a mouth-wash or for purposes of irrigation in addition to the ordinary antiseptics. The mouth should be irrigated after feeds by means of a Higginson syringe.

Dressings.—Owing to the constant dribbling of saliva in maxillo-facial wounds the dressings are rapidly soaked and frequent changing is necessary. A large jaconet or other waterproof bib should be worn to protect the clothing.

Disposal of Cases.—At the first opportunity the patient should be evacuated to a special maxillo-facial hospital or other hospital where the services of a maxillo-facial team are available.

That the number of practising midwives is diminishing at a time when the calls on the midwifery service are becoming more numerous is an inference to be drawn from the report of the Central Midwives Board for the year ending with March last. There were 64,440 women on the roll of midwives, a net increase of 854 during the twelve months, but only 15,874 had notified their intention to practise during the calendar year 1940, being 1,347 fewer than in 1939 and 1,620 fewer than in 1937, the peak year of the decade. Of the midwives who did make the notification only eleven were untrained "bona-fide" midwives, having been enrolled by virtue of practising before the passing of the Midwives Act. Those entering midwifery practice for the first time during 1940 numbered 1,500. The register of pupil-midwives shows that during that year 2,178 women took the first period of midwifery training and 1,083 the second period. The manner in which the teachers have carried on despite war difficulties is praised in the report; there has been surprisingly little interruption of training.

SERUM RESEARCH IN AUSTRALIA

THE COMMONWEALTH LABORATORIES

[FROM A CORRESPONDENT]

Among the industrial and scientific establishments that have become essential to Australia's war organization are the Commonwealth Serum Laboratories at Royal Park, Melbourne, which are the largest of their kind in the Southern Hemisphere. Since the outbreak of war they have been working at high speed in supplying sera, vaccines, and other biological products for the fighting Services and the civil community, and they now manufacture almost the whole range of biochemical products. For some time the laboratories have been capable of supplying the needs of Australia and its fighting forces over-seas, and recently they were extended to enable them to relieve the United Kingdom of the task of supplying such products to other British possessions bordering the Pacific and Indian Oceans and friendly non-British Powers.

Aim and Work of the Laboratories

The Commonwealth Serum Laboratories were established in the early days of the last war to meet an emergency caused by the cessation of supplies of serum and vaccines from over-seas. They absorbed the earlier Commonwealth Calf Lymph Depot at Royal Park, Melbourne.

A staff of about 300, consisting of graduates in human and veterinary medicine, specially trained in bacteriology and pathology, and highly skilled biochemists, physicists, and botanists, is conducting research into every relevant aspect of bacteriology and immunology. As the growth of medical knowledge opens up new fields of treatment, prevention, and diagnosis, new sera and prophylactic agents are being tested. The livestock population of the laboratories totals many thousands of guinea-pigs, rabbits, mice, rats, horses, cattle, sheep, dogs, donkeys, and bandicoots.

The laboratories are unaffected by constitutional limitations, which restrict Commonwealth action in other phases of public health control in Australia, and in their twenty-five years of existence they have shown a record of steady development, high scientific attainment, and commercial success conspicuous among Government institutions. They now play a part in Australia's national economy for which there is no substitute. The volume of business has steadily increased, and the growing profits are put into a trust account. It is the policy, however, first to pass on to the public the benefit by way of reduced prices for products, and, secondly, to extend the facilities for research into some of the obscure aspects of this branch of medical treatment. Results have been most encouraging, and have proved the wisdom and soundness of this policy.

It has always been the aim of the laboratories to supply only agents of proven value, uniform in potency, and standardized according to the best technique available. The laboratories have been appointed the national centre for the maintenance in Australia of the standards of the Permanent Commission on Biological Standardization of the League of Nations.

Departmental Products

The department responsible for the production of insulin used in the treatment of diabetics has steadily grown, and the amount of insulin now being regularly issued is very large. Commonwealth pituitary extract is now well established among the practising profession as a sound therapeutic agent, and supplies of the Commonwealth subsidiary standard of pituitary are regularly renewed and checked against the international standard. Thyroid tablets are produced and standardized in terms of thyroxine iodine in accordance with the recommendations of the *British Pharmacopoeia*.

Although the local demand for Jennerian calf lymph for vaccination against small-pox is not great, adequate supplies are constantly maintained in a readily available form to meet any possible epidemic emergency. The vaccine department of the

laboratories produces a wide range of vaccines for prevention or treatment of such diseases as cholera and plague, dysentery, gonorrhoea, influenza, whooping-cough, typhoid fever, and coryza, and the streptococcal and staphylococcal infections. In addition this department makes special vaccines to prescription.

Separate departments produce diphtheria and tetanus toxins and also toxoids. The latter are used for the prevention of these diseases in human beings and animals. A special anaerobic department prepares toxin for the production of gas gangrene antitoxin and other sera. In other departments sera are prepared for treatment of many other diseases, including anthrax, dysentery, gonorrhoea, cerebrospinal meningitis, gas gangrene, and pneumonia. Part of the laboratories was recently rebuilt and specially equipped for the investigation of vitamins, and high-grade spectrophotographic and other apparatus are used. Antivenenes for the treatment of snake-bite of the Australian venomous snakes have been the subject of intensive investigation for the last ten years, and antivenene is now available for the most poisonous of the Australian snakes.

A large range of tuberculins is prepared by a special department from human and bovine strains of *M. tuberculosis* for the diagnosis of tuberculosis in human beings and animals. Other preparations from similar organisms are also available. In the allergen department a very large number of special extracts for testing and treatment of hay fever and asthma are prepared.

The media department supplies several hundred different types of bacteriological medium for use by bacteriologists within the Serum Laboratories and in the special departments of hospitals and other institutions throughout Australia. Another special department prepares various agents for the diagnosis of disease as used in the practice of human and veterinary medicine by pathological departments of hospitals, etc. Speaking generally, the work of the laboratories has been a background of scientific research in the fields of bacteriology and biochemistry.

Although, for the last fifteen years, the production of veterinary biological products has been a feature of the work of the laboratories, there has been an extensive development in this direction more recently. The products have been used in greatly increased amounts in all States for the prevention or treatment of disease in domestic animals due to black disease, botulism, tetanus, enterotoxaemia, blackleg, canine distemper, canine tick-poisoning, etc. The care and treatment of many thousands of animals are the responsibility of the veterinary staff.

Activities other than Production

It would be a misconception to regard the Serum Laboratories as an institute solely devoted to the preparation and distribution of biological products. A very large part of the work consists of activities other than production as already indicated. The laboratories do much work as part of the Commonwealth Department of Health, exercising advisory, investigative, and routine functions in a special capacity. In addition, regular annual examinations are held for several grades of officers in the Department. These are compulsory for all of these grades throughout the health service.

For many years, by means of publications of many kinds—independently and in scientific and lay journals—the laboratories have performed an educational service to the community. There is now a considerable and regular issue of articles for publication, embodying the results of original and applied research, which has been extensively developed during recent years.

The Commonwealth Serum Laboratories combine scientific achievement with commercial enterprise in an institution which serves Australia well in time of peace. In time of national emergency it provides a service vital to the civil population and the fighting Services, as well as to those units of the Empire now dependent upon Australia in this respect.

S. Ansbacher (*Science*, 1941, 93, 164), referring to the work of Woods and Fildes on the anti-sulphanilamide activity of *p*-aminobenzoic acid *in vitro*, presents evidence that the latter is one of the factors in the vitamin B complex. According to his experimental evidence, Ansbacher concludes that *p*-aminobenzoic acid is a chromatrichia factor for the rat and a growth-promoting factor for the chick.

ECONOMY IN LIVER EXTRACTS

The Ministry of Health has issued an Order under the Defence Regulations, limiting, as a wartime measure, the use of liver extracts. The Order provides that liver extracts shall be administered to patients suffering from pernicious anaemia or other megalocytic anaemias only and that such administration shall be only by injection. These restrictions will not apply to preparations manufactured before August 31, 1941.

Until now liver for medicinal preparations has been imported, home supplies being used for food purposes. This has meant the use of shipping refrigeration space which is urgently required for other needs. Further, the preparation of extracts of liver to be taken by mouth involves the use of glycerin and alcohol among other substances, and these, as is well known, are in immense demand for munitions. Fortunately, it is possible to achieve economy in the use of liver extracts without patients suffering any hardship. Liver extract is a specific in the treatment of pernicious anaemia and other megalocytic anaemias only, and it has been proved that by far the most effective and economical way of administering it is by injection. It does not, however, have the same specific effect on the other and much more common forms of anaemia, which can be effectively treated in other ways. Patients, therefore, with other forms of anaemia need not suffer, while at the same time ample supplies of liver will be assured for those who really need it.

Local News

ENGLAND AND WALES

An American Hospital in England

On a site in the South of England a complete field hospital is nearing completion with a total floor area of 3,256 feet by 440 feet. It comprises nine wards, a laboratory, a laundry, a recreation centre, a fully equipped kitchen, a pathological laboratory, and accommodation for full medical and nursing staff, who will be drawn entirely from American volunteers. This is an all-American hospital. Roofs, floors, walls, every bolt and screw, and every bit of interior furniture and equipment have been shipped from America as a gift from the American Red Cross and Harvard University, and their enterprise has established something quite new in building practice. The hospital is of timber construction throughout and it was delivered on to the building site in prefabricated sections all ready for rapid assembly. It has been put together under the supervision of Mr. Gwyer of the American P.H.C. Corporation without the aid of plans and detail drawings because these failed to reach this country. It is estimated that, employing thirty men with a knowledge of this system of construction, a hospital of this size could be completely assembled and equipped in less than twenty-five weeks. The hospital incorporates a mobile field unit. Dr. John E. Gordon, professor of preventive medicine and epidemiology at Harvard University, is director of the hospital, and the medical staff have all been supplied by Harvard University.

Bristol Hospitals Fund

Two years ago the voluntary hospitals of Bristol, in a concerted effort to stop the large deficits which appeared annually in their individual balance sheets, launched their own contributory scheme—the Bristol Hospitals Fund. In spite of the war and of gloomy prognostications based on the fact that Bristol already had several independent contributory schemes, the fund has collected £33,000 for hospitals and auxiliary services. Its annual revenue is between £25,000 and £30,000, and its membership—still growing—is 18,000. Still more encouraging is the proposal, announced by Mr. Egbert Cadbury at a recent meeting of the Bristol Hospitals Fund, to start an "intermediate contributory scheme," the admitted object of which is not only to provide for a section of the community whose income falls within certain defined limits, but also to secure some payment for specialist and consultant services in addition to cost of maintenance. The

B.M.A. scale fixing the limit of income for free medical and surgical attention is to be observed by all Bristol voluntary hospitals—that is, the upper limit will be £312 a year for a married person with dependants, £260 for a married person without children, and £208 a year for a single person without dependants. The Bristol Hospital Fund's new scheme is for persons with incomes just above these figures—that is, for married persons with dependants and an income of not more than £416, married persons without dependants and an income of not more than £364, and single persons without dependants with an income up to £260. For a payment of 6d. a week (26s. a year) they will be entitled to full hospital services, including those of specialists and consultants. The scheme will apply to all the voluntary hospitals in Br.stol except the Br.stol Eye Hospital, where a specially modified scale of fees is payable.

Reports of Societies

PATHOLOGICAL MISCELLANY

About sixty members and guests attended a meeting of the Association of Clinical Pathologists on July 19 at Cambridge, when a number of short communications were made.

Acute Pancreatitis.—Dr. J. F. GASKELL described seven cases of fatal acute pancreatitis in Cambridge between 1932 and 1934. The patients had been in vigorous health, but death occurred within a few hours of onset, in several cases shortly after a full meal. At necropsy, done usually within twenty-four hours, acute haemorrhagic and even necrotic pancreatitis, apparently of ante-mortem origin, was found. No association between the cases could be traced and no significant micro-organisms were found. In one case a man died on the football field, the suggestion being that the head of the pancreas had been squeezed against the spine by another player's knees.

Serum for Transfusion.—Drs. G. A. HARRISON and L. E. R. PICKEN demonstrated the preparation of blood serum for transfusion. Ordinary dry blood bottles were used and about 47% yield of serum was obtained. The resultant serum remained clear at room temperature. Among 102 transfusions pyrexia with rigor occurred once and without rigor four times. On the assumption that the body contained 10 pints of blood and that a haemorrhage of 6 pints was the largest compatible with survival, the maximum amount of serum that could be required even in the worst cases would be 3 pints—that is, half of the volume of blood lost. In most transfusions one bottle of serum had been given. Defibrinated blood was also prepared: 30 c.cm. of glass beads shaken in the blood gave good defibrination. If the blood were not used the serum could be recovered later.

Dr. I. N. GRAEVES demonstrated the attractive Cambridge plant for vacuum-freezing drying of serum or plasma. Plasma was dried in the sterile bottle in bulk, or spun so that a readily soluble layer of dried serum adhered to the inner walls of the bottle.

Blood Groups.—Drs. G. L. TAYLOR, R. R. RACE, and Prof. R. A. FISHER showed figures amplifying those published in *Nature* in April, 1940. The proto-Scandinavian abundance of the O phenotype in blood groups as one progressed from South England north to North-West Scotland was clear in the large figures now available from blood transfusion centres, the totals nearing 150,000. For O and A groups the percentage figures for South England were 45 and 43, for North England 48 and 40, for Scotland 52 and 34.

Glandular Fever.—Dr. A. M. BARRETT gave details of technique in deciding titre in the Paul-Bunnell test for glandular fever. Horse red cells, he said, gave a somewhat higher titre than sheep cells. Of 100 normal human sera none agglutinated sheep cells at 1 in 80, 4 gave a titre of 1 in 80 or slightly higher with horse cells. Of 27 cases of glandular fever 17 gave a titre of 1 in 640 or slightly less with sheep cells; 10 had a higher titre. With horse cells 11 gave 1 in 640 or less, and 16 showed

a higher titre. The slight titre in normal sera could be abolished by absorption with Forssman antigen (guinea-pig kidney), whereas ox cells would absorb the true glandular fever haemagglutinin. Dr. S. C. DYKE showed curves of blood counts during glandular fever. The rise in the total white cells might not start for about a week; it reached in the average case about 18,000 per c.mm. at three weeks, dropped to 9,000 at seven weeks, with a temporary secondary rise to 19,000 at about ten weeks. This curve ran parallel to the eosinophil curve, since it was the eosinophil increase that mainly caused the leucocytosis. During the early reduction or absence of eosinophil cells, eosinophil granules might be found in the polymorpho-neutrophils. There was swelling of the eyelids in every case.

Poliomyelitis.—Dr. SINCLAIR MILLER suggested that, as general lymphoid hyperplasia occurred in poliomyelitis and swelling of Peyer's patches was associated with the passage of virus in the faeces, the textbook description of poliomyelitis as an exclusively or predominantly neurotropic virus was insufficient.

Glycosuria.—Dr. F. B. SMITH described glucose-tolerance tests in 57 recruits referred for "glycosuria." Only 1 had diabetes mellitus; 23 had no glycosuria; 29 had renal glycosuria compatible with full activity and good health; and 36 gave a peak response in the tolerance test, with return to normal in one and a half to two hours. Dr. Smith was inclined, for capillary blood, to accept a maximum of 180 to 190 mg., and even 200 mg., per 100 c.cm. if the return to normal took place under two hours.

Tuberculosis.—Dr. C. H. WHITTLE discussed some variations in response to tuberculous infections. Five types were described. Purulent cerebrospinal fluid from acute fatal meningitis in an Indian student showed large numbers of acid-fast bacilli. A boy of 4, afebrile and in good health, was found at operation for hernia to have his peritoneum studded with active tubercles containing acid-fast bacilli. A case of Bazin's disease, one of papulo-necrotic tuberculide, and one of Schaumann's disease were described with biopsies and tuberculin reactions.

Media for Diphtheria Bacilli.—Dr. A. W. DOWNIE described a modified tellurite blood agar medium for diphtheria bacilli. Hedley-Wright agar with 1.0% of Turner's peptone formed the bottom layer of the plate; the top layer of agar contained 5% horse blood and 0.04% potassium tellurite. The addition of 0.75 to 1.0% of Evans bacteriological peptone (or bacto- or difco-proteose peptone) yielded larger *mitis* and *gravis* colonies. Of 488 swabs from new cases, contacts, convalescent and carrier cases, Loeffler plates were positive and tellurite negative in from 2 to 3%, whereas in from 15 to 37% in different groups tellurite plates alone gave positive results.

Haematology.—Dr. L. B. COLE demonstrated a macrocytic anaemia in a baby 4 weeks old, with rapid response to anahæmin. Dr. F. B. SMITH showed 4 cases of ovalocytosis in one family (one patient suffered from pernicious anaemia); and Dr. C. H. WHITTLE sections of benign lymphogranulomatosis in a woman.

Clostridia.—Miss NANCY HAYWARD demonstrated the use of the Nagler reaction for the rapid identification of *Cl. welchii* (Hayward, N. J., *British Medical Journal*, 1941, 1, 811). The reactions of strong and weak toxin-producing strains of *Cl. welchii*, feebly reacting non-*welchii* cultures, and other non-reacting anaerobes were shown both in tubes and on plates. The growth from wound swabs on Nagler plates and on blood plates were compared. In plates containing serum *Cl. welchii* produced a Nagler opacity; if the plate contained a small amount of antitoxin the opacity did not appear. Dr. SCHWABACHER said that *Cl. tertium* would grow as a facultative acrobe. This was often forgotten, despite the work of Hall and Dufforth (*J. Bact.*, 1935, 29, 269). By means of surface viable counts colonies of *Cl. tertium* were found to grow in air, in 5% CO₂, under micro-aerophilic and anaerobic conditions, the intensity of growth increasing in this order. The organism was shown sporing when grown anaerobically and as a Gram-negative bacillus when cultivated in air.

The second American Congress on Obstetrics and Gynaecology will be held at St. Louis, Missouri, from April 6 to 10, 1942. Further information may be obtained from the Chicago office of the Congress, 650, Rush Street.

Correspondence

Describing Hypochlorite Solutions in Treatment of Burns

SIR,—In view of the importance of avoiding confusion in the treatment of burns with hypochlorite solutions, it seems desirable that users of this treatment should take real care in describing the composition of the solutions employed. The dangerous practice of describing a 2.5% dilution of a 1% solution of sodium hypochlorite as "2.5% electrolytic hypochlorite" (Bunyan, *Proc. roy. Soc. Med.*, 1940, 34, 27) has already been criticized by Mr. Lunn (*Journal*, July 26, p. 136) and has been amended by Commander Bunyan (July 5, p. 3) in his proposal to use the term E.S.H. for a 1% solution of electrolytic sodium hypochlorite. But even now it seems undesirable to use the term "5% E.S.H." to mean a solution of 0.05% electrolytic sodium hypochlorite, since the consequences to the patient of the mistaken use of a solution of 100 times the correct strength might be disastrous.

There is further danger in the lack of definition by various authors of the sodium chloride content and pH of their solutions of hypochlorite. These factors may be of clinical importance at least as great as the hypochlorite content, especially when solutions are used such as "milton," which when undiluted is said to contain 16.5% of sodium chloride. All danger of confusion would be avoided if authors were to state early in their papers the content of their stock solution in hypochlorite and in sodium chloride, and the approximate pH. Authors could then refer to dilutions of this solution as "5% of stock solution" and so on, thus admitting of no ambiguity.—I am, etc.,

National Institute for Medical Research,
Hampstead, N.W.3, Aug. 20.

R. B. BOURDILLON.

Neurosis or Psychosis?

SIR,—The perennial debate as to the distinguishability of neuroses and psychoses is certainly wearisome, but it remains fundamental. Unlike Captain Tredgold, experience with the psychiatric disorders of soldiers has impressed on me both the usefulness and the general ease with which a distinction between endogenous and reactive types of depression may be made. There are, it seems to me, two common fallacies which are not always avoided by disputants on this theme. One is in essence the old logical trap which faces one when asked to say how many stones make a heap. If we were to be troubled in this way in physical medicine we might be tempted to doubt the existence of diabetes mellitus as a pathological entity. The other fault frequently committed is a forgetfulness of the fact that psychiatric disorders have a long time-span, frequently extending over the whole of the life. We may be puzzled at any one instant of time to say whether a condition belongs to one or another class, and yet find ourselves in no such difficulty were we able to know the whole past and future life of the patient. Upholders of the belief in a distinction between "neurotic" and "psychotic" types of depression have allowed themselves to be side-tracked by pre-occupation with clinical minutiae, such as the presence or absence of insight. We should rather attempt to evaluate the biological qualities of the illness, as it occurs in its setting of personality make-up and constitution as revealed by family history. If we were to adopt such an attitude, we would no longer be inclined to regard the characteristic phasic disturbance of the manic-depressive and the depressive systems shown almost universally by any sick human being as the polar extremes of the same syndrome.—I am, etc.,

Sutton, Surrey, Aug. 18.

ELIOT SLATER.

Activity of Tuberculosis

SIR,—The clear-cut definition of such useful terms as "activity," "allergy," and "toxæmia" (which are apt to become woolly not only at the edges) is long overdue; I should like, if I may, to accept Dr. Lawrence Roberts's challenge in his letter (August 16, p. 245) to define "activity," and set the ball rolling.

I submit that the presence of "activity" is to be deduced only when there are evidences of tissue destruction. The amount of tissue destruction can be measured by means of the sedimentin index and expressed numerically in units: the higher the index the greater the amount of tissue destruction. Healthy young

adult males show indices varying from 0.53 unit to 0.74 unit, with an average of 0.65 unit. Active pulmonary tuberculosis causes indices to rise to anywhere between 0.95 unit and 2.70 units. (The average patient admitted to this sanatorium shows an index of 1.70 units.) Rarely as a result of treatment is the index reduced to less than 1.0 unit; but an index of 1.15 seems to be compatible with good symptomatic health and a full day's work. If in addition the lesions continue to regress the index will improve still further.

If a patient had a T.B.-positive sputum and no evidences of tissue destruction (i.e., an index within normal limits) his bacilli would be entirely saprophytic and perfect symbiosis would exist between them and him. Without any tissue destruction he would be providing them with a home and a culture medium in which to breed. Such a condition obtains with various other organisms, and is therefore presumably theoretically possible with the tubercle bacillus.

But I have yet to meet the man with a positive sputum and a normal index.—I am, etc.,

Vale Royal Abbey, Cheshire, Aug. 17.

GEORGE DAY.

Active Pulmonary Tuberculosis: A Definition

SIR,—In your issue of August 16 (p. 245) Dr. Lawrence Roberts quotes two types of case of pulmonary tuberculosis, and implies that I would class patients in the first type as carriers of the disease. I must disclaim all responsibility for this statement, which is a great surprise to me. I cannot help feeling that Dr. Roberts has misunderstood my meaning, but I do not think that this was my fault, as Dr. Wright, in the same issue, has obviously understood what I wished to convey.

The original purpose of my paper was to make the profession "tubercle-conscious," and it was directed chiefly to those members of the profession who, in the course of their routine work, inevitably meet individuals who are coughing up tubercle bacilli and infecting others. The suggestion was that if those practitioners cared to have sputum examined in every possible case they would meet with some surprising results, and they might well encounter many cases which were infectious and yet which were not suffering from pulmonary tuberculosis. After all, it was only a suggestion, and as such capable of verification, so that there is little point in criticizing the hypothesis until the material which I indicated has been examined.

The discussion has, however, shifted in a direction which I did not foresee, and a definition of active pulmonary tuberculosis is asked for. This is by no means easy. Pulmonary tuberculosis presents itself in an astonishing variety of ways, but for a diagnosis of active disease there must obviously be symptoms and/or signs (in the wide sense, including pathological evidence). The symptoms and signs may be either those of toxæmia or those of a lesion in the lung. Toxæmia, together with evidence of a tuberculous lung lesion, is almost conclusive of active pulmonary tuberculosis. What many people do not recognize is that symptoms and signs of the local lesion are not so conclusive; hæmoptysis, for instance, may continue for years after the lesion has become arrested, usually in such cases being associated with fibrosis and bronchiectasis. The physical signs in the chest are rarely conclusive, although persistent crepitations and pleural friction are usually good evidence. In the same way a single x-ray is universally admitted to be misleading at times, and so, I maintain, is the sputum. I would define active pulmonary tuberculosis as "a tuberculous lesion in the lung which is considered to be responsible for toxæmia or which can be shown on serial skiagrams to be altering." It does not matter in which direction x-ray changes occur, for evidence of improvement is proof that the lesion is, or has recently been, active.

I gather that Dr. Fraenkel advocates the treatment of all sputum-positive cases until they become sputum-negative. This appeals to me most strongly, but how is it to be achieved?—I am, etc.,

London, W.1, Aug. 18.

JAMES MAXWELL.

Chemotherapy in Middle-ear Disease

SIR,—I had assumed that the leading article recently published in your columns had brought to an end the discussion on chemotherapy in acute otitis media. The article by Major C. A. Hutchinson (August 2, p. 159) revives the subject, fortunately, I

think, in view of its practical clinical importance. Dr. Jessiman's opening contribution¹ showed considerable enthusiasm for chemotherapy, though the cases quoted by him appeared to show an infection unusually mild or a diagnosis open to doubt. Later contributors have expressed an appreciation of the value of chemotherapy, but have entered so many caveats and suggested such possibilities that one is left with the impression that while lip-service is paid to the method its value is in fact discounted.

Great emphasis has been placed upon preliminary bacteriological examinations of specimens from the middle ear or nasopharynx. Is this necessary? Is this another case where treatment must wait upon the laboratory? It may be that sulphamidamide, sulphapyridine, and sulphathiazole are not mere specifics for streptococci, pneumococci, and staphylococci, but that each is more polyvalent than its predecessor. Prof. Fleming² recently adduced evidence suggesting the latter possibility. The time should soon arrive when there is general agreement on this important point: it has not yet been reached.

My own practice is to regard the bacteriological examination of these cases as not compensating for the time consumed (nor for the possible expense to the patient). My usual prescription is sulphapyridine in adults, one gramme every four hours as a minimum. This, free fluids, confinement to bed, local palliatives, and appropriate surgery for suppuration when localized are the essentials of treatment.

More important, however, is the suggestion repeatedly made by your correspondents that chemotherapy fogs the clinical picture or masks a mastoiditis (Hutchinson³). I cannot agree that the cases described by the last author are, in fact, cases of masked mastoiditis, unless all cases are to be so described which do not present the old-fashioned and elementary features—pyrexia, mastoid tenderness, and mastoid swelling. Nor has it been shown that chemotherapy was responsible for the course of the disease in the cases quoted by this and other writers. How commonly we saw cases such as those described before the days of chemotherapy! As students we were taught the dangers of antipyretics—relieving symptoms, lowering a perhaps useful rise in temperature, yet leaving the disease untouched. But all the evidence shows that the chemotherapeutic agents under discussion do not act in this way; they are not palliatives, are not antitoxic, but are anti-bacterial.

Chemotherapy may well make otology more difficult; the patient being tied over an acute and spreading infection, the decision to operate for a residual infection may become necessary—a decision requiring judgment, but surely not more than competent otology can provide. And the greater difficulty for the otologist does not counterbalance the advantage to the patient: operation for a localized and not a spreading infection—how desirable elsewhere in the body, how equally desirable in the middle-ear tract!

Altered spheres of activity since the outbreak of war make recent comparisons difficult: in any case the Army should not be a fertile field for mastoid surgery. But I do not forget that in the twelve months before the outbreak of war mastoid operations performed by me were some 40% less than the fairly steady average of the ten preceding years. These twelve months saw chemotherapy (largely sulphamidamide) in extensive use. The lowered incidence of mastoid operations could perhaps in part be explained by the prevalence of streptococci of relatively low virulence (as suggested by T. B. Layton), but chemotherapy was in my opinion an important factor. This practice of chemotherapy and decrease in operations were not accompanied by any increase in complications; the reverse was the case, I believe, but I am writing without access to the records. There occur to me two cases admitted (without previous chemotherapy) of otitis media with meningitis, each showing a turbid C.S.F. with streptococci both in smears and on culture. Both were treated with sulphamidamide; one, occurring early in an acute suppurative otitis media, had no operative treatment of any sort; the other, occurring later in the disease, had a Schwartz mastoid operation; both cleared up completely.

Chemotherapy is of great value in acute suppurative otitis media and its extensions in the early stages and when extension is threatened. It will tend to prevent spread of infection, but it will not cause resolution of a suppuration which has localized. It lessens in no way the need for careful and skilled observation of every case of acute suppurative otitis media; it lessens in no way the truth of the statement that in acute suppurative otitis

media discharge persisting unduly long has a mastoid or nasopharyngeal cause which *must* be cleared up, by operation if necessary, if permanent tympanic damage or serious complications are to be avoided. Failure to perform myringotomy or mastoid operation when indicated is negligence; failure to employ chemotherapy when indicated is also a disservice to the patient.—I am, etc.,

Aug. 6.

T. A. CLARKE,
T/Major, R.A.M.C.

REFERENCES

- Jessiman, J. B., *British Medical Journal*, 1941, 1, 399.
Hutchinson, C. A., *ibid.*, 2, 159.
Fleming, A., *Proc. roy. Soc. Med.*, 1941, 34, 342.

SIR.—Dr. J. B. Jessiman's (March 15, p. 399) article interested me not so much by its optimistic note as by the many patients whose acute otitis media was secondary to scarlet fever. I found that sulphapyridine given in half the dosage recommended brought the temperatures of children suffering from scarlet fever and measles to normal within a few days, and those who were seen early did not develop otitis media. The few who had otalgia when first seen did not have distended drums, and their pains disappeared in twenty-four to forty-eight hours. Similar results were noticed in patients suffering from or likely to suffer from symptoms of otitis media secondary to sinusitis, tonsillitis, endemic parotitis, dental extraction, teething, pertussis, nasopharyngeal operations, and kindred ailments.

I agree with Major C. A. Hutchinson (August 2, p. 159) that too much reliance should not be placed on the sulphonamides, but not that sulphapyridine should be replaced by sulphanilamide in streptococcal infections. The dosage and variety of sulphonamide should depend on the age, sex, idiosyncrasy, and complaint of the patient, and the course of the condition.

A man aged 35 was suffering from acute pain in the right ear. This was associated with right antral, sphenoidal, and tonsillar infection. The drum was distended and oedematous. Myringotomy immediately relieved the pain: 0.5 gramme of sulphapyridine was given three times a day for three days. Clear blood-stained serum, usually associated with streptococcal infection, escaped from the curved myringotomy incision. No secondary infection occurred with pneumococci or staphylococci and the drum was dry on the fourth day. He returned to work in ten days and has had no return of symptoms.

The following three cases may also be of interest.

A boy aged 2 years, with a history of suppurative otitis media for fourteen days, had creamy pus coming from the right ear and cloudy pus from the left. A quarter of a 0.5-gramme tablet of sulphapyridine was given three times a day for a week, half a tablet was given twice a day for the second week, and a quarter tablet for the third and fourth weeks. The left ear was dry at the end of the second week and the right at the end of the fourth week.

A boy aged 2 years had had spasmodic torticollis on the left side of three months' duration. There were injection, thickening, and loss of light reflex of the left drum. This was associated with loss of appetite and poor health. There was also a left antral infection and chronic rhinorrhoea. A quarter of a tablet was given three times a day for the first week and twice daily for the second and third weeks. The rhinorrhoea had now ceased, the appetite returned, and the thickened and retracted drum was less injected. The spasmodic torticollis was now only pronounced when on his mother's right arm. Nebulae ephedrin. (ephedrine grain 1/4, liq. paraffin ad 1 oz.) with guttae ac. carbolic were continued for two months, when recovery took place.

A youth aged 18 had had a discharging ear for three months. Offensive cholesteatomatous material was removed when syringed: 0.5 gramme of sulphapyridine was given three times a day for three weeks, when the ear was dry and a clean healthy perforation remained.—I am, etc.,

Burley, Leeds, August 11.

L. C. LODGE.

Severe Reaction after Sulphapyridine

SIR.—Quite apart from the fact that a definite diagnosis has not been made in the case here recorded, the interesting feature is the intense reaction following reinstitution of therapy with sulphapyridine. The presumption is, of course, that the patient has become sensitized to it.

The patient, a woman aged 60, had eight weeks ago become suddenly ill with malaise and fever. On the second day of her

illness she became covered with a scarlatiniform rash, which disappeared after twenty-four hours. She was febrile at this time, but there was no sore throat. The fever continued, and therapy with sulphapyridine was started. She was given 0.5 gramme at four-hourly intervals for six days—a total of 18 grammes. Fever still persisted, and after a lapse of three days treatment with sulphathiazole was instituted. She was given three tablets every four hours for three days. During the time she was taking sulphapyridine she felt very ill and vomited three to four times daily. Sulphathiazole therapy produced similar symptoms, but they were not so bad. At the end of this time—that is, four weeks ago—the patient was still febrile and has remained so ever since.

During the last week she has been given pentnucleotide 10 c.cm. every other day for four doses, in the hope that it might improve the polymorphonuclear count (see below). After the fourth dose I thought that another course of sulphapyridine might help to get rid of the fever. The patient felt well at 7 a.m.; temperature 99°. One tablet was given at 8 a.m. At 8.30 a.m. she vomited and felt very ill. At 9 a.m. she had a rigor and another at 10 a.m. Temperature rose to 104°. No more sulphapyridine was given, and her condition gradually improved during the day.

On examination the only physical sign she presented was an indescribable bruit—pericardial—which occurred in diastole over the pulmonary area. Blood culture and the urine were sterile. Agglutination reactions, repeated twice, for *B. typhosus*, paratyphoid A and B, and *Br. abortus* were negative. A blood count showed 30% haemoglobin, 1,700,000 red cells per 100 c.cm., colour index 0.9. The white cells numbered 2,100; lymphocytes 79%, polymorphs 21%.

The patient's past history is of interest. At birth she is said to have been a "bluc baby," which is a possible explanation of the heart murmur. Three years ago she had a septic finger followed by a staphylococcal septicaemia, from which she recovered with difficulty. She had lobar pneumonia one year ago, when she responded well to sulphapyridine.—I am, etc.,

Tenbury Wells, July 19.

J. A. BURNETT, M.R.C.S.

Abortus Fever and Sulphapyridine

SIR.—In your issue of August 9 (p. 210) Dr. J. Whittingdale writes of the treatment of a case of abortus fever with sulphapyridine. If I interpret the case report correctly, the patient had approximately fourteen days of fever, on the last two of which he was given sulphapyridine. Since then Dr. Whittingdale has noted an afebrile phase of about ten days before sitting down to pen an enthusiastic eulogy of "our newest bactericide," which tempts him into the unequivocal and forthright title for his letter of "*Brucella abortus* Infection responds to Sulphapyridine" (I presume that is his own choice).

It may well be, of course, that the patient concerned has remained afebrile since Dr. Whittingdale wrote his letter, but it is surely misleading to record as an apparent cure, after so short a time of observation, a case of a disease which is notorious for its intermissions and relapses.

Our opportunities for studying this interesting disease at first hand are necessarily limited. A recent case of my own has been under observation in all for rather over one hundred days. In that time there have been three febrile phases lasting approximately 10, 14, and 4 days, but the intermission periods which have punctuated these have been 20 and 28 days, and, up to the present time, a further 28 days have passed since the last phase. I am not yet able to say that a point of cure has been reached. The illness has been entirely symptomless except for sweats and temperature and the usual concomitant features during the bouts of fever. There have been no joint or muscle pains and no splenic enlargement. The agglutination titre for *Brucella abortus* was 1:500. Sulphapyridine was given during the second and third febrile phases in doses of 0.5 gramme four-hourly except when the patient was asleep. As to its effect one can only speculate. The course of the fever in the second stage did not show any material difference from that of the first, in which sulphapyridine was not used, and actually the second stage lasted longer. Treatment in the second stage did not prevent a further relapse after twenty-eight days, and, though the subsequent recurrence of temperature was not prolonged, that fact cannot necessarily be attributed to sulphapyridine, which in this case certainly failed to achieve any dramatic result.

comparable to the effect in other conditions—for example, pneumonia. Abortus fever is so capricious in its behaviour that one cannot with certainty say how much its course is influenced by treatment or how much by the natural rise and fall of the infection itself.

One point of interest is the possible effect of sulphapyridine on the blood picture, which is normally leucopenic in this condition. My own case showed 3,800 white cells per c.mm. after the first course of sulphapyridine, with polymorphs 40% and lymphocytes 51%. If prolonged treatment with sulphapyridine should become necessary in this type of case, the double strain on the granulocytes—one from the disease and the other from treatment—must be considered.

Most of us in general practice must see from time to time, especially in children, febrile illnesses some of which are unrecognized cases of abortus fever. The temptation to give sulphapyridine to pyrexias of doubtful origin is obviously great, and at times may seem justified by results. It is impracticable to take blood specimens either for counts or for agglutination tests in all cases. We thus do a double disservice—first to the patient in treating, without adequate control, pyrexia with leucocytosis in the same way as pyrexia with leucopenia; and, secondly, to both the patient and scientific truth (also important) in obscuring the nature of a pyrexia before establishing a diagnosis. Indiscriminate use of sulphanilamide, sulphapyridine, and sulphathiazole is as great a fault as masking the acute abdomen with morphine.

May I add that I shall be happy to hear at some future date that Dr. Whittingdale's case has not belied his enthusiasm for "our new weapon," or that the "target" which he has shot to pieces has not suddenly popped up again. The more recorded experiences of abortus fever and the treatment thereof with sulphapyridine the better.—I am, etc..

Boston, Liens, Aug. 13.

J. H. F. PANKHURST, M.D., D.P.H.

Haemorrhage in Sulphonamide Therapy

SIR.—I was interested to read Dr. Crawley's memorandum (August 2, p. 160), in which he described intestinal haemorrhage complicating sulphonamide therapy in two cases of meningococcal meningitis.

In his first case, before being certain that the drug was the cause of the symptom, the question of haemorrhage into the adrenals should, I think, be considered. Nelson Carey (*Ann. intern. Med.*, 1940, 13, 1740) calls attention to this complication of septicaemia, and states that it is most often associated with the meningococcus. He states also that the condition usually occurs in children and may be recognized by collapse, cyanosis, accelerated respiratory rate, low blood pressure, vomiting, and purpura during the course of the initial illness. The leucocyte count is high. Heinle (*Arch. intern. Med.*, 1939, 63, 575) reports cases of massive haemorrhage into the adrenals in patients dying of acute meningococcal septicaemia, who may also have haematemesis, melaena, and extensive purpura. In Dr. Crawley's first case adrenal haemorrhage rather than the drug seems, I think, to have been a more likely cause of the melaena and sudden death. It would be most interesting to know if a post-mortem was performed and whether there were any blood-pressure readings.

In his second case, although the evidence is far more suggestive of the drug's causing the melaena, another possible explanation is an acute peptic ulcer occurring during the course of the infection. Although I have on occasion seen haematuria as a complication of the sulphonamides, I have not come across melaena during extensive use of the drugs in both meningococcal and other cases in the last two years.—I am, etc.,

C. ASTLEY CLARKE, M.D., M.R.C.P.,
Surg. Lieut.-Commander, R.N.V.R.

AUG. 6.

Medical Planning

SIR.—May I be allowed to congratulate Dr. Douglas Boyd on his letter (August 2, p. 179). His statement on the attitude of the profession towards medical politics tallies exactly with my own. The crying need of the moment is not a blue-print of the future, which not even the Government can foresee, but to achieve unity among ourselves. There is great uneasiness among the rank and file, but instead of looking to the B.M.A. for a lead each man is trying to provide for his own security—G.P.s

are hurriedly taking up factory appointments and consultants are seeking addresses elsewhere "for the convenience of their patients who have been evacuated." The *saave-qui-peut* momentum is increasing and will become a Gadarene stampede when the men now on service come home.

The movement for unity should have preceded the Planning Commission, and it may be now too late, but therein lies the only hope of averting the disruption of the profession. No confidence is placed in the assurance that the findings of the Commission will be submitted to the Divisions for final approval, the general feeling being that whatever they may be they will have to be accepted as the quickest way out of an intolerable state of things, and that any disagreement will receive scant consideration. At present the B.M.A. has no adequate machinery for finding out what the wishes of its own constituents are, even if it wished to, and there is a considerable body of medical opinion altogether outside the fold.

If the B.M.A. wishes to put its own house in order before the deluge, it should begin by establishing close contact with the periphery, and this can only be done, in my opinion, through whole-time paid officials in each Division or group of Divisions. The average G.P. has no time, and is generally too tired, to devote his leisure to accounts and clerical work, still less to travel considerable distances to attend arid business meetings. A paid representative would take all this off him, would arrange short *ad hoc* meetings, or would ascertain the views of his Division by personal visits. After which he should be in a position to keep his Division in constant touch with headquarters by frequent visits to London—say, once a month. In this way provincial members at least would get a great deal more for their money than a building in London which few contrive to visit more than once or twice in their careers. Personal contact with a representative would go a long way towards recovering the lost prestige of the B.M.A. among members and non-members. Under existing arrangements a Divisional secretary has few opportunities of making such contacts.

Another urgent requirement is for an effective voice to be found for dissentient opinion. Among 36,000 medical men there is bound to be opposition to any policy, and it is no answer to say that the Divisional Representative can come to London under the existing arrangements to give tongue to it. It is not at all easy to find a representative in a small Division—few men are accustomed to public speaking, many lack self-confidence, and all lack time. Nevertheless, their dissent may be both strong and reasonable. Such men drift first into sullenness, then into apathy, and lastly into defection. Can the B.M.A. envisage this situation with complacency?

Desperate needs call for desperate measures. Can the B.M.A. realize that the need is desperate and urgent? Or will it still continue to act as though the G.P. were not capable of knowing which side his bread was buttered? Mere additions to an already top-heavy Commission will not meet the case.—I am, etc.,

C. J. STOCKER,
Lieut.-Col., I.M.S. (ret.).

Cannon Hill, Lancaster, Aug. 4

The National Loaf

SIR.—Dr. Griffith Evans (August 9, p. 212) is hopelessly at sea in regard to the subject under discussion. He is evidently mixing up the national wheatmeal loaf, which is not fortified, and against which I have never expressed an adverse opinion, with the white loaf, which I believe in some parts of the country is fortified with one vitamin and nothing else. It is the unfortified loaf which is rich in vitamins, etc., and not the fortified loaf. From the letter of your correspondent it would appear as though my criticism had been concerned with the national wheatmeal loaf. I never said that the loaf was fortified with calcium alone. It is certainly not a fact, as stated by your correspondent, that "calcium is added in the form of phosphates." Calcium is not added in any form to the fortified loaf; but so far as the original proposal in regard to this substance is concerned I should like to refer him to the various memoranda of the M.R.C.

Bad teeth are common among all sections of the community, but they certainly have nothing to do with calcium deficiency (see our paper in this *Journal*). In regard to vitamin D, etc., the point is this. The only evidence which is said to point to a calcium deficiency is a rare disease called "osteoporosis." This condition is now generally recognized to be due to vitamin D

deficiency. It follows, therefore, that there is a vitamin D deficiency somewhere in our diet. My criticism solely concerned the original proposal to add calcium to flour. We know now, from a recent statement by Major Lloyd George, that the fortified loaf does not contain added calcium. I have now no adverse comments to make on the bread policy of the Government.—I am, etc.,

Liverpool, Aug. 15.

I. HARRIS.

Obituary

C. A. SCOTT RIDOUT, M.S., F.R.C.S.

The passing of the distinguished Portsmouth surgeon, Mr. Charles Archibald Scott Ridout, has cast a gloom over all who knew him.

He was born in 1875 at the Royal Naval Hospital, Stonehouse, Plymouth; his father, Staff-Surgeon Charles Lyon Ridout, R.N., was on the staff there, and later served in H.M.S. *Tourmaline*, East Indies, and died at Mauritius of malarial fever. His mother was Ada Purley, daughter of Archibald Scott of Halifax, Nova Scotia. When a small boy he began his education at Plymouth College, and from there he went on in 1887 to Sherborne School, where he remained six years; the environment of this school remained his Mecca to the end of his life. In 1894 he proceeded to St. Bartholomew's, and qualified in 1899, obtaining the M.S.Lond. in 1903, and the F.R.C.S. in 1904. Several house appointments followed—at Bart's, North Stafford Infirmary, and the Royal Hospital at Portsmouth. He was destined to become a surgeon and a hospital man, eventually holding the position of senior surgeon at the Royal Portsmouth Hospital and the Portsmouth and Southern Counties Eye and Ear Hospital. At the latter hospital, which he dearly loved, he accomplished some of his best work over a period of thirty-three years. His influence for its extension was all-prevailing, and so it was meet that his memorial service, which was very largely attended, should have been held at the Cathedral of old Portsmouth, in the immediate vicinity of that hospital. He also held other surgical appointments, and was president of the Laryngological Section of the Royal Society of Medicine in 1937-9, and a vice-president of the Section of Laryngology and Otology of the British Medical Association in 1924. He was a strong advocate of the B.M.A., serving as secretary of the Portsmouth Division and president of the Southern Branch, and local general secretary for the Annual Meeting at Portsmouth in 1923.

Surgeon Rear-Admiral R. J. McKEOWN, O.B.E., R.N. (ret.), writes:

In the midst of such a strenuous life it might reasonably be thought he had few spare moments, but Charles Ridout readily accepted the chairmanship of the Local Medical War Committee, Portsmouth, in March, 1939, and carried through with success the scheme for the "Protection of Practices," which safeguards the practices of his colleagues who have volunteered or been called up for the defence Forces. He organized two clinical meetings yearly, which were always successful and much appreciated by his colleagues. He was extremely patriotic, and during the last war served as surgical specialist and surgical divisional officer, with the rank of major, R.A.M.C., in the 29th Stationary Hospital at Salonika (1916-17), and in Italy (1917-19). His principal hobbies were those which might be expected of a man with his vigorous mind—motoring, fishing in Scotland, and rugger; in fact, nowhere was he happier than when running up and down the touchline encouraging the first XV, in which his eldest son played, at his old school, and for many years he attended the university and international matches at Twickenham.

Nature bestowed on him some of her finest gifts: a keen intellect, great powers of physical endurance, and infinite patience.

In the operating theatre, perhaps, was to see him at his best, so ably exercising his masterly skill with the lightest touch, never perturbed by any unforeseen complication (for which the remedy was immediately forthcoming); sympathy and kindness for one and all, especially for his child patients and their anxious parents. No wonder that his name became a household word with rich and poor alike; and so, when his health began to fail some months ago, his many friends were gravely anxious and distressed. But he carried on as usual until an operation became imperative in June last, from which he made a hopeful recovery, and his complete restoration was anticipated, but, alas! a fatal relapse frustrated these hopes. On the domestic side of his life he was a devoted husband and good father, taking the liveliest interest in the careers of his children—one of his sons a soldier who was present at Dunkirk; his second son, a surgeon lieutenant R.N.V.R., present at the naval engagement at Narvik; and a daughter now following in her father's footsteps as a medical student. He was buried at Sherborne after cremation at Southampton, and to his widow and children is extended the deepest sympathy. Truly it may be said of Charles Ridout, "Well done, thou good and faithful servant; enter into rest after toil."

J. JAMESON EVANS, M.D., F.R.C.S.

We regret to announce the death of Mr. J. Jameson Evans on August 13 at Aberdovey. He was for many years surgeon to the Birmingham and Midland Eye Hospital and had been president of the Midland Ophthalmological Society and the Midland Medical Society.

Born at Carmarthen in 1871, John Jameson Evans was educated at St. David's College School, Lampeter, and Queen Elizabeth's Grammar School, Carmarthen, and after a distinguished student career at the University of Edinburgh, graduated M.B. and C.M. with honours in 1892. He took the M.R.C.S. and L.R.C.P. diplomas in 1897, the F.R.C.S.Eng. in 1899, and the M.D. degree of Birmingham University in 1903. His first appointment was as house-surgeon to the Carmarthenshire Infirmary; in 1897 he began his long association with the Birmingham and Midland Eye Hospital as resident surgical officer. After three years he was appointed honorary ophthalmic surgeon, and continued to serve in that capacity till 1934, when he became consulting surgeon.

Mr. Jameson Evans had been for many years consulting ophthalmic surgeon to the Birmingham General Dispensary and ophthalmic surgeon to the Royal Institution for the Blind, Edgbaston, to the Hallam Hospital, West Bromwich, and to the Bromsgrove Hospital. He was Middlemore lecturer in 1899. During the last war he served as ophthalmic surgeon to the 1st and 2nd Birmingham War Hospitals. At the Annual Meeting of the British Medical Association in Birmingham in 1911 he held office as honorary secretary of the Section of Ophthalmology, and at the Centenary Meeting in London in 1932 he was vice-president of the same Section. He was the author of *Notes on Ophthalmology for Students* and contributed articles on diseases of the eye to this and other journals. He had been vice-president of the Ophthalmological Society of the United Kingdom. He served on the council of the Oxford Ophthalmological Congress, of which he was a foundation member, for nineteen years, and held the position of lecturer in ophthalmology in the University of Birmingham for twenty-five years.

Mr. Jameson Evans leaves a widow, the second daughter of the late Principal Edwards of Aberystwyth, and two sons, both of whom are engaged in medical practice.

Mr. HARRISON BUTLER writes:

The unexpected death of Mr. J. Jameson Evans after a very short illness has come as a blow to his colleagues in Birmingham and to his many friends and patients. It was my privilege to work with him for eighteen years as a colleague on the staff of the Birmingham Eye Hospital, and naturally I learned to know him very well, to respect him, and to love him. We sat on the same day at adjoining desks, and became thoroughly acquainted with each other's views and work. I look back upon those years as among the happiest of my life. Never was there the slightest semblance of friction between us, and never have I

seen Evans lose his temper or utter a cross word. He always had a happy smile and a pleasant witicism for everybody. His courteous treatment of the patients was an example to all. Even during the last war, when three out of the six surgeons were on active service and we were always short of good house-surgeons, he was unruffled, efficient, and helpful. Pathology was Evans's strong suit. For many years in his early days at the hospital he made himself responsible for this branch of the work, and he became quite enthusiastic over any unusual condition. He was an outstanding ophthalmoscopist and his judgment was unerring. Although he never seemed to read much, he always knew all about current literature. I think that his active brain soaked up facts and theories with the facility of a sponge; he learned without difficulty, and retained all the knowledge that he acquired. His death leaves a gap that cannot be filled. His friends called him "Sunny Jim," and that exactly describes the man.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

The returns for England and Wales show a substantial decline in the incidence of the common infectious diseases. The numbers of notifications of whooping-cough, measles, diphtheria, and scarlet fever were 638, 246, 94, and 32 fewer, respectively, than in the preceding week. In Scotland an increase has been recorded, and the cases of scarlet fever, diphtheria, and whooping-cough increased by 8, 78, and 18 respectively.

Typhoid and Paratyphoid Fevers

The increase in the number of cases of typhoid in England and Wales, 34 as compared with 24 in the previous week, was due to isolated cases over a wide area: eight more counties were involved than in the past week. The decline of the local outbreak in Cheshire and Lancashire—25 and 96 cases were reported from these counties as compared with 43 and 133 of a week ago—was responsible for the large decrease in the number of notifications of paratyphoid. The incidence remains high in Liverpool C.B., and, with 70 cases, this city accounts for over one-third of the total for the country. In Scotland only 13 cases were recorded, against 33 of the previous week.

Dysentery

The outbreak in Brecknock M.B. has apparently subsided, only 1 case being reported this week against 69 last week. The experience of three counties accounted for over one-half of the total cases reported in England and Wales; the remainder were distributed over twenty counties. The principal outbreaks were those of Essex, 13, of which 12 were reported from Colchester M.B.; Lancaster, 19, of which 11 were contributed by Blackburn R.D.; Suffolk East, where the whole of the 37 cases occurred in Leiston cum Sizewell U.D. In Scotland 52 cases occurred during the week, the largest outbreaks being those of Lanark County 13, Aberdeen County 9, and the Burghs of Dundee 10 and Glasgow 8.

Cerebrospinal Fever

Cerebrospinal fever showed a slight increase during the week; 19 more cases were notified in England and Wales than in the preceding week. The disease was widespread, over thirty counties reporting its presence. The largest outbreaks were those of Lancaster 26, West Riding of Yorkshire 20, and London 12. An increase of 5 was reported from Scotland. Glasgow, with 15 cases, accounted for over one-third of the total cases notified.

Acute Poliomyelitis

Although the number of cases reported in England and Wales was only 1 less than in the preceding week, only ten counties were involved as compared with seventeen counties in the previous week. The counties of Berkshire and Buckinghamshire, with 8 cases each, were responsible for over half the cases recorded in the country. The opening of the elementary and secondary schools in a large area of South Buckinghamshire has been postponed until further notice because of the outbreak. Individual districts with multiple cases were: Berkshire (Maidenhead M.B. 6); Buckinghamshire (Slough M.B. 3, Eton R.D. 3, Wycombe R.D. 2); Lincolnshire (N. Kesteven R.D. 2). Nine cases were reported from Scotland, an increase of 2 upon last week's number. Multiple cases were notified from Edinburgh 3, Lanark County 2, and Glasgow 2.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 2.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	166	12	39	8	9	142	14	29	1	5
Deaths	—	—	—	—	—	—	—	—	—	—
Diphtheria	737	31	204	25	38	814	28	275	24	24
Deaths	26	2	—	3	1	13	—	11	1	—
Dysentery	122	7	52	—	—	42	2	54	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Enteric fever, acute	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Enteric fever, typhoid	34	—	1	5	3	119	3	10	7	5
Deaths	—	—	—	—	—	—	—	—	—	—
Erysipelas	—	—	42	6	5	—	13	33	2	1
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	—	—	—	—	—	—	—	—	—	—
Deaths	34	4	5	15	2	29	7	10	10	4
Measles	3,084	101	42	143	1	9,312	39	647	—	11
Deaths	4	—	—	—	—	6	—	8	—	—
Ophthalmia neonatorum	86	3	18	2	—	85	4	23	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid A and B	194	—	13	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza?	424	11	13	—	—	425	17	4	2	3
Deaths	4	—	—	—	3	11	—	2	1	—
Pneumonia, primary	—	—	124	12	—	—	15	107	8	7
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	5	—	—	—	—	8	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	25	—	9	2	—	25	1	2	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	1	1	18	5	—	2	2	10	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	135	9	12	—	—	144	13	9	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	1	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	863	35	107	36	18	1,502	42	144	29	43
Deaths	1	—	—	—	—	3	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	3,731	251	59	63	5	815	5	41	—	13
Deaths	22	2	4	2	—	2	—	1	4	2
Deaths (0-1 year)	229	23	46	51	19	252	37	53	25	29
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths)	3,596	513	573	190	113	4,039	635	553	165	134
Annual death rate per 1,000 persons living	—	—	12.5	12.6	—	—	—	11.8	11.2	11.7
Live births	4,518	331	796	354	202	5,911	936	807	373	221
Annual rate per 1,000 persons living	—	—	16.2	23.5	—	—	—	16.3	24.5	19.4
Stillbirths	191	24	27	—	—	249	32	33	—	—
Rate per 1,000 total births (including stillborn)	—	—	—	—	—	—	—	—	—	—

* Includes paratyphoid A and B for Eire and Northern Ireland.

† Includes primary forms in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, the birth and death rates for Northern Ireland are no longer available.

The Services

NAVAL AWARD

The O.B.E. has been awarded to Surgeon Commander Edward Hefferman, R.N., for bravery and devotion to duty in boarding a burning merchantman during an enemy air attack.

ARMY AWARD

The Military Cross has been awarded to Captain Robert Norman Lees, R.A.M.C., in recognition of gallant and distinguished services in the Middle East.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

Prisoners of War

War Substantive Captain Wilfred R. Crowe.
War Substantive Captain Nicolas Shtetinin Seaford.
War Substantive Captain Malcolm Montgomery Wallis.
War Substantive Captain Richard Mallorie Wiltshire.
Lieut. Archibald Leman Cochrane.

Medical News

Dried separated milk powder, rich in protein and therefore of special value for children, may now be purchased in bulk from the Ministry of Food by school canteens, residential schools, and hostels, and Circular 1561 of the Board of Education explains how this should be done. The allowance of the powder is 1 oz. a day for each child. It is also announced that industrial undertakings which supply milk as a beverage to their workers should apply to local Food Offices for permits to continue this practice, as provision is to be made in the milk distribution scheme for the supply of milk for this purpose.

The Privy Council has appointed Dr. G. Roche Lynch lecturer in chemical pathology, St. Mary's Hospital, and senior official analyst to the Home Office, to be present at the examinations held by the Pharmaceutical Society.

A medal was recently presented to Dr. Maurice Roch by the Société Médicale de Genève on the occasion of the twentieth anniversary of his professorship of clinical medicine at Geneva.

Dr. J. Alejandro Téliier has been appointed Director-General of Health in Bolivia.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a Congregation held on August 2 the following medical and surgical degrees were conferred:

M.D.—*K. Vigers Earle, E. D. Hoare, R. H. Dobbs.
M.B., B.Chir.—*R. M. Archer, *E. D. Barlow, *D. V. Bateman, *R. I. S. Bayliss, S. L. Binderman, *P. T. Boyle, *K. F. C. Brown, *E. D. H. Cowen, *D. Currie, B. Dansie, *R. Daley, *J. O. W. Dick, *W. M. M. Douglass, *J. R. Ellis, *R. M. Evans, J. Foley, *R. B. Franks, *R. E. A. S. Hansen, *D. V. Harris, *A. Holmes-Smith, *F. H. Howarth, *E. W. Hyde, G. T. James, *R. K. I. Kennedy, *E. F. Laidlaw, J. M. Lipscomb, *J. F. Lucey, *G. M. Lunn, *F. N. Macnamara, *O. D. Macnamara, *A. E. de la Tour Mallett, *R. Martlew, G. A. Mott, J. M. Mungavin, *H. H. Nixon, *J. F. North, *M. S. M. Palmer, *G. H. Parkinson, *A. G. E. Pearse, *John Perrin, *M. T. Phelps, *G. E. Pinkerton, G. K. Riddoch, *K. B. Rooke, *R. D. Scott, C. G. R. Sell, *A. W. Simmins, *A. G. Stansfield, *D. E. Thompson, *A. J. H. Tomlinson, *J. G. Thurston, *A. B. Unwin, *A. H. Widdup, *J. M. Willcox, *A. B. Kinnier Wilson, C. H. Wood, *W. B. Young.

* By proxy.

UNIVERSITY OF LONDON

King's College Hospital Medical School

Upon the results of recent examinations, awards have been made as follows:

Senior Scholarship for Clinical Studies: R. A. Moir, King's College Hospital Medical School.

Anatomy and Physiology Scholarship: J. R. M. Miller, King's College, London.

Pathology Exhibition: V. H. Wheble, Brasenose College, Oxford.

Science Scholarship: P. C. Harris, St. Olave's Grammar School, London, S.E.

UNIVERSITY OF GLASGOW

A series of eight postgraduate meetings will be held in the Tennent Institute of Ophthalmology on Wednesdays from September 10 to October 29 at 8 p.m. The subjects of the addresses will include: postgraduate tuition in ophthalmology, the making of the ophthalmic specialist, ophthalmic practice in retrospect, the future of ophthalmic practice, pros and cons in ophthalmic therapeutics, ophthalmology in the law courts, and the problem of the nearly blind. There will be opportunity for informal discussion.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS of their articles must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager (hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and subscriptions should be addressed to the Secretary.

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TELEGRAPHIC ADDRESSES.—EDITOR, *Aitology Westcent*, London; SECRETARY, *Mediscera Westcent*, London.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Timepiece for Blind Person

Mr. N. BISHOP HARMAN writes in reply to "Inquirer." (August 16, p. 254): The most pleasant timepiece for the blind is a "repeater," either a carriage clock or a watch. Pressure on the button on the case causes a striking of the hour and half-hour. There are special watches made for the blind, with "hunter" cases, and face with raised metal figures and strong hands. The time is told by feeling the face. If cost be a consideration, the simplest plan is to get a five-shilling clock, remove the glass front, and put small blobs of sealing-wax on III, VI, IX, and XII. Anyone can tell the time by feeling the position of the hands of the clock, and without any sight.

E. H. C. writes: A relation of mine, blind from his youth, used an ordinary "hunter" watch with the glass removed, and he could tell the time by feeling the hands. Possibly, however, as the lady has only recently become blind, she may have difficulty in acquiring sufficient delicacy of touch for the employment of this method. If means permit, the obvious solution is the purchase of a watch or a small travelling clock that repeats hours, quarter-hours, and minutes, but I fancy the cost of such an article would be in the neighbourhood of £100. It might be worth advertising for a second-hand one.

LETTERS, NOTES, ETC.

Medical Unit for Ethiopia

Dr. ANDREW MORLAND writes: In response to a request from the British Administration in Ethiopia, the Friends Ambulance Unit is shortly sending to that country a medical unit of forty men. The need for medical personnel in Ethiopia is greater than ever and it is anticipated that the F.A.U. will assist in the more elementary forms of medical treatment. It is also thought likely that they will be called upon to train native dressers in this work. The work of the unit will be under the supervision of the Director of Medical Services, but its value would be greatly increased by the inclusion of qualified doctors. Their presence would also be cordially welcomed by the Administration as well as by the native of Ethiopia, whose medical needs have been so greatly accentuated by the recent fighting. Any medical man wishing to offer his services in this direction should write to the Secretary, F.A.U., 4, Gordon Square, London, W.C.1.

Convalescent Poliomyelitis Serum

Drs. SINCLAIR MILLER and STANLEY WRAY write from Duchy House Clinic, Harrogate: We have available a moderate supply of convalescent poliomyelitis serum for use in conjunction with sulphapyridine, and would be willing to forward a limited quantity on request.

THE FUTURE OF MEDICAL EDUCATION AS SEEN BY A TEACHER

BY

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Without an accurate acquaintance with the visible and tangible properties of things our conceptions must be erroneous, our inferences fallacious, and our operations unsuccessful. "The education of the senses neglected, all after-education partakes of a drowsiness, a haziness, an insufficiency, which it is impossible to cure." Indeed, if we consider it, we shall find that exhaustive observation is an element in all great success. (From Herbert Spencer's *Essay on Education*.)

I

At a time when planning is much in the air, but the war and the vast uncertainties of the future conspire to give to all Utopian castles a more than usually aerial quality, the Editor has invited a statement of ideas on the future of medical education. At the moment we cannot begin to visualize the kind of foundations upon which we shall have to build. The physical, social, and economic structures of our post-war world are beyond imagining. Ideas and hopes must therefore be accepted as such and not regarded as fixed projects. Discussion and inquiry must be fostered. Individual opinions in such a time, although freely expressed, may later need to bow to change or circumstance.

We can, nevertheless, start with the thesis that medical education stands much in need of reforms, and that all concerned for it, both old and young, are willing to become reformers in aid of this particular contribution to our new order. On certain main points, such as the overcrowding of the curriculum, there will be full agreement, and none will dispute that the aims of medical education should include on the one hand the training of sound and practical doctors and on the other the maintenance of high cultural and scientific standards. If there is one thing which medicine has shown a tendency to sacrifice in return for the rapid contributions of the sciences to its instruction and practice, it is perhaps its position as a cultural profession. Its philosophy has not kept pace with technical achievement.

Let us briefly state the problem which confronts us in the form of a question. How shall the medical education of the future, without further complications or additions to the curriculum, provide a better scientific and general training for the student and ensure a more organized and integrated approach to the clinical subjects and, in place of accumulations of memorized but poorly correlated detail, a wider appreciation of first principles? How in the process shall it help to develop a breed of doctors better blessed with humanity and judgment, with simultaneous gain rather than loss to their scientific sense?

II. The Phases of Education

The teacher in the wards receives the product of a previous education in the schools and the laboratories, and, while fully conscious of shortcomings in his own department of learning, may justly feel entitled to criticize some

of the results of preliminary training. He also sees his students launched into the world of practice, and meets them there afterwards, knows something of their requirements and difficulties, and has opportunities of observing defects in their methods or standards. He thus stands as an important intermediary observer between consecutive but at present too widely separated phases of education. An analysis of the curriculum as a whole and of existing teaching methods suggests to him that at every stage, both clinical and pre-clinical, there is too much instruction and too little education in its truer and better sense, and that the community of interest and purpose which should obtain between those responsible for the organization of earlier scientific and later clinical training is too rarely cultivated.

Medical education may be considered as falling into five periods. These are:

1. The school period prior to the year or years devoted to work for the First M.B.—a period which should surely, in the modern world, seek to prepare the way for a more scientific outlook in the population as a whole and to provide an early inspiration to those destined for the scientific professions, albeit without loss to general discipline.
2. The period devoted to work for the First M.B., whether this takes place at school or elsewhere (generally called the pre-medical period).
3. The pre-clinical period proper, which is spent at a medical school and concerns itself with the study of physiology, anatomy, and pharmacology, and, at some universities, of biochemistry and pathology.
4. The clinical period, which is spent at a teaching hospital.
5. The first postgraduate year, which is generally but by no means universally devoted to house appointments and should come to be regarded as an essential educational year in responsibility and practical experience.

Even though it be accepted that the main purpose of the education given in the second and third periods is to provide an introduction to scientific method and a proper familiarity with those sciences which are everywhere regarded as necessary to medicine, the work should ideally be organized throughout in such a way as to prepare the mind and interest of the student for the tasks which will engage his attention during the clinical years and, in fact, throughout the rest of his professional life. Without such provision there must be some loss of interest and organized thinking in the earlier stages, a lack of continuity between earlier and later training, and a groping for method at the beginning of the fourth or clinical period which the pre-clinical period should already have instilled.

At present certain of the shortcomings of the clinical period can unhesitatingly be referred to shortcomings in previous training. With a growing tendency to embark at too early an age upon specialized work for the First M.B., the general education of the student has assumed too low a level. Good literary standards, general knowledge, know-

ledge of languages, and interest in problems outside his own necessary sciences do not, with rare exceptions, characterize the equipment of the medical student. This is evident in his written work and examination papers, and often enough in his conversation, his reluctance or inability to share the literary, artistic, or socio-political enthusiasms of others in his generation, and often in his intellectual standards subsequent to qualification. However anxious he may be to make good these deficiencies, the overcrowding of the pre-clinical period proper hampers his endeavour in the early adult years. In comparison with the medical faculty at a university few faculties show a comparable multiplicity of subjects in their curricula or allow such scant leisure for private interests and recreation. The education of the mind and of the whole man inevitably suffers.

III. Some Present Defects in the Pre-clinical Years

Before proceeding to a consideration of remedies for these defects let us consider the First M.B. period and the university or pre-clinical period proper in a little more detail. In what respects does the teaching here fall short of what is to be desired? What are the particular mental faculties which it fails to encourage or to train?

Briefly, we may say that the whole of the teaching in the pre-medical and pre-clinical periods—allowing for exceptions in a few of the more advanced schools—is didactic and analytic. The student is taught facts and to memorize facts, and he is instructed in the analysis of certain natural or artificial phenomena, but at no stage as a rule is he given serious encouragement in the *observation of phenomena for himself*. Rather is the natural inquiring faculty of childhood unintentionally discouraged and inhibited year after year by too much teaching. Now the most essential faculty in clinical science and its application to practice is the ability to *observe naturally occurring phenomena*. Small wonder that the student entering the ward for the first time often feels or shows that he is entering a new world for which the world he leaves has inadequately prepared him. Here for the first time (unless of his own initiative he has indulged some naturalist hobby) he must learn to look and to see, to touch and to feel, to listen and to hear, and, furthermore, to interpret logically what he discovers with his senses and by the interrogation of his patient—types of inquiry for which the classroom and the laboratory have given him but a poor orientation. Clearly the didactic and analytic method cannot be dispensed with altogether, and chemistry, physics, biology, anatomy, physiology, and pharmacology are all essential studies. While, however, the teaching of the first two must remain in large part didactic, the teaching of biology, physiology, and anatomy might with reorganization encourage to a far greater extent than heretofore the faculties of observation and interpretation—the twin faculties so necessary to clinical science and practice.

At present, from the day when he first dissects the frog to that on which he concludes the dissection of the human cadaver, the student spends the greater part of his time in looking for things he is told to look for, in carrying out experiments prescribed by book or lecture, in remembering by means of diagram and table, in imagining physiological function in terms of tracings, graphs, and chemical formulæ, in building his composite picture of the living human organism from inspections of the dead or of the decerebrate animal and from microscopical films or sections—in *constantly contemplating parts to the exclusion of wholes*. He is not customarily given a frog and told to observe all he can about it in the living state—its colouring and movements, its digestive or respiratory habits—without reference

at first to books or pictures, and to write down all he sees. Nor when it is pithed does he settle down, as Harvey would have had him do, to discover what he can of internal structure and related function.

After two years of lectures and laboratory work in physiology he may know much that has been discovered by others about carbohydrate metabolism, the acid-base equilibrium, the latest views on nerve conduction, the cardiographic tracing, the carotid sinus and Hering-Breuer reflexes, the theories of urinary secretion, the role of the accessory food factors—all valuable knowledge. About his own everyday movements and functions, however, and his own sensations and their responses to such things as exercise and changes of temperature and emotion, and about the temperamental and physical variability of those with whom he consorts, he may still be quite ill informed and unobservant. He lacks "an accurate acquaintance with the visible and tangible properties of things." If he notes peculiarities of feature or gait, of expression, habit, colouring, or body weight in others he does so casually and not critically, and without that curiosity and that urge to interpret in terms of intimate function or structure which are so essential a part of the mental behaviour of the good naturalist or clinician. Although he is supposed to have completed a study of the normal he knows little about growth in infancy or childhood, about the changes in such simple functions as the pulse and respiration rates between birth and adult life, or the other milestones of natural development. He has not watched healthy babies. Of such things, in fact, he often remains in ignorance until he starts his paediatric studies in his last clinical year. The occasions on which he has felt the radial pulse or apex beat critically and attentively or listened to the normal heart or examined the normal fundus and sought to describe his findings unaided have usually been very few. It is unlikely that he will have observed closely the subjective and objective phenomena of dyspnoea induced by effort in himself or his fellows, or have produced for contemplation and analysis varieties and degrees of pain in his own accessible structures. At present after a year or two in the wards he may remember something about the respiratory functions of the blood and yet be unable to describe or discuss and sometimes to recognize the manifestations and clinical varieties of disturbed respiration which are so valuable to diagnosis; visceral and other pains, for all their significant qualities, present themselves to him as phenomena of doubtful and difficult interpretation. The symptoms of health, and the transition from them through the symptoms of health modified by applied physical or psychological processes to the symptoms of developed disease, have rarely received consideration by him or his teachers.

And yet work along these lines would have been good physiology and would have supplied good training in scientific method, both of an observational and of an experimental kind. It would have had an obvious and immediate bearing on his ward work from its earliest days. It would have helped him by inculcating as a habit the exercise both of his sense organs and his wits, implementing the parallel discipline of a more repetitive and precise kind provided by the dissecting-room and the laboratory. The interest, bordering on excitement, of the first days of clinical work would then, too, be controlled and directed by past training; comparisons between normal, less normal, and frankly abnormal would be more readily and appreciatively made; disease and the symptoms of disease would have meaning from the beginning. Necessary instruction, in brief, would have been allied with and assisted by education in its truest sense, with interest more surely maintained and the goal of human medicine kept constantly in view.

2. Medicine and surgery are at present separated from the beginning in a way which renders them almost rival subjects employing different methods—as though pathologies could be separated according to therapeutic procedure! The discipline and principles in medical and surgical wards are at variance. In the medical ward the student is expected to examine and write a report on the whole patient. In the surgical ward it is commonly considered enough if he examines the hernia or the lump and does not forget to examine the urine before the day of operation, and this notwithstanding that no patient more needs a general examination than one about to be subjected to anaesthesia and operation. Sometimes he sees cases for the first time in the theatre which have not been previously discussed and perhaps not even seen in the ward by the operating surgeon. Pre-operative and post-operative therapeutics considered at the bedside are of high educational value and should receive far more attention. It has taken a second world war to remind us all that Listerian and Hiltonian principles could still be more meticulously taught and practised. The principles of asepsis and measures to counteract cross-infection are or should be the same in medical and surgical wards. There may be nursing and administrative advantages in the separation of surgical from medical cases at the stage of operation, but at the stage of diagnosis there is no good reason for separating them. There are, in fact, strong arguments for combined medico-surgical units and for more frequent consultations before students between surgeon and physician on matters of diagnosis, on therapeutic decisions and alternatives, and on post-operative management and complications.

3. The sequence of appointments could be reconsidered with advantage. Although the usual order of junior surgical, junior medical, senior surgical, and senior medical dresserships and clerkships has much to commend it, and this order, as conducting from the simpler objective examinations to the more complicated study of all the systems, including the analysis of subjective phenomena, will still commend itself to most teachers, the alternative experiment of learning the general approach first with the full discipline of medical ward routine should be worthy of a trial. The special appointments which follow should be employed more for a continuance of the demonstration of general principles in diagnosis, prognosis, and treatment in medicine and surgery and less for the demonstration of specialized techniques. Neurology, orthopaedics, laryngology, and genito-urinary surgery can be made to provide the most valuable lessons in applied anatomy and physiology. In the matter of paediatrics we might well follow the practice of the Russian schools by giving it a much more prominent place in the curriculum. It is one of the most important subdivisions of general and preventive medicine. The handling of children and modifications of diagnostic approach necessary in their diseases are not at present sufficiently brought home to the undergraduate student. For the most part purely specialist teaching should, however, be postponed until the postgraduate period. The details, rarer problems, and operative techniques of ophthalmic, orthopaedic, and genito-urinary surgery and of throat and ear work are essentially postgraduate studies. Indeed, surgical technique as a whole should not claim much more of the student's time than radiological or bacteriological or chemical techniques. Principles and methods of study are the student's chief requirement, and above all constant practice in assembling evidence and in logical deduction from facts observed and symptoms elicited.

Psychological medicine must not be wholly concentrated in a department but should come to inspire the daily teaching of the medical and surgical wards. Regular clinico-pathological consultations on post-mortem material should be universally adopted. The chemist and the pathologist should be invited more often to ward discussions. The value of consultations as opposed to "second opinions" and interchanges of requests and reports must be impressed upon the student's mind from an early stage.

4. In the matter of lectures customs vary. Some schools have abandoned the systematic lecture in medicine and surgery in the belief that they are a duplication of textbook teaching. In replacing them, however, by a much greater number of clinical lectures by the many members of a staff too little trouble has been taken to secure enough lectures or lecture-demonstrations

on essential subjects and the commoner diseases. Some teachers lecture again and again on their own pet themes. Few go out of their way to discover what subjects have been covered in a recent session or what their colleagues are lecturing upon or what their students want. There is thus much overlapping and much omission. But what perhaps is needed most of all is a series of introductory lectures in each academic year by the professor of medicine or a senior physician on some of the main principles underlying the tasks of the applied science of medicine, of which all the special subjects are after all but subdivisions. Aetiology, the meaning of Diagnosis and the forms and uses of diagnostic method, Prognosis, and Therapeutic Principle are all surely worthy of separate discussion. There are few students who pause or are advised to consider how their approach to their work and to the individual case may be improved and amended by a better familiarity with basic ideas on such subjects and even by a better understanding of nomenclature. Lectures on main symptoms such as fever, pain, cough, and dyspnoea can also make an important contribution. Symptoms as expressing morbid physiology and signs as expressing morbid anatomy should, in fact, inspire frequent discussion. "What does this symptom mean?" not "What disease is it a symptom of?" should be the constant query in the mind.

5. The approach to the patient, the "management"—both in a physical and a psychological sense—as opposed to the more specific treatment of cases of the common diseases, with reminders that much sound treatment can be viewed as applied physiology, find frequent texts in the daily material of the clinic and yet are apt to suffer neglect in enthusiasm for the manifestations of a rare or "interesting" and often incurable case. On ward rounds the attempt to see too many patients in an afternoon is apt to lead to superficial or anecdotal teaching. Two or three cases carefully reviewed are less likely to leave bewilderment and a train of ill-digested ideas in the minds of the "firm." A part of out-patient teaching should be in the hands of senior members of the staff. Again a limited number of cases should be employed, but preferably not selected, for the purpose.

A proper perspective in the matter of accessory diagnostic methods, their place and limitations, and the interpretation of their findings is as necessary as insistence on the primary importance of the clinical survey.

6. It would be impossible in the space available to consider in detail the future of the teaching of obstetrics, of pathology and bacteriology in their special relation to medicine, and some important reforms needed in other special components of the curriculum. The belief is gaining general acceptance that a much broader "social medicine" course in illustration of the origins of ill-health and the social responsibilities of the doctor might come to replace the present dull teaching on "public health." It should occupy some part of the free period commonly devoted to fevers, anaesthetics, and vaccinations.

Postgraduate education, both in the house-officer period and later, and some overdue reforms in the examination system must also, for reasons of space, be omitted from present consideration.

VI. The Teachers

Finally, we must consider the clinical teachers themselves. It will surely by now be conceded that if anatomy, physiology, and pathology require whole-time teachers we can no longer accept that the much more difficult and essential subjects of Clinical Medicine, Surgery, and Obstetrics can be satisfactorily shared among a number of part-time teachers, each spending a few hours a week in the service of his school. On the whole-time professors of the three main subjects, in consultation with the dean of the school, should fall the duty of organizing the teaching on behalf of the students and the part-time staff and maintaining close educational contacts with the laboratory teachers. With the increase of specialism among physicians and surgeons, and their natural tendency to accumulate in their beds cases of particular interest to themselves, it becomes ever more important to have one or two large

units concerned with medicine as a whole and with beds open to cases of all types. The medical unit or combined medico-chirurgical unit should perform this function, and the professor, whatever special interests he may have, must remain a general physician (or surgeon) concerned with the principles and methods in accordance with which diagnoses and prognoses are achieved and with the lessons to be learned at the bedside, in the operating theatre, and in the post-mortem room from successes and from failures. At present it is not possible for all students in a given year to serve on the professorial units, where such exist. A combined medico-chirurgical unit and an additional three months for medical clerking should make it possible for all students to hold an appointment, whether medical or surgical, under the whole-time teachers and to obtain the advantages of work in the unit atmosphere. The clinical professor should whenever possible be a man with wide experience of institutional or consulting work, or both, and a developed interest in teaching. He should rarely be under 40 on assuming his chair. Such an appointment should not exclude the appointment also of a reader or associate professor in clinical science, whose main function would be research, who should accept limited teaching, and whose scientific activities should prove of the utmost value to the unit and provide frequent reminders for all its members that experiment as well as observation has an important part to play in education as in the advancement of learning generally. One general practitioner of high standing in the profession should also be attached to the unit and should engage in ward and out-patient consultations and give occasional classes on the management of a practice and of sickness in the home and the essentials of medical ethics. The opening of discussions on teaching among senior and junior members of the staff should be a regular function of the heads of units. Opportunities should be given to student representative bodies to register considered desires and criticisms.

In the medical school of the future we may perhaps visualize provisions (a) for whole-time clinical teaching staff, (b) for staff devoted entirely to institutional work, but sharing their time between and deriving their experience and income equally from a teaching school and a municipal hospital, and (c)—if private practice survives the war and the reconstruction—for staff giving half their time to their teaching school and the rest to private consulting work, albeit with facilities for most of this private work provided within the precincts of the hospital. With a healthy diversity of interests and experience thus secured; with closer contacts between the teachers themselves and between the staff, the students, and the house officers; and with a freer association within the hospital community of clinicians, chemists, and pathologists, and more consultations between them, we might picture the evolution of a clinical school and methods of training as far superior to what now obtains as are existing conditions to those which flourished in the days of the apprenticeship system and "walking the hospitals." Those days had certain things to commend them, and they witnessed the birth and infancy of our cherished bedside clinical teaching, but they allowed too free a rein to authoritarian instruction and lacked the inspiration, the checks, and the precisions of a preliminary and parallel education in scientific method.

Freedom to live and to learn must be secured first, but thereafter, with wise prevision and co-operation on the part of the State and the schools, and by dint of extracting the best from old experience and new experiment, who can doubt that we shall one day find the proper place and proportion for each science and service in the complex structure of our medical university or whole?

THE FUTURE OF MEDICAL EDUCATION A MEDICAL STUDENT'S VIEW

BY

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To say that medicine and the medical profession need reforming is to-day to utter a commonplace. To decide how this shall be done is less easy. In the past the wider problems of medicine have been the hobby of more or less eminent members of the profession who are retired. To-day, sudden and violent change has become such a part of our daily life that everyone takes note, and the future has become the vital concern of everyone. As a sign of this, meetings of medical students from schools all over Britain, which were unknown ten years ago and embryonic four years ago, this year gathered almost 200 students at Cambridge, organized as the British Medical Students' Association. They discussed problems in every sphere of medicine; but, because the student of to-day is the doctor who will have to solve these problems to-morrow, and because the education he receives will make or mar his success in this task, medical education was held to be the most important link in the chain of medical planning.

The first and yet most vital problem is the actual entry into the medical school. For the individual who wants to be a doctor this is a question of money rather than ability. For the community, it determines very largely what sort of a doctor it will get; for, as one Spanish university has it, "What Nature has denied, Salamanca cannot supply." No one can doubt that the present methods of selecting medical students are haphazard in the extreme. A father's sentimentality; a desire for a safe job; almost any reason, except a desire to serve the community, is good enough, provided there is enough money for the initial heavy expenditure. Medical schools, bound up with the voluntary hospitals, have to accept such students as a source of income, using a very few scholarships as a means of advertising. The solution clearly must lie with the provision of a vastly increased number of scholarships by the State. Only then can students be chosen because they will make good doctors, which requires temperamental as well as intellectual qualities, and not for any other reason.

The Curriculum

The medical curriculum itself is long and arduous. This is inevitable because the subject is vast and the doctor needs to be efficient in every branch of it; therefore no one complains about its length. On the other hand, there is much that is useless and irrelevant which needs to be pruned away. The result of this will not be to shorten the whole course but to allow more important subjects to be introduced. The wartime need of getting doctors as quickly as possible introduces an important factor into immediate considerations of the question, but will not alter the long-term view of what is felt to be desirable. In chronological order, the pre-medical course in the elements of the physical and biological sciences comes first. It needs drastic revision, for it is poorly presented, uninformative, and a dead weight on the early enthusiasm of the student. Although its aims are entirely praiseworthy it is still planned, as in olden times, for the student who read only classics at school, and even possibly took a classical degree before proceeding to medicine. To-day that is true of very few, and certainly specialization at school should not be so advanced as to exclude anyone's reaching university standard from the elementary knowledge of physics and chemistry that is

required. In the meantime, the university teaching in these subjects could be much more imaginatively related to their application in medicine. On the other hand, students who have reached Higher Certificate standard in these subjects at school should not be forced to relearn them, as they are at many universities. With regard to biology the position is different. A sound understanding of the behaviour of living organisms in general is essential for the doctor, but the manner of presenting the subject is not the best. Botany is still based on the needs of the doctor who dealt directly with medicinal herbs. Zoology is planned on the Huxleian idea that evolution was in a single line and that a study of lower types will lead directly to an understanding of man. In practice this has led to the student's being required to know details of animals which are the failures, the dead-ends, of evolution. Man is the simplest mammalian type, and is easier to understand than other species which are highly specialized in one direction. Therefore the comparative anatomy learnt at this stage is actually much better introduced with human anatomy. A course in General Biology orientated to the special viewpoint of the doctor is required, and this should include the principles of heredity; the evolution of behaviour, which is necessary for an understanding of psychology; and also oecology—the study of animal communities—leading on to sociology. In recognition of the fundamental importance of this course it should be taught by the best and most mature teachers. A course of this type is given in America, and is found to be very successful. Some people go further and think that even more time should be given to broadening the outlook of the medical student. One suggestion is that at least a year between school and university should be spent in a job; this has a crude parallel in the military service required in Continental countries, and would hardly be acceptable to most students. Another plan would be to imitate the American method, in which a general university degree is taken before starting medicine; again the lengthening of the time as a student would be very irksome to most.

Technical Training

After completion of the introductory course the technical training of the doctor begins. Many criticisms are made of the way in which anatomy and physiology are taught, particularly as the mass of detail to be learnt is very burdensome; but, nevertheless, they are not always justified, for the future doctor and surgeon has to have the details of human anatomy at his finger-tips. The important question is to ask whether this essential knowledge is taught in the best way. The answer is definitely in the negative. In the first place, the two main subjects, anatomy and physiology, are taught as if they bore no relation whatsoever to each other, with the exception that, by a peculiar English custom, histology lives in the same building as physiology. The geographical separation of the dissecting-rooms has created an apparently insuperable obstacle in the relation of structure to function. A little co-operative discussion could surely solve this problem. Anatomy is traditionally learnt by mnemonics—which means without the co-operation of the intelligence. To some extent students are to blame for this, because there are many progressive anatomists who strive against this degradation of their subject. But the students, in turn, are ruled by the examinations and the unknown quantity of the external examiner, so that progress in an isolated school is very difficult. It has already been mentioned in this connexion that comparative anatomy illustrates and makes human anatomy more clear, and with this embryology should be included: both these subjects, which introduce a rationale into anatomy, are very much neglected in present teaching. This is not a plea for

pedanticism, but is of real practical importance; for anatomy learnt intelligently can never be completely forgotten as can that learnt by rote, when forgetting one letter of a mnemonic may mean making a complete farce of it facts.

The teaching of physiology is, on the whole, much better but once again suffers from a tendency to cram certain facts without understanding. In this subject the defect is more important, for, while anatomical detail remains the same for successive generations, physiology is advancing at tremendous rate. Therefore it is essential for the future doctor, if his medicine is to be based on sound physiology to learn it in a scientific flexible way with an understanding of past developments that will enable him to keep track of its advances in the future. In the past only Oxford and Cambridge have specifically set out to do this, and the allocated a whole year to take an honours course in animal physiology. It was popular in spite of the extra year required, which means that its value was appreciated by students as well as teachers. Unfortunately, in the interests of the war, this course has been omitted; but in the future its example should be taken heed of, if not in the formal sense of a year's course, at least in the way that physiology is taught. In addition to the intellectual approach, the course provided excellent technical practice, of which the best was in mammalian physiology, for this is the only chance students get of handling living material before they have to deal with patients on the operating table.

The teaching of structure and function together is an obvious need. Equally essential is the comparison of the diseased with the normal. While it is necessary to appreciate that the student cannot do every subject at once, yet it must be remembered that the pre-clinical subjects are taught for use in clinical medicine, so that the introduction of clinical material early in the course illustrates and gives direction to the learning of anatomy and physiology. Study of the nervous system is the outstanding example in which function and anatomy need to be taught together and then directly applied to the neurological case. Instead of this, each part is taught quite independently, in different places, at different periods, with a great amount of repetition which is wearisome and a waste of time.

Clinical Teaching

In clinical teaching the most frequent criticisms are directed against rather different objects. This is because the whole environment changes from an academic to a professional one. The student is told that the objects of his studies are, first, diagnosis; second, diagnosis; and third, again diagnosis! But the student, while never denying its importance, wonders if this is quite enough. Has he really done all that he can if he listens to a tuberculous lung for six months and then, having diagnosed a healing condition, sends the patient back to the slums he came from? Is it really sufficient to study ten cases of children with rheumatic heart disease without observing that they all come from a district with notoriously bad damp housing? No, it is not enough; and the fact that students in conference bring such criticism up again and again shows that they feel frustrated by the present scope of their teaching. The teaching of Preventive Medicine is a widespread and urgent demand which is neglected almost everywhere. Public health lectures, as given at present, deal with the legal aspects of sanitation, and no more.

The great majority of students are going to be general practitioners, forming the vanguard of any advance to improved health for the community the profession is going to make. On them will rest the responsibility of diagnosing disease early. Yet the material they are taught with is so

almost entirely "interesting" cases of rare diseases or with advanced physical signs. This has some justification, for the specialist naturally collects cases in his own specialty, and the loudest murmur is the one for the beginner to listen to. On the other hand, the senior student who has learnt to recognize physical signs can apply his knowledge in clinics, which is the nearest thing to general practice that hospitals provide. Out-patient clinics are fairly good for this purpose if they are not overcrowded, but municipal clinics that some London students go to are better, and the dispensary system in Scotland probably best of all. Another major problem in general practice is the maladjusted, possibly mildly neurotic, patient. A field in which a great deal of good can be done, it is almost entirely neglected by present-day medical education. Psychology consists of a few lectures in the major psychoses, illustrated by the most amusing inmates that the mental hospital can produce. This is a most important omission that can and should be rectified. Also in general practice in industrial centres diseases due to working conditions and industrial processes are constantly being met, yet training in recognizing them is confined to possibly two lectures in a public health course. In all these ways could medical education be more closely related to the needs of the doctor after qualifying.

The manner in which teaching is carried out falls short of the ideal. Units tend to be much too large for the best results, as, particularly in the wards, the information does not reach many of the listeners, and there is no opportunity at all of asking questions or taking part in discussion. Lectures are often compulsory, in which case the student is denied even the simple criticism of stopping away, and the lectures may become slovenly as a result. Reading from textbooks has been redundant since the invention of printing. During the last two years, when many schools have been evacuated, it has been found that the formation of seminar groups between teacher and students, with free discussion, has led to the most successful results. At the same time the ability to criticize lecturers has resulted in marked improvements. Thus the formation of staff-student groups to discuss the organizational problems in a school is found to be effective from all points of view, revolutionary though it may seem. The other alternative suggestion is that the staff of a medical school should have had a pedagogical training, or at least be chosen for teaching ability rather than for research. Many feel, however, that this would kill any scientific life in the teaching through replacing scientists by orators, for if the research worker is good he will have such a clear idea of his subject that he cannot talk badly about it. The way forward shown by helpful mutual criticism between teachers and taught seems to be by far the most promising.

The provision of smaller teaching units also enables students to get far more practical experience of the various techniques, such as lumbar puncture, intravenous infusions, and so on, that he will need to be able to do as a doctor. Opportunity for this varies greatly in various medical schools, and it cannot be doubted that the complete divorce of the student from practical work is very bad. On the other hand, there is often required a tremendous amount of attendance at operations which in fact can demonstrate nothing to those more than a yard from the operative site. Perhaps most important of all is training in casualty work, for minor surgery plays a large part in a practising doctor's life. The aerial warfare of to-day makes it doubly important: in fact, the teaching of this subject has been greatly extended since the beginning of the war, but there is doubtless still room for improvement in some places.

Conclusion

A great many of the points mentioned can be easily changed by local adjustment, and usually the staff are very willing to accept suggestions for improvement. Broadly, however, the aims of medical teaching can only be altered, so that they fulfil the needs of the doctor and enable him to serve the community to the best of his ability, on a national scale. The British Medical Students' Association is going to present, by invitation, a memorandum to the Planning Commission set up by the B.M.A., and by this means it is hoped that the necessary changes will be effected.

CLINICAL OBSERVATIONS ON AIR-RAID CASUALTIES*

BY

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AND

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Comments on Treatment: (a) Transfusion

It is apparent that the great majority of the cases in all groups respond well to treatment, at least for a time. The simple measures of rest, warmth, morphine administration, and the head-down position, however, are usually insufficient to effect lasting improvement. We have seen that only 17 cases escaped transfusion; none of these is regarded as having suffered severe blood loss, the haemorrhage being assessed as little or none in 13, moderate in 2, and as unknown in 2. In the majority, also, the injuries are classified as minor or moderate (4 and 7 respectively), in only 4 as severe, and in 2 as internal. In several of them transfusion probably ought to have been given, and would have hastened improvement.

The other 83 cases received transfusions in amounts and at rates that differed greatly. Blood and plasma together were given in 50 instances, blood alone in 13, and plasma in 15; sometimes serum was used instead of plasma, and in a few various salines were added. The amounts, including those given before, during, and in some cases after operation, vary from one pint to thirteen pints (this last amount being administered over a period of twenty-eight hours); 23 received two pints or less, 29 from two to four, 18 from four to six, and 13 more than six pints. In general these amounts are related to the blood loss rather than to the nature of the injury, the larger transfusions being given mainly where bleeding was renewed either before or at operation. The amount required for resuscitation varies so greatly from patient to patient that no definite ruling on this point can be given. While the end in view seems to have been the replacement of lost blood, the restoration and maintenance of normal systolic blood pressure (100 mm. Hg and over) is used as the chief indication that an adequate amount has been received.

In most cases the early transfusions were given at a rate of about one pint in a quarter or half an hour; later transfusions, unless to combat renewed bleeding, were administered more slowly—one pint over one or more hours. More rapid transfusions have been given, apparently without other than good effect: in one instance two pints was administered in fourteen minutes with general

* Concluded from p. 297.

improvement and a rise of blood pressure from 40/20 to 130/70 mm. Hg. The rise of pressure, however, accompanying a rapid transfusion is not always maintained; for example, in one case the blood pressure rose from 70/38 to 134/50 when two pints of plasma was given in twenty-five minutes, but soon fell away again to below 100 mm. Further, rapid transfusion is not always well tolerated; in one case restlessness developed during the transfusion of one pint of plasma in five minutes and one pint of blood in eight minutes; in two others restlessness and increased rate and depth of respiration were noted to come and go with the speeding and slowing of the transfusion. On the other hand a slow transfusion may be ineffective, the blood pressure remaining low or continuing to fall until the rate is increased. Thus in one case (fractures of skull and legs; severe blood loss but no continuing bleeding) 1,400 c.cm. of plasma was given over a period of eleven hours. At the start (one and a quarter hours after injury) the patient was pale, sweating, restless, and excited, and was vomiting; the blood pressure was 100/65 and the pulse rate 125. During the transfusion period the patient became worse, and was semi-comatose, with sighing respirations; pallor persisted, the blood pressure fell gradually to 70/40, and the pulse rate rose to over 140. The rate of transfusion was then quickened (how much is not stated), and after half an hour the blood pressure had reached 110/68; improvement continued, and after another half-hour (during part of which time oxygen was also given) the blood pressure was 120/80, the facial colour good, and the patient fully conscious. Another patient (leg severed through thigh; much laceration), who had lost much blood before and at least a pint during operation, became very ill towards the end of it. Although a blood drip was running slowly, his respirations became rapid (25 a minute) and shallow; and his radial and carotid pulses failed, being palpable only for short spells, and then grossly irregular. After the end of the operation his face and extremities suddenly became pale and he sweated profusely; he lay motionless and apparently unresponsive, though round from the anaesthetic (pentothal, gas-oxygen-ether). The bottle of blood was nearly empty and no more was available; plasma was not obtained until a quarter of an hour. During this time oxygen was given by B.L.B. mask without improvement. The plasma was then transfused at the rate of one pint in twenty minutes. The observer remarks that he expected the patient to die, but that in fifteen minutes there was a remarkable change: the pulse was regular and of good volume, its rate 120 a minute; the blood pressure was 135/70 and the respirations 15; his mental condition had improved greatly, and he conversed normally.

In most cases improvement is pronounced within a few hours of beginning transfusion, being shown by a lessening of pallor (sometimes restoration of a good colour) the cessation of sweating, a feeling of warmth, and a rise of blood pressure to over 100 mm.; slow pulses tend to increase and rapid ones to fall towards normal rates. In some the improvement is dramatic in its rapidity. In a few the response is slow: thus in one instance transfusion of two pints of plasma in the early stages raised the systolic blood pressure from 50 to 90 mm. but no further, though recovery took place later. This case also illustrates that one factor slowing improvement is delay in beginning transfusion. The patient was not admitted to hospital until five and a half hours after injury; transfusion was begun seven and a quarter hours after injury. Blood pressure was not established at normal levels until some time after operation—about thirty-nine hours after injury.

As a general rule, in the absence of continued bleeding, if no material improvement takes place after giving two or

three pints of blood or plasma at an adequate rate, later improvement is unlikely. Only 6 patients showed no improvement after amounts varying from two to six pints, and all soon died; in 3 failure to respond was associated with uncontrollable bleeding; this factor was not evident in the others.

(b) Reaction to Transfusion

A reaction to transfusion is recorded in 15 cases (18%). Rigors are noted in 14, but in one case pallor, a feeling of coldness, and a temporary rise of blood pressure occurred without rigors. We believe from our own experience that reactions are even more frequent than is shown. Unless the patient is carefully watched reactions may be easily overlooked when shivering is slight or absent and the only signs are increased pallor, coldness, a diminution in the pulse volume, and a temporary rise of blood pressure.

(c) Operative Treatment and Anaesthesia

Eighty-three cases underwent operation; the time after admission at which operation was begun and the duration of operation are noted in 68. Operation was begun within two hours in 18 cases, four hours in 23, six in 5, twelve in 20, and twenty-four hours in the remaining 11. In the majority operation lasted an hour or less (49 cases), between one and two hours in 15, and between two and three hours in 4. Too many factors seem to have influenced these times to allow analysis to bring out clearly what we have gathered from our own experience—namely, that the sooner operation is begun, after resuscitation in those cases requiring it, and the more rapidly it is carried out, the better for the patient. The danger of delay is illustrated by two comparable cases. Both patients were young and healthy men with badly smashed legs, and were severely ill on admission. They were soon revived by transfusions; in both, double amputation was rapidly carried out by two surgeons operating together, transfusion being continued. In one case operation was begun within two hours of admission, and the patient survived. In the other operation was delayed for seventeen hours; the patient became gravely ill during operation, responded poorly to further transfusion, and died about eight hours later.

It has been seen that a considerable proportion of cases deteriorate at operation. The data given are too meagre for an analysis of the factors involved, but in at least 9 cases renewed bleeding was the chief. These findings serve to emphasize three practical points. The first is the necessity for carefully watching the patient during operation for signs of deterioration; the best indicator is the state of the blood pressure. The second is the importance of keeping blood loss at operation minimal; and the third, the need for continuing transfusion at drip rate during operation so that at any time it can be speeded up to compensate for further haemorrhage.

Data on the induction and course of anaesthesia are scanty, and in 23 of the 83 cases no note is given of the anaesthetic used. The gas-oxygen-ether anaesthetic was used in 45, ether in 4, pentothal or evipan in 4, a local anaesthetic in 5, and a spinal in 2. We are of the opinion that too little attention is paid to this aspect of treatment, and from our own experience we urge that the anaesthetic should be administered by a skilled anaesthetist. The series affords no material for comparing the efficacy of different anaesthetics: from what we have seen the gas-oxygen-ether mixture well administered is a safe and satisfactory anaesthetic. It is of interest to note that in two cases a spinal anaesthetic was given before operation for "shock"; in both of them the blood pressure fell further and was later restored by transfusion.

Plasic Variations in Blood Pressure : Cardiac Irregularities

In passing, attention is drawn to a commonly occurring phasic variation in blood pressure, corresponding to the "pulsus paradoxus." The pressure rises with expiration and falls with inspiration. The amplitude is often no more than 5 to 10 mm.; but it may greatly exceed this, and in one case reached 50 mm. It often becomes apparent during anaesthesia, but occurs apart from this. It does not seem to be associated with any particular injury or with obstructed respiration. Its significance is not understood, and further observations are required.

Cardiac irregularities also are not infrequent. Extrasystoles are the commonest, but auricular fibrillation and pulsus alternans have been met with. These irregularities usually pass off as the patient's condition improves.

Disturbance of Renal Function

A feature of interest is a commonly occurring disturbance of renal function; its frequency is unknown, for observations have been insufficient. The chief characteristics are a delay in passing urine (up to thirty-six hours) and the presence of abnormal constituents in the urine for a day or two (albumin and red blood cells, less often casts, and occasionally sugar). The delay in passing urine is in most cases not due to retention, for the bladder does not fill, and in some patients who have died without passing urine little has been found in the bladder at necropsy. The delay may be followed by several days of reduced urinary output in spite of plentiful fluid intake, which may be succeeded by a period of increased diuresis. In some instances the blood urea is raised. While in most cases the disturbance is relatively slight and transient, in a few it is more severe and longer-lasting, and in two cases death appears to have been due to renal failure. In neither was the renal failure adequately explained at necropsy, though in one case fat emboli were discovered in the kidneys. Examples of the disturbance are given in the case histories quoted under Groups I and IIIA (pp. 294 and 296). Whether all these cases fall into one category or whether or not the renal disturbance is the same as that occurring in the "crush syndrome" remains unknown. So far as evidence goes the disturbance is not clearly related to age, blood pressure, severity of wounds or haemorrhage, or transfusion. Further observations are necessary.

Deaths

Although most of the cases responded so well to treatment, yet in a high proportion improvement was only temporary. The table (p. 293) shows that of the 100 patients 44 are known to have died: none in Group I; 7 (or one-quarter) of Group II; 4 (or just under one-half) in Group IIIA; and 15 and 18 (or more than a half) in Groups IIIB and IIIC respectively. This probably does not fully represent the mortality of the series, for, as the table also shows, the after-history is no more than twenty-four hours for 10 cases, forty-eight hours for 6, and seventy-two hours for 2. None of the 5 patients with minor injuries died, and only 1 of the 17 with injuries classified as moderately severe. Of the 41 with severe injuries 14 (34%) died, and no fewer than 28 (76%) of the 37 with internal injuries. The majority (27) of the deaths occurred within twenty-four hours of admission to hospital, 11 within forty-eight, 3 within seventy-two, 1 on the fourth day (renal failure), the other 2 on the eighth day (one from renal failure and one from gas gangrene). Fourteen died without reaching operation, 6 died on the table, and 23 died after operation.

In 21 instances death can be accounted for more or less satisfactorily by the nature of the internal injuries; in 8 cases details are insufficient from this point of view. Gas gangrene accounts for two deaths, renal failure also for two; one is attributed to too deep anaesthesia. Insufficient transfusion is probably responsible for one, only one pint of plasma having been given though severe haemorrhage was likely. In another, death occurred when operation had lasted two hours, and in this case also transfusion was begun late.

In the remaining 8 cases death is not readily accounted for. They are alike in that all had improved greatly with transfusion and all except one underwent operation and remained for a time in a more or less satisfactory condition. Then unexpectedly these patients deteriorated progressively and died. The recorded details of the later course are too meagre for further comment in three cases, but in the others the description suggests a pulmonary or cerebral complication. In one, restlessness, delirium, rising pulse and respiration rates, a profound fall of blood pressure, cyanosis, and convulsive attacks are described; in two others the symptoms were similar though convulsions were lacking. A third displayed intense headache, extensor plantar reflexes, and coma. Plasma transfusion did not improve the state of two, nor did venesection a third; oxygen was tried without avail in several. In none was a satisfactory explanation for death found at necropsy. Fat emboli were looked for in six cases, and were found in the lungs, brain, and kidneys in two and in the lungs only in three; they were not very numerous, and it is doubtful if death can be rightly attributed to this cause. No common feature in their injuries or treatment suggests an explanation. More observations are required. It is probable that such cases are more frequent than the series suggests: the final stages are apt to be missed, since they occur at a time when the interest in resuscitation has passed.

Concluding Remarks

The majority of these cases were regarded on admission to hospital as instances of shock. If this is accepted, then it is clear that "shock" is no readily recognizable clinical entity. The survey of the cases, we think, bears out our impression that the grounds for the diagnosis of "shock" depend rather on the personal views of the individual making it than on definite and well-established criteria. In our experience the term is so loosely used in practice as not to give an indication of what we should expect to see at the bedside; it does not tell us how ill the patient is, what symptoms and signs he displays, or what treatment he requires. We prefer not to apply this label to these cases. We have shown that there is much to be learnt of the reaction or reactions to injury, and believe it is only by continued observation and analysis that we can learn more. Haemorrhage plays an important part, but is not the sole factor involved. Many more accurate and detailed case records are needed: attention is drawn to the "Memorandum on the Observations required in Cases of Wound Shock," which appears in this issue at page 332.

These observations have taught us much about treatment. Many of these patients are severely injured and have lost much blood; left untreated, they soon become dangerously ill, if they are not so already. The simple measures of rest, warmth, and morphine administration are usually insufficient for their recovery, but a transfusion of blood or plasma properly given is a most potent means of restoring or maintaining the circulation.

In assessing the need for transfusion emphasis is placed on the severity of the injury and blood loss rather than on

blood pressure; nevertheless, the course of the blood pressure is the best available indicator of response to treatment, and its determination should not be omitted. In severely wounded cases with evidence of blood loss, transfusion should be begun without delay, whatever the blood pressure. Early transfusion should be given at the rate of about one pint in fifteen minutes or half an hour; later transfusions, unless to combat renewed bleeding, more slowly—one pint over one or more hours. More rapid rates may not be well tolerated; slower ones may prove ineffective.

The restoration and maintenance of blood pressure to about or above 100 mm. is a good indication that an adequate amount has been transfused. The response to transfusion may be dramatic in its rapidity; usually it is more gradual. Few cases fail to respond: in the absence of continued bleeding, lack of improvement after the giving of two to three pints of plasma or blood indicates small chance of recovery.

Operation should be carried out as soon as possible after the patient is revived. At operation as little as possible should be done as quickly as possible, and blood loss must be kept minimal. The gas-oxygen-ether mixture is a safe and satisfactory anaesthetic; its administration should be in skilled hands. Transfusion ought to be continued during operation and the patient carefully watched for signs of collapse.

In the post-operative period the patient still requires to be carefully watched for several hours; transfusion is often necessary. Even in patients well restored and safely past operation, death may occur unexpectedly within forty-eight hours.

In many cases, owing to the nature of their wounds, improvement is but temporary and is followed by deterioration and death. Nevertheless, because of the difficulty in foretelling the outcome, transfusion should not be withheld, no matter how dangerously wounded the patient appears to be when he comes under observation.

MEMORANDUM ON THE OBSERVATIONS REQUIRED IN CASES OF WOUND SHOCK

BY

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The following memorandum was prepared for the Medical Research Council's Committee on Traumatic Shock and issued in February, 1941, to a number of medical officers in the London area. The memorandum has proved useful, and is now published in the hope that medical officers elsewhere may also help in collecting the required information. Case records should be sent to the Secretary, the Committee on Traumatic Shock, Medical Research Council, c/o the London School of Hygiene, Keppel Street, London, W.C.1. A brief account of the observations made so far also appears in this and the previous issue (pp. 293 and 329).

Close observation of air-raid casualties shows that in spite of all the work already done, especially in the last war, little is known of the nature and treatment of traumatic or wound shock. In the first place there is in practice a wide variation in the application of the diagnosis of "shock." Some medical officers apply the label "shocked" to any patient, however slightly wounded, who seems ill, is perhaps pale, and has a weak pulse. Others

restrict it to cases displaying low blood pressure, a rapid thready pulse, pallor or cyanosis, a cold and sweating skin, shallow and rapid respiration, and often vomiting, restlessness, a lessened sensibility, and a dulled mental state. To the majority the criteria of "shock" are severe injury and low blood pressure. It follows that those who apply the diagnosis in the first sense see many more cases and obtain better results in the treatment of "shock" than those who apply it with more restraint.

Secondly, the clinical manifestations presented by injured patients are varied: some cases of so-called "shock" recover quickly with only rest and warmth, some require transfusion, and others die whatever treatment is given. It seems likely that there are different types of "shock," but we have not yet learnt to distinguish them clearly at the bedside. Prognosis is often at fault and treatment in doubt. Moreover, the lack of a common basis of diagnosis makes it impossible to assess the efficacy of the various methods of treatment adopted.

For these reasons it is better to avoid the diagnosis of "shock" and to replace it by an accurate and complete record of a patient's state and progress, together with the treatment given. It is only by accumulating and analysing such records that we can hope to learn if the patients do fall into different clinical groups, with differing prognoses and requiring different treatments. It is only thus we may pave the way for further observation and experiment directed towards understanding the mechanism of "shock" in its various forms.

The same need for careful observations on "shocked" and wounded soldiers was realized in the last war, and much was accomplished by special observers in France in spite of difficulties associated with active service abroad. Much remains to be done, and the opportunities for observation are more favourable now than then. Valuable material is passing through our hospitals either unrecorded or insufficiently documented. It is important that case-records should be made on a uniform plan, and the following notes have been compiled for the guidance of medical officers who have the opportunity of dealing with air-raid casualties and who are willing to undertake such work. On page 333 is an example of the type of detailed case record desired.

This work is exacting; it often requires that an observer should remain by one patient almost continuously for hours. It follows that only one or at most two cases can be satisfactorily dealt with on any single occasion unless the medical officer has available helpers on whose observations he can rely. A few records fully documented are of far greater value than scrappy notes on many cases. Observations need not be confined to air-raid casualties: they are equally valuable when applied to accident cases or surgical emergencies.

NOTES ON OBSERVATIONS

A complete record should be kept of all that happens to a patient from the time he comes under observation until he is out of danger or dies. It is most important that all observations should be recorded at the time they are made and that the times of the observations should be noted. These points are often overlooked by unpractised observers, and require emphasis.

An attempt should be made also to find out what happened to the patient before he came under observation. The circumstances of the injury should be inquired into: when the patient was injured; what he was doing at the time; how near the bomb fell; whether he was buried or left exposed; whether or not blood was lost, and how

Hospital:

Name: A. B.

Date and Time of Admission: 8.11.40, 7 p.m.

MEDICAL RESEARCH COUNCIL

Age: 33 years

Sex: Male.

Time of Injury: 6.30 p.m.

Time	Pulse	B.P.	Resp.	Observations	Time	Pulse	B.P.	Resp.	Observations
7.28 7.50	?	70/7		I.M.H. gr. 1/4. 3 ccm. A.T.S. B.L.B. mask on. Said to be ashen pale and sweating profusely. Pulse: impalpable, rapid breathing, cold extremities.	9.11.40 a.m. 12.30 (cont.)				Suddenly forehead and extremities pale and sweating. Doctors present take a grave view. Carotid pulses barely palpable and only in bursts at wrist. With some delay another vein needed. Coming round from anaesthesia.
8.00 8.50	?	60-70/7	28	Plasma, Group O, 1 pint started. Skin colour fair. Warm. Pinhead pupils. Mental state clear. B.L.B. mask in place—tolerated well.					Transferred to bed in theatre; foot of bed raised; bed moved to resuscitation room next door to theatre. Hot cradle on. B.L.B. mask on. Very ill. Only about 50 ccm. of blood left in transfusion bottle. Plasma is being switched, but very slowly. Transfusion rate a slow drip to make blood last; but if drip speeded up he immediately improves, only to fall away again when it is slowed.
8.45	128	70/50	18	Injuries: Leg off at level of lower right thigh. Severely lacerated. Has been cleaned up and packed. No sweating. Exposed hand rather cool. Apparently no other injury.	12.45	?		25?	Breathing very shallow. Pulse as above. B.P. unrecordable. Fair colour in skin of forehead and lips. Sweating on forehead. Exposed extremities cold.
8.50				Pulse (ft. radial) regular, then volume. No pause after expiration; respiration regular. Skin colour of face still quite good. Hand not particularly cold, but slightly bluish.	12.50	?			Breathing very shallow. Extremely ill. Citrate and plasma at last; run in pretty rapidly, about 1 pint in 20 mins. Pulses still as before. Lies quiet; does not talk; appears semi-conscious. I went away thinking he would die.
9.00	120	78/56	17	Has had 1 pint of plasma. Blood, 1 pint, started. Patient sleeping. Rt. arm bandaged from elbow to wrist to keep warm. Rt. hand exposed.	1.00	120	135/70		Miraculous change. Pulse good volume. Mental state clear and normal. Feels better. This pint of plasma finished.
				Respiratory variation of B.P. Hand cold. Slight sighing resp. Blood running at about 3 drops a second. Skin of face paler but not bloodless. Lips appear to be slightly cyanosed. Lying quite quiet. Patient feels not too bad. Has had but cradle over lower part of body and legs since 8.45 p.m. Rt. hand exposed.	1.10 1.15	128	120/70	15	Blood, 1 pint, started. Pulse regular and no fluctuation. Mentally quite normal now. Thirsty. Lips moistened with water. Sips of water.
9.15	122	84/56	17	Rt. hand cold. Forehead and cheeks cool. Colour of face definitely paler. Blood taken from rt. thumb. Squeezing and congestion—to get blood drop. Hb 80-82%—(Gowers's method). Patient quiet and drowsy.	1.30	128	125/70		Pulse good volume and regular, with occasional poor beats. Forehead moist. Ears and nose warm.
9.30	120	92/58	16	No respiratory variation of B.P. now. Lips pinker. Ears cool to warm. Sull quiet. Foot of bed raised. Ears and lips colour better. Mental state clear. Patient says his back is burning.	1.55	128	120/80	14	Warm, quite comfortable, not too hot. Skin colour good. Entirely rational. Feeling well to himself. Resps. deep and even. Pulse regular and even. Remarkable recovery.
9.45 9.55 10.00	124 122	100/60 118/79	16 15	Hand not so cool, but coolish—more blood in it. Veins visible. Tummy—sips of milk.					Now in good condition. Hb from blood at 1.45 a.m.—88% (Gowers's method). Blood: about 250 ccm. of this last 550 ccm. has now gone in.
				Exposed hand cool but warmer. Skin of face, ears, and lips good colour. Patient quiet and co-operative. Free flow of oxygen into B.L.B. mask.					
10.15	124	140/70	14	Exposed hand good colour though still cool. Colour of cheeks, lips, and ears still good. Pulse thin. Vasodilatation.	P.m. 12.30	120	140/35		Patient feeling quite well—good colour in face; usually warm ears and hands. (B.P. a bit high.)
10.20				Has now had 1 pint of blood. Second pint of blood started. O ₂ still bubbling through mask. Stump has bled a little but not much. Patient asked for pillow under rt. leg. Still quiet and cool.					Has had a good sleep. Has been taking fluid (water), but brought some up again. Fluid intake about 2 pints +; 1 pint output by vomiting after 2 cups of tea. Passed water about 12, not in excess quantity. Did not feel he wanted to pass any water. Mental state normal. Pulse quite regular and good volume. Patient still a bit thirsty. Hb 83-87%, taken from rt. thumb. Easy flow.
10.30	128	138/70	16	Exposed hand warming. Colour of exposed hand good; also cheeks, ears, and lips a good colour. B.P. shows respiratory variation.	10.11/40 a.m. 6.00 10.00 11.11/40 P.m. 3.30	80 96		20 20	Temp. 97.6° F. Temp. 100.2° F.
10.35				Hb (rt. thumb) 95%—(Gowers's method. Hb (congestion and squeezing—) was done after he had had 1 pint of plasma, 1 pint of stored blood and 100 ccm. of new bottle of blood. O ₂ now off.					
10.40 10.45	144	134/68	17	Slight rhythmic fluctuation of B.P. Respiration regular and even so far.					
				Vomited 1 oz. Face a bit congested. Forehead sweating. Lips not so pink. Quite rational. Says he was in house about 6.30 p.m. Bomb dropped and house fell on him. Also cough escape.					
10.50				I think a bit bluer since O ₂ off. Hb on last few drops of last bottle of blood done—100% approximately. ? a fair sample. Quite clear-headed.					
11.00 11.15	132 128	126/70 130/90	14	Slightly more fluctuation in B.P. Feels good in himself. Pupils still pinhead. Hands warmish, good colour. Blood in skin veins. Comfortably warm. Calm. Probably fit for operation.	15.11/40 P.m. 3.00	100	140/80		Pulse good volume, regular. Mentally normal. Since Monday, 11/11/40:
11.25 11.30 11.45	128	134/85	16	Anaesthetic started. Pentothal intravenously. ? how much, followed by gas-oxygen and ether; 80% O ₂ and not much ether or N ₂ O necessary to dope him. Moved into theatre. Blood drip not now running very well. Moved on to table.					Average temp. = 98-100° F. swinging. Pulse = 93-104° F. resp. = 20.
				Stump wound (about through knee) cleaned up and isolated in sterile towel. Amputation through about middle of femur. Well and rapidly done. Total operation time about 30 mins. Tourniquet above operation field.	16.11/40				Sulphapyridine stopped 12.11/40. Had 2 pints of blood, Group O, on 12.11/40. O ₂ 15.11/40 Hb was 90%.
				On about 20 mins. A fair amount of blood loss. I should say at least 1½ pints, but this may be an over-estimate.					Evening. Fairly sudden onset of pain in chest. Got worse and limited inspiration. Doctor thought he could detect signs of pleurisy. No cough. No sputum; 1 slight haemoptysis.
				Operation finished. Stump sewn up. Operated on with head lowered and legs raised, and blood drip running in badly, partially subcutaneously.	18.11/40 19.11/40 20.11/40 21.11/40 22.11/40				Temp. persisted about 100°-101° F. Pulse went up from 100 av. to 110-120. Given sulphapyridine and sulphathiazole in large doses.
9.11/40 a.m. 12.30	?	?		Now flat out. Rapid breathing (and shallow). Pulse at wrist impalpable except in bursts, when gross irregularity of rate and rhythm can be detected. Has been like this for the last 15 mins.					Seen at 3 p.m. Feels better, but now on sulphathiazole instead of sulphapyridine. Still some pain. Still no cough or sputum. I should think probably an infarct.

Note.—To bring the readings of the Gowers haemoglobinometer used to a "normal" standard in which the blood of average healthy men is represented as containing 100% haemoglobin, correct the readings here recorded by subtracting from them $R \times 30$, where R is the given reading.

much; what treatment he was given. The amount and time of administration of morphine or other drug should be noted, as also the time of application of a tourniquet. It may be impossible to get this information from the patient, but it can often be obtained sooner or later from other witnesses. The injuries observed on admission and later, including radiographic and operation findings, should be fully described.

The general condition of the patient should be noted. State, for example, if he is mentally clear, apathetic, drowsy, comatose, talkative, delirious; what his memory is for events up to and since the time of injury (concussion); whether he is frightened or calm; if he is in pain; whether the eyes are sunken and closed, or staring; what is the state of the pupils. Some patients are deafened by the explosion; even in the absence of deafness it is advisable to examine the ear drums for rupture (blast). The general build and nutrition should also be noted—for example, whether the patient is short and fat, tall and thin.

Loss of Fluid

A close watch should be kept on loss of fluid from the body by haemorrhage, sweating, vomiting, and the passage of urine and faeces. When possible the amounts lost in this way should be measured. Thirst and nausea should also be noted. An attempt should be made to estimate fluid lost from the circulation into the tissues—for example, when blistering is extensive or when the limbs become swollen. In the latter case the swelling of the limbs may be estimated by measuring their girth or by noting displacement when immersed in water.

Haemorrhage.—It is difficult and often impossible to estimate how much blood has been shed. The colour of the skin and mucous membranes is of little value, as they may be rendered pale by local vasoconstriction or by drainage of blood to other parts of the body. The usual methods of estimating circulating blood volume (dye or carbon monoxide methods) are not readily applicable to severely injured patients. An indication may be got, for example, from the state of the dressings, by measuring the amount of blood lost at operation, by soaking dressings, etc., in water and subsequently noting the volume of water and estimating its haemoglobin content. Some indication also may be obtained from the state of the blood. Thus the estimation of the haemoglobin and the red cell number or volume (haematocrit) before and after the administration of plasma may give an approximate idea of the circulating blood volume. A single estimation of the haemoglobin content of the blood is of little or no value for showing the amount of blood lost from the circulation; of greater value is a series of readings which may reveal a progressive dilution or concentration of the circulating blood. In this connexion it is important to note the method used for estimating haemoglobin, the site from which the blood sample is drawn, if much squeezing or venous congestion is required to obtain a flow of blood, and if the finger or ear is cold. It is said by some that a concentration of the blood is an early and valuable sign of "shock"; on the other hand, others say that many cases regarded as "shocked" show no evidence of blood concentration, while some claim that concentrated blood may be found in the cold extremities of normal subjects.

Sweating.—The amount of fluid lost from the body by sweating may be considerable. Its outbreak, degree, and cessation should be noted. Sweating may be associated with a pale skin as in "shock"; associated with a hot flushed skin it may indicate that the patient is being overheated.

Thirst, Nausea, and Vomiting.—Thirst should be noted; it is often severe, especially when dust has been inhaled. Nausea and vomiting are frequent; the amount and character of the vomit should be noted. Undigested food may be vomited hours after injury. Nausea and vomiting may be associated with either a rise or a fall of pulse rate and blood pressure.

Urine and Faeces.—The passage of these should be noted. Many patients do not pass urine until fifteen to thirty hours or more after injury, and the urine then and for a time subsequently often contains albumin, blood, and casts. The anuria does not seem to be necessarily associated with low blood pressure or severe injury; further observations are required. When facilities are available other urinary investigations should be undertaken. For instance, estimations of blood urea are of interest.

Observations on the state of the circulation are regarded as of chief importance in the condition of "shock," and much information may be gathered from observations on the blood pressure, pulse rate, and skin colour and temperature.

Blood Pressure

Blood pressure is regarded at the moment as one of the most important guides to the patient's state and progress;

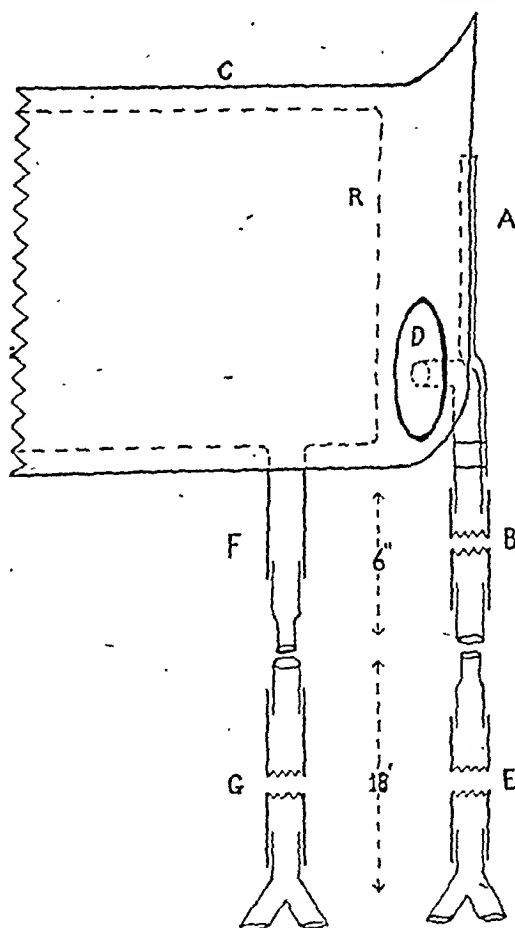


Diagram of apparatus used in taking serial blood-pressure readings.

serial readings are essential. The frequency of readings depends on circumstances: they may be required every five, ten, or fifteen minutes in the early stages, or at hourly or longer intervals in the later stages. A respiratory variation in blood pressure is often present, the pressure rising with expiration and falling with inspiration.

For serial readings it is of great help to use a modification (see diagram) of the auscultatory method usually employed. A flat stethoscope diaphragm D having the exit tube bent parallel to the diaphragm is incorporated in the inner and lower edge of the sphygmomanometer cuff C. An aluminium strip A ($1/32'' \times 3/8'' \times 4''$), suitably bent and stitched to the cuff and exit tube of the diaphragm, holds the latter in position on the cuff. If the rubber bag R comes close up to the end of the cuff it is necessary to add another piece of cloth to accommodate the diaphragm. A rubber tube B, 6 inches long, is attached at one end to the diaphragm and at its other bears the female part of a male-and-female metal junction. The male part of the junction is inserted into a rubber tube E, 18 inches long, at the other end of this tube a metal Y-piece receives the two rubber tubes of a binaural stethoscope. The rubber tube F of the sphygmomanometer cuff is cut to 6 inches in length and bears the male part of another male-and-female metal junction. (The second tube from the cuff, if present, is cut short and sealed, not being required.) A rubber tube G, 18 inches long, bears the female part of the metal junction at one end; at the other it connects through a metal Y-piece with the manometer and pressure bulb. The diaphragm is placed and held over the brachial artery above the elbow, while the cuff is applied in the usual manner and fixed by a buckle. The stethoscope and manometer are connected by the rubber tubes. Readings may then be taken no matter what the position of the patient's arm. This method avoids the necessity for disturbing the patient by repeatedly exposing an arm, and readings may be made even during sleep. It is more convenient to use an aneroid than a mercurial manometer, particularly when blood-pressure observations are made in the operating theatre, thus avoiding the necessity for a stand for the manometer in a space already sufficiently occupied by surgical staff and instruments. The length of tubing allows the observer to stand at some distance from the patient. With this modification, also, the pulse rate may be counted by inflating the cuff till the pulse becomes audible and maintaining the pressure for the quarter-minute or half-minute necessary.

It is of advantage to have several cuffs, with the diaphragm incorporated, so that observations can be made on more than one patient, leaving the cuffs on the arm and disconnecting stethoscope and manometer at the junctions.

Pulse

In addition to the rate, the rhythm and quality should be noted. Irregularities in force and rhythm are often encountered as transient phenomena in air-raid casualties. Alternation, sinus arrhythmia, extrasystoles, and fibrillation have all been met with. Where a portable electrocardiograph is available records would be of interest. A point which has been noted is that though in some instances the radial pulse is hardly palpable the blood pressure may be within normal limits or be raised. The observations on pulse and blood pressure are important because they are used as a basis for judging the patient's progress. It is said by some that a rising pulse rate indicates improvement, and by others, on the contrary, that it indicates deterioration. Both may be true, depending on the circumstances. A rise of pulse rate and a fall of blood pressure may indicate that a cold patient is becoming warm or that haemorrhage is taking place. It is to be remembered that 1/100 grain of atropine may considerably increase the pulse rate.

Skin Colour and Temperature

It is important to observe closely the phenomena displayed by the skin, and how these change with the passage

of time. Note the colour of the skin, whether it is pale or flushed, and whether the tint is a normal pink or is cyanotic. It is to be remembered that cyanosis is not easily recognized in artificial light, especially if this is dim. For the observation of colour it is of advantage to carry a torch giving a white light. It is to be remembered also that pallor or greyness of the face may be due only to a coating of plaster dust, the pale tint being enhanced by smears of blood on the face.

Skin temperature is particularly useful in assessing the state of the peripheral circulation: a cold skin indicates poor, a warm skin good, peripheral circulation. It is not necessary to estimate skin temperature by a thermometer; it is sufficient to record whether the skin feels cold, cool, warm, or hot to the observer's hand. The observer's hand should be warm. Note where the skin temperature is taken, because it is only in the hands and feet, nose and ears, that skin temperature is a good index of the skin blood-flow. On the trunk, forehead, and muscular parts of the limbs the skin is warmed mainly by underlying structures, and skin temperature may be high although skin circulation is at a standstill. The extremity of which the skin temperature is noted should be exposed to room air: a hand withdrawn from under a heated cradle may be warm without the warmth indicating a good peripheral blood-flow. The nose, or the hand of an arm exposed for transfusion, is a convenient site for watching changes in skin temperature. It will be found, for example, that low blood pressure is usually accompanied by pallor and coldness of the skin: as the blood pressure rises the skin becomes pinker and warmer. In certain instances, however, the exposed hand may remain warm although blood pressure falls. The onset of a rigor is often preceded or accompanied by the appearance of pallor and a drop in skin temperature. It is to be remembered that evaporation of sweat cools the skin surface.

Body Temperature and Respirations

Estimations of temperature in the mouth or axilla are very liable to error, and it is best to note rectal temperature. Remember that a patient may be thoroughly chilled by exposure and may require prolonged heating to become comfortably warm, although his body temperature may have been but little or not at all lowered. Rectal temperature is the best guide to blood temperature.

In addition to rate of respirations, the depth, regularity, etc., should be noted. Cheyne-Stokes respiration should be looked for. Attention should be paid to the development of abnormal signs in the chest (collapse, oedema).

Handling the Patient

Details of the handling of the patient should be recorded. Notes should be kept, for example, of when the patient is undressed (whether or not the clothes are cut off), moved from stretcher to bed, taken to the theatre, and examined surgically. The method of warming by cradle or electric blanket should be recorded, also the time of application and of the withdrawal of heat. Note, too, when the end of the bed is raised and how much, and when it is lowered. The effect of handling should be observed—whether or not blood pressure or pulse alters, or pallor or sweating develops.

There is considerable difference of opinion on how best to handle patients. For example, in some hospitals it is the general rule, as soon as possible after admission, to transfer the patient from stretcher to bed, to undress him, cutting the clothes off if necessary, to examine him completely, and then allow him to rest while being warmed. At other hospitals it is the custom not to undress the injured patient until he is in the operating theatre and under the

influence of an anaesthetic. Data are wanting by which the relative value of the different methods of handling a patient can be assessed.

Treatment

In addition to such points as have already been mentioned note should be kept of all drugs given, the dose and time being recorded—for example, A.T.S., morphine, atropine, oxygen, sulphanilamide. A record should be kept of all fluids administered, whether by mouth, rectum, or vein. When blood or plasma is given the rate of transfusion should be noted. Any difficulty in entering a vein with a needle or cannula or of getting the fluid to enter the vein should be recorded. Note the temperature of the fluid administered: rigors may follow the intravenous administration of cold fluids. It is of value to note whether varying the rate of transfusion appreciably alters the patient's state. It has been found, for example, in some cases that blood pressure falls when the rate of transfusion is reduced; in others that nausea, restlessness, and respiratory distress accompany speeding of the transfusion.

Operative treatment, the anaesthetic employed, and the progress of the patient while he is in the operating theatre and subsequently, all require description. An attempt, too, should be made to follow the progress of the patient if he is transferred to another hospital. In the event of death the manner of death should be recorded and every effort be made to obtain a post-mortem examination. Fat emboli should be looked for.

It is of value also if during the course of the case and at the end the observer gives his general impressions. For example, he may state that judging by the rise of blood pressure the patient now seems fit for operation; that the case appears to be one mainly of loss of blood; that he is surprised at the turn events have taken. In this way he is led to learn from his observations and to look for further evidence in future cases to support or correct his impressions.

Medical Memoranda

Sulphonamide in the Treatment of Corneal Ulcer

Sulphonamides have in recent months been used locally in various surgical and skin conditions. The suggestion arose to try this method in seriginous ulcers of the cornea, and since October, 1940, we have treated these cases with prontosil applications. The following preparation was used:

Prontosil soluble 5% 5 c.cm.
Paraffin, molle ad 1 oz.

It was inserted into the conjunctival sac twice daily for prolonged periods. No other disinfectant was used.

In judging the results of any treatment of seriginous ulcer it has to be borne in mind that we are dealing with a disease which has to be attacked from several sides, since almost always there are complications, with their special features and dangers, which may influence the course of the disease. Iritis, invariably present, has to be held in check by mydriatics and by the application of heat; increased ocular tension often necessitates surgical intervention in the form of paracentesis: a diseased lacrimal sac has to be excised.

In any given case it is difficult to say to which of the various factors of treatment success or failure has been due; and it will be understood, since prontosil replaces only one of the weapons used, that a conclusion as to its efficiency can be arrived at only by comparing a series of cases in which it has been used with a corresponding series in which other anti-bacterial agents have been employed.

COMPARISON OF RESULTS

Two series of cases are considered: (1) the prontosil series, comprising all patients so treated who have been discharged from hospital two weeks or more; and (2) the "previous" series, consisting of the first 20 cases of seriginous ulcer treated in 1940, in which either argyrol or mercurochrome had been used. The latter series contains a number of cases in which the cautery had been employed, when the ulcer could not be prevented from spreading. No form of cautery, chemical or heat, has been used in the prontosil series, but in 9 cases treatment was supplemented by local irradiation with ultra-violet light (Duke-Elder's mercury vapour lamp). This subsidiary treatment was chosen for two reasons: (1) In cases in which the ulcer did not come to an early standstill it did not seem justifiable to resort to an experimental drug only. (2) On theoretical grounds local irradiation appeared well fitted to supplement the bacteriostatic action of the drug. Since ultra-violet light acts more in the nature of stimulating the tissue to anti-bacterial activity than as a direct bactericide, it only partly overlaps the effect of prontosil.

The table shows that the results of treatment with prontosil, as judged by the visual acuity remaining when the ulcer had healed, compare favourably with those of the orthodox treatment. The most striking feature of the prontosil series was the transparency of the resulting scar of the cornea, even in many cases in which the infiltration had gone very deep into the corneal tissue. Perhaps this was mainly due to the fact that the cautery was never

Visual Acuity of Affected Eye on Last Visit to Out-patient Dept., with Refraction Corrected	Prontosil Series	Previous Series
6/6 or better	6	1
6/6 to 6/18	7	8
6/18 to 6/60	5	3
Less than 6/60	2	6
Eye lost	0	2

required to arrest the spread of the ulcer. The rapidity of healing was the same in the two series, the average period of in-patient treatment being 10½ days in each.

Summing up we would say that the results of treatment of seriginous ulcer of the cornea by the application of prontosil ointment are encouraging, especially when used in conjunction with local ultra-violet light. It might prove a valuable addition to our therapeutic weapons against this dangerous affection of the eye.

We would like to express our thanks to Mr. Alexander MacRae for allowing us to treat these cases and for his encouragement and advice.

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Renal Complications of Sulphapyridine

After reading the article by Mr. Leedham-Green (*Journal*, 1941, 1, 586) I am prompted to record the following case.

CASE REPORT

The patient, a boy aged 5, had had three attacks of tonsillitis during last winter. Two of these were followed by mild otitis media, the first attack being treated with sulphanilamide. The second attack occurred a week after the tonsillitis, and as there was considerable injection of the malleus region of the ear-drum, with a temperature of 101°, I decided to give sulphapyridine. He had an initial dose of 1 gramme in the morning. About four hours later he began to vomit, and vomited several times during the afternoon. He refused to take fluids on account of the vomiting which they almost immediately initiated. He passed no urine from about midday until evening, when a small quantity was voided; this was not measured and was not seen by me. That evening he seemed better, but as the temperature was 99.6° another 0.5 gramme of sulphapyridine was given, also a small drink of water—all he would take.

The next morning he complained of abdominal pain centred round the umbilicus and spreading laterally towards the flanks. He vomited about 6.30 a.m. and again shortly afterwards, and voided a small quantity of thick cloudy urine, which was not

saved for me to see. I examined him about 8 a.m. for the abdominal pain, and thought it was probably colic, as he had had no bowel action the previous day. His car-drum looked better and his temperature was normal. He was given an enema with a good result, but so far as could be ascertained he passed no urine. The enema relieved his pain, and he seemed better. He had had an appendicectomy at the age of 12 months, so appendicitis was ruled out. Nothing of note could be felt in his abdomen, and no loin tenderness was observed.

At 2 p.m., after voiding no urine since 6.30 a.m., he passed about half a pint of very heavily blood-contaminated urine, almost pure dark blood; I saw this, but through a misunderstanding it was thrown away. About an hour later he voided 6 oz. of urine; this was very much better, but it still contained obvious macroscopic blood. Laboratory examination showed red blood cells only; no casts or crystals were noted. About 5 p.m. I catheterized him. Macroscopically the specimen contained only faint blood; microscopically red blood cells were seen, but no casts, and a culture was sterile. He had been drinking well all day, had had no pain since early morning, and his temperature was normal. He continued voiding urine with progressively less blood, and the last night specimen, about 10 p.m., was only very faintly hazy.

The next morning his urine was crystal clear and chemically contained no albumin. For the rest of the week it remained the same, fluids being forced, but no more specimens were microscopically examined. Beyond looking rather pale for a week, during which time he was kept at rest, he has remained perfectly well, and a subsequent radiograph (plain abdominal) revealed no opaque calculus in the whole renal tract.

The diagnosis seemed initially to rest between sulphapyridine haematuria, acute haemorrhagic nephritis, and renal or vesical calculus. The sudden onset of haematuria, with abrupt clearance of the urine within twenty-four hours, and the complete absence of casts made nephritis very unlikely. No opaque calculus was seen radiographically, and he had never had any symptoms of calculus.

COMMENTARY

The interesting feature is the onset of haematuria after 1.5 grammes of sulphapyridine. This I am inclined to think was caused by the dehydration produced by vomiting and the inability to take fluids. Tsao *et al.* (1939) pointed out that the dosage does not seem to be an important factor. Their lowest dosage totalled 3.5 grammes in a child of 11 years. All that is necessary in a mild case such as the above is the withholding of sulphapyridine and the forcing of fluids to dissolve the concretions, which are composed of acetyl-sulphapyridine, and which are readily soluble in water. In severe cases of anuria, with complete ureteric obstruction caused by concretions which lodge mainly in the ureteric orifices of the bladder—that is, cases of calculous anuria, the calculi being composed of acetyl-sulphapyridine—the treatment has been to insert ureteric catheters up to the kidney pelves and actually to lavage the pelves and ureters with sterile water or saline until the concretions have dissolved.

Carroll *et al.* (1940) and Sadusk *et al.* (1940) reported two such cases that were cured by this means, although one patient died later from the cerebral injury for which he was given sulphapyridine. The pyelograms which they publish tend to show that it is not the ureteric orifices alone which are affected, but that the whole collecting apparatus—calices, pelves, and ureters—is full of concretions, which cause a very poorly defined radiograph of the renal pelves, etc., after injection of the pyelographic media through the catheters. Following lavage for half an hour or more a clear picture is obtained, and the urine, which after insertion of the catheters emerges very scantily and heavily blood-stained, quickly clears and appears almost normal in colour. It also drips rapidly from the catheter. Hence it seems necessary not only to insert catheters up to the renal pelves, as was originally suggested by Tsao *et al.*, and mentioned by Leedham-Green, but, in addition, to wash away these soluble concretions by repeated lavage.

Action. H. G. LETCHER, M.B., F.R.C.S.

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Reviews

WARTIME FEEDING

Food Values in War-Time. By Violet G. Plimmer. (Pp. 80. 1s. net.) London, New York, Toronto: Longmans, Green and Co. 1941.

Mrs. Plimmer has turned her wide knowledge of food and diets towards the solution of the difficulties of wartime feeding. Our information on food values is far greater to-day than it was during the last war, and if only we were intelligent enough to accept and apply the recommendations made by the people who know about these things we should be in a better physical condition at the end of the war than we were before it. Unfortunately many people look upon these recommendations as merely war measures, and will return to their previous diets as soon as possible. Mrs. Plimmer's book seeks to explain these recommendations and does so clearly and forcibly. We are left in no doubt as to why wholemeal and even the national wheatmeal bread are better than white bread. It is deplorable that such a large proportion of the public refuses to give up white bread that the Government has to help that part of the public in spite of itself. Vitamin B, and extra calcium will be put into white flour, but this cannot make it equal to wholemeal, which contains in addition vitamins B₂, A, and E, essential minerals, and better proteins. Mrs. Plimmer's plea throughout her book is for whole foods, which may be ground as finely as one may wish, but nothing must be taken from them. No addition of vitamin concentrates (least of all the pure or nearly pure ones) can make up for what is taken away in certain processes of manufacture, for we do not yet know every constituent of the parts removed, and some of them may be at least as important as those we know. Only one sentence in this book would we change. For "What the civilian loses in protein he gains in vitamins and minerals" (p. 39) we would substitute, "The civilian loses in protein but gains in vitamins and minerals," and on page 68 the word "variable" should come after the vitamin D content of butter, not of margarine, for the vitamin D content of all margarine nowadays is far more constant than that of butter.

The whole book is most readable and instructive, and concludes with some valuable tables of amounts of various foods which on the average will supply the necessary daily amounts of each of the vitamins. It is worthy of a better binding, but that would have made it more expensive and probably therefore have restricted its distribution.

SURGICAL ASPECTS OF HEART DISEASE

Surgery of the Heart. By E. S. J. King, M.D., M.S., D.Sc., F.R.C.S., F.R.A.C.S., Major A.A.M.C. (Pp. 723; illustrated. 50s. net.) London: Edward Arnold and Co. 1941.

Books and journals devoted to the study of heart diseases from the medical point of view are abundant, but those dealing with the same subject from the surgical aspect are few and far between. For this reason *Surgery of the Heart*, by E. S. J. King of Melbourne, is a notable monograph. Its matter consists of an expansion of the Jacksonian Essay submitted to the Royal College of Surgeons of England in 1938. In the preface the author explains that the contents include observations made on pathological material collected over a period of several years, experimental work carried out during the last four years, and clinical cases, some of which were treated a number of years ago but the majority being relatively recent. Study of the book reveals that a more descriptive title would have been, "Diseases

of the Heart from the Surgical Aspect," for here is as complete an account of the development, anatomy, histology, physiology, and pathology of the organ as is to be found in any purely medical treatise of corresponding size. In addition the chapters on the examination of the heart include extensive accounts of orthodiagraphy, teleroentgenography, kymography, tomography, and electrocardiography. It is perhaps rather unfortunate that the same word "kymography" is used to describe both the new method of x rays through a moving multiple slit grid, and also the ordinary physiological pressure curves in the blood vessels. Possibly, in view of its derivation, the term would be best applied to the "comb"-like tracings made on the x-ray film; but, on the other hand, custom has for long accepted the common physiological usage. To find, however, two utterly dissimilar illustrations both described as kymograms within a few pages is certainly distracting.

In the section on coronary occlusion we were surprised to find so little description of the actual technique of the various operative procedures attempted for its relief. Had this been a medical instead of a surgical treatise we should still have expected a rather fuller account of the surgical details. Cardio-omentopexy, for instance, introduced by Beck and elaborated by O'Shaughnessy, is mentioned, but the surgeon must look elsewhere for any guide as to the performance of the operation. Even the author's own method of introducing bone dust into the pericardium, to induce adhesion formation and so reinforce the failing blood supply to the heart wall, is given but a scanty description, though an illustration of an injected specimen six months after this operation conveys an impressive picture of the degree of collateral circulation thus produced in the myocardium. We agree, of course, that it would be a mistake to overload a book of this kind with operative detail, and acknowledge that "surgery" is a much bigger thing than the mere performance of operations, yet at the same time the essence of surgery is technique. In a book as generally excellent as this monograph and with such a title it might have been advisable to devote more space to this aspect.

At the end of each chapter there is an exemplary bibliography which we believe records every significant article that has been written on the particular subject. This alone indicates a very great labour, for which many will be grateful to the author. Despite certain criticisms, therefore, which are not meant to be destructive (for we hope the book will reach further editions in which its general scheme can be modified), *Surgery of the Heart* is likely to become the standard book on the subject. It is one which every surgeon aspiring to cardiac work should study, for not only will he find it very informative but it will also help him to careful judgment by its sanity of outlook.

FAITH HEALING

Priest or Physician? By George Godwin. No. 10 of the Thinker's Forum. (Pp. 44. 6d.) London: Watts and Co. 1941.

To-day it would be impossible for the publication of Mrs. Humphry Ward's *Robert Elsmere*, with its Arnoldian dictum "Miracles do not happen," to arouse the furore it did in the 'eighties. On the one hand Christianity is no longer regarded as rooted in miracles, and on the other there is now a much better comprehension of the interaction of mind and body. Any argument in favour of the "miraculous," so far as it is not based on mere obscurantism, comes from a different quarter: the philosophic criticism of causality and recognition of the fact that Nature is not nearly so tidy as the human mind would like her to be. Yet there remains substance in Hume's observation that "it is contrary to experience that a miracle be

true, but not contrary to experience that testimony should be false." To which Sir R. Burton added the pertinent rider that if Hume had lived in the East he would have come across so many miracles that he would have been even more incredulous!

In this pamphlet the author briefly surveys various stories of miraculous healing through the ages, and concludes that faith-healing cults arise from an instinctive reaction to psychological laws without any similar understanding of the laws themselves. Every faith cure is amenable to a rational explanation. The most modern technique of the healing art is really a scientific growth out of the old art of faith healing: suggestion, catharsis, the analysis of dreams, etc. Psychotherapy is in fact the oldest form of healing we know, whether it be applied without knowledge of underlying principles by priests in temples or by men groping on the edge of that vast uncharted realm, the unconscious mind.

We would present the author with an argument he does not use. Even organic ills have a penumbra of functional symptoms; disuse breeds incapacity, which can be greatly alleviated by psychotherapy whereby the lame and palsied can be made to walk again. It is to be hoped that this little book will be widely read, for there is still much opposition to be encountered.

PRINCIPLES OF PHYSIOLOGY

Starling's Principles of Human Physiology. Edited and revised by C. Lovatt Evans, D.Sc., F.R.C.P., F.R.S. Eighth edition. (Pp. 1,247; illustrated. 32s. net.) London: J. and A. Churchill, Ltd. 1941.

Starling's *Physiology* was first published in 1912, and since then has passed through seven editions. It has been translated into Spanish, a language of increasing importance in the modern world. Those who were brought up on Starling will have a warm feeling of satisfaction in knowing that their old favourite is still upon the stage, acting its part, indeed, with renewed vigour. The eighth edition, recently issued, is the fourth that has been prepared by Prof. C. Lovatt Evans, Starling's successor in the Jodrell Chair of Physiology at University College, London. In his preface he states that the quick change of events in the world of physiology and the vast accumulation of published matter have inevitably made it impossible to keep "that ample and leisurely atmosphere which was so attractive a feature of the earlier editions." In these hard-pressed times, when technology reigns supreme and human beings seem to be doing their best to earn the appellation of Yahoos, we may share Prof. Lovatt Evans's implied regret for the days of leisure in which the broad idea and the wide generalization found easy expression. We live in a period in which the material world is being analysed with a boldness and vigour that bring us unexampled power over Nature. What a distance, for example, physiology has gone since Wöhler synthesized urea in 1828! The synthesis of vitamins and hormones is now taken as a matter of course. These are startling new achievements, but the fundamental discovery that an organic substance can be synthesized without the intervention of a vital process was made over a hundred years ago. Most of the modern advances that have been made might best be described as tactical. The broad strategy was laid down by the pioneers, of whom Starling was one.

Prof. Lovatt Evans has faced the problem squarely and done his task of revision with admirable skill. The section on the central nervous system has been entirely rewritten. The part dealing with reproduction has been extensively altered, and much new matter has been included in the sections on the endocrines and on the vitamins. Prof. H. Hartridge has revised the section on the special senses.

In spite of much pruning and rearrangement the text has been increased by 139 pages over the last edition, and there are 118 new figures. The publishers are to be congratulated on the way they have helped the reader by the use of headings and an easily legible type, and upon the excellent reproduction of the illustrations in line and half-tone. That such a volume should be published in the second year of the war is a high tribute to both editor and publishers.

Notes on Books

The Voyage of the Cap Pilar, by ADRIAN SELIGMAN (Hodder and Stoughton, 2s. 6d.) is in no sense a medical book, but it will appeal to many doctors. Those who love the sea, admire the spirit of adventure, and those who were fortunate enough to take part in the "Round the World" tour of the B.M.A. in 1935 will enjoy the book. To most of us there is an ample spirit of adventure in embarking on the sea of matrimony. Add to this the purchase of a sailing ship of 259 gross tonnage with the decision to take a honeymoon of two years' sailing round the world with a crew of amateurs, and the reader will have a good idea of the contents of this book. It is clear from the outset that the gods look with favour on this revival of the Elizabethan spirit of adventure. There is a remarkable absence of record of illness and accident, and the party arrived safely home in the third week of September, 1939. We miss the beautiful photographs of the original issue.

A Laboratory Manual of Physiological Chemistry (4th edition), by Prof. D. WRIGHT WILSON of the University of Pennsylvania, is a manual designed for use in medical, dental, and veterinary courses. The volume of 298 pages describes a very extensive series of laboratory exercises in the subject. It is published in this country at 14s. by Baillière, Tindall and Cox.

Prof. T. W. M. CAMERON's textbook, *The Parasites of Man in Temperate Climates*, was favourably reviewed in these columns on May 10 (p. 711). The publishers in this country are the Oxford University Press, and the English price is 18s. 6d.

A Textbook of Physiology, by WILLIAM D. ZOETHOUT, Ph.D., and W. W. TUTTLE, Ph.D., has now reached its seventh edition (London, Henry Kimpton, 22s. 6d.). This work is intended to fill the gap between the larger textbooks and books of a quite elementary character, and to be used by students with from 50 to 150 hours to devote to the subject. In the present well-revised edition the authors express the hope that "the reader will find this text to be a clear, logical, and concise account of the facts of physiology as they are recognized to-day." In the opinion of the reviewer they have succeeded in their aim. The book should be useful to students working for the Conjoint, and for examinations in pharmacy, domestic science, etc. It is as detailed as need be, and keeps the facts of medicine and everyday life well in mind.

Dr. F. M. R. WALSH's book, *Diseases of the Nervous System Described for Practitioners and Students*, was very favourably noticed in our issue of November 16, 1940, and the review ended: "As an introduction to clinical neurology this small volume has few equals, and as a useful handbook for the practitioner it can be highly recommended." A second edition has already appeared (E. and S. Livingstone, 12s. 6d.). Changes and brief additions to the text have been made in accordance with suggestions of certain colleagues and other readers, and the discussion of certain subjects has been expanded without departing from the original plan and scope. There are also some new diagrams and photographs. We foresee a continuing demand for this straightforward guide to the commoner diseases of the nervous system.

There are occasions when people unconnected with the Press are in need of accurate information about some newspaper or other periodical; they will find what they require briefly set out in *Willing's Press Guide*, of which the sixty-eighth annual issue is published at 5s. by Willing's Press Service, Ltd., 356-364, Grays Inn Road, W.C.1. Care has been taken to keep pace with the very large number of changes brought about by war conditions.

Some periodicals have disappeared from the list because of temporary suspension of publication, and others have been merged or now appear less frequently than usual; others, again, are being produced from evacuation addresses.

Preparations and Appliances

EYE AND MASTOID BANDAGING: LOOPED-CAP SYSTEM

Captain ERIC COPLAND, R.A.M.C., writes:

The existing method of bandaging is, in my view, open to criticism. The pressure of the fixation bandage (round the temple) causes headache and distress; this may be due to pressure on the supraorbital nerve. The bandage often slips down over the uninjured eye or up the head and needs adjustment. It takes a whole bandage and safety-pins.

The loop system consists of a skull cap of strong, washabable linen or calico. Around the lower band, which should be a 2 in. hem, is placed a series of vertical loops 1½ in. high. Figs. 1 and 2 show the position of these loops (tape): one front central (A); two front, 4 in. apart, each 2 in. from centre (B); two back central, 4 in. apart (C); one each side of head (D).

The procedure is as follows: Cut off 1½ yards of 3 in. roller bandage. Adjust looped cap to patient's head. To bandage the right eye, thread the end of bandage twice through the loop



FIG. 1



FIG. 2



FIG. 3

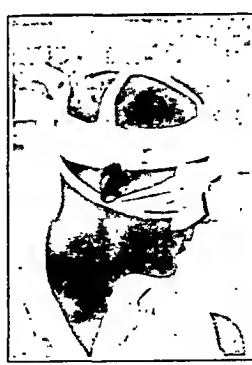


FIG. 4

over the left eye—draw taut (tying or safety-pins unnecessary). Draw bandage across bridge of nose, over right eye, down below right ear to back of head. Thread through back loop (Fig. 2) and return back below ear up to the front central loop. Thread and repeat, finishing at original starting loop.

The ear, mastoid region, and jaw are bandaged by choosing appropriate loops. If it is desired the hem or band can be cut and tapes attached for adjustment to any size head.

It is hoped that this will prove in the hands of others a method of rapid and complete fixation of eye, ear, and face bandaging with considerable economy of bandage. In the photographs (Figs. 3 and 4) the upper part of the looped cap is "windowed" because the experiments were conducted in the Tropics.

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FUTURE OF MEDICAL EDUCATION

In the present upheaval, which is changing social conditions more than any event since the Black Death, the future of medical education becomes a problem as difficult as it is important. Prof. John Ryle in his stimulating and thoughtful article published this week poses the fundamental question, How can medical education be improved so as to help to develop a breed of doctors better blessed with humanity and judgment with simultaneous gain rather than loss to their scientific sense? For there has been a tendency, in return for the rapid contributions of the sciences, for medicine to sacrifice its position as a cultural profession. Its philosophy has not kept pace with technical achievement. How can this best be remedied?

To start at the beginning—the tendency is to begin specialized studies too soon, yet without an adequate introduction. Not only the Regius Professors at Oxford and Cambridge but outside bodies have urged that biology should be a subject of general education. A better world can be built, physically and psychically, only on a sound biological basis. All should know the laws of being, for Nature has no mercy for ignorance. Although adults often seem to have or to acquire a curious lack of interest in such matters, the child has unbounded curiosity about life and its origins. Here is a door wide open for the reception of biological teaching by all school children. As Prof. Ryle truly says, there is no subject more important as a proper introduction to the later understanding of man and his problems and of healthy citizenship. Moreover, it would provide some indication of the boy's vocational inclination. Yet the boy destined for medicine who has passed his School Certificate is brought abruptly to its study and finds it strangely different from the rest of his work. Inevitably he flounders at first and wastes time in a way which could thus be avoided. It would also enable general education to go on concurrently with preparation for the First M.B., which should not be taken before the age of 18. That is quite young enough to start work in the dissecting-room; indeed, a year later is preferable.

Too often the teachers of the pre-medical and pre-clinical subjects seem to forget that they are training students the great majority of whom are going to become medical men and not laboratory workers. Then they tend to rationalize by drawing a sharp and really unjustifiable distinction between education and vocational methods of training, for these are by no means incompatible. What the medical student needs is a training in the principles of chemistry, physics, and biology rather than an accumulation of facts. The teachers

maintain that general principles are the last thing the student can appreciate, and they have Bacon's opinion on their side. Intelligent students, however, deny this contention. Considering that the practice of medicine touches life at all points it should not be impossible to give a vocational trend to the whole of a student's education without impairing its intellectual value.

If dissection of the whole body is to be insisted upon emphasis should surely be laid on those parts which will repeatedly come into the student's ken later on, when the complex connexions of the otic ganglion, for instance, will assuredly fade into the background. The anatomy of the living is fortunately receiving increasing attention through the application of x rays and other means. The study of structure and function should be more closely related. Physiology is becoming highly abstruse, and it would be well if in addition to insistence on general principles emphasis were laid more on human physiology, which could be illustrated by the stethoscope, electrocardiograph, sphygmomanometer, and so on. Everything should be done to minimize the breaks which still exist between the different stages of the student's career. It is still the exception rather than the rule in the physiology course to illustrate sensory tracts by showing cases of tabes or syringomyelia, while a patient with hemiplegia will impress the student with the functions of the upper motor tract more than any sections or diagrams. These things are generally agreed, and it is chiefly due to lack of co-ordination and co-operation that they are often not carried into effect. The Universities' Committee for the revision of the curriculum advocated some elementary lectures on normal psychology before going on to abnormal, just as the student proceeds from physiology to pathology. Admittedly a psychologically normal man is a mathematical concept based on a series of superposed mental photographs, as it were. By the psychology of the normal we do not mean academic psychology, which is so remote from the medical student's needs that it may easily deter him from taking any further interest in psychology at all. Medical psychology has, however, worked backwards from full-blown psychoses and neuroses to arrive at certain general conclusions on the nature of the emotions, rationalizations, mental development and regression, and so forth, sufficiently to be able to present working hypotheses which can be correlated with the teaching of the physiology of the central nervous system and special senses. Prof. Sigerist has recently urged that, although disease is a biological process, when it occurs in man it always involves the mind. Clearly it is more important for the student to know something of the working of his patient's mind than to memorize the *materia medica* he will never have to handle directly. In this way the student on entering the wards will be more prepared to regard his patient as an individual and to view his case as a whole. It is the particular merit of the British system of clinical instruction that this attitude is encouraged from the outset, and the student, after long communing with the dead, is usually eager to come at last to terms with the living. There is much to be said for Prof. Ryle's contention that in-patient medical clerking should be the first clinical appointment, though naturally after a preliminary course

of instruction on methods of examination and physical signs. The more popular method of pitchforking the student into the turmoil of the surgical casualty department may have the advantage of proceeding from the simpler objective examinations to more complicated studies, but lacks the mental training derived from thorough and quiet investigation in the wards. It is essential that he should be impressed with the vital importance of pressing the purely bedside methods as far as possible before the aid of the laboratory and other such departments is sought. There are difficulties, we are aware, in the way of a closer association between pathology clerking and clinical clerking, but it is a bad practice to keep a student doing blood counts and the like on cases he never sees; no wonder he feels it is a meaningless routine. It is the pressure of preparing a case for the visiting staff that leads to a rush of multiple investigations being made as soon as possible after a patient's admission, but it is having a most pernicious influence on the whole mental approach of the student to his patient. It is no exaggeration to say that this lies at the root of much of the dissatisfaction with the present results of medical education. After all, the student is influenced by deeds rather than words, and when he sees his house-physician busily engaged in signing "path. forms" he draws his own conclusions, and attaches more importance, for instance, in a case of jaundice to a van den Bergh test than to inspection of the urine and faeces.

Systematic lectures are out of favour: the word "lecture" tells its own history of a mere reading from authorities when books were scarce. Now books are abundant, but increasingly expensive and soon out of date. Lecture-demonstrations on cases are always preferred, and if these are supplemented by advice as to reading, together with a copious supply of current textbooks which could be taken out from the library for limited periods, the need for systematic lectures would disappear. On the other hand, tutorial classes in which the student is asked questions are valuable and should be retained. The student should be able to ask questions in return. The cost of books is only one, though an important, item in the student's expenses. Indeed it seems that when about 45% of university students are in receipt of State grants it is only fair that students in medical schools should also share in these. In this way the path of able students from whatever class would be smoothed. If this involves raising the standard for entrance, so much the better.

Students are becoming more vocal in their criticisms, and this is not always welcomed by the teachers. Yet it is democratic, and reasonable representations should be received in a reasonable spirit. The good sense of the general body of students can then be trusted to see that the privilege is not abused. A student's journal recently abandoned dreary dissecting-room jokes for the nonce and published some useful impressions from its own members of the various courses of instruction. After all, the subject is of vital importance to them, and for that reason we have invited a contribution from Mr. Donald McDonald on the future of medical education from the student's point of view, which should be of interest to the teachers.

INFECTIOUS DISEASES IN WAR

War seems always to have been attended by an increase in the prevalence of disease. Spread of infection may be expected to occur when there is concentration and movement of large bodies of men from various parts of the world. Fatigue and hardship, malnutrition, famine, and exposure, lack of medical care, of sanitation, and of personal hygiene, all provide conditions that are ideal for the explosive outbreak of widespread epidemics. Refugees and captured—perhaps especially returned—prisoners are important instruments in the transmission of disease among troops and civilians alike. The factors governing the spread of infectious disease in war are, however, very complex: certain of them have recently been considered by Clara E. Councell,¹ with special reference to events in the present war and in that of 1914-18.

Apart altogether from wars some diseases are known to show a periodic prevalence. Thus it has been suggested that the spread of virulent small-pox throughout Europe after 1870 cannot be explained wholly by the events of the Franco-Prussian War. In the same way the prevalence of influenza in 1918-19, and of cerebrospinal meningitis in the same years and again in 1939-40, may be interpreted as evidence of a wave in epidemicity that would have manifested itself in the absence of any contributory factors present in wartime. It is, however, obvious that usually mild diseases may flare up with unparalleled activity as the result of abnormal circumstances of living. In wartime, too, owing to the similarity in symptoms of certain infections there is often a tendency to confound two or more diseases. Thus in America in 1918 cases of typhoid were undoubtedly included among the hordes of sufferers from pandemic influenza. Such difficulties make it by no means easy to assess the extent to which wars are responsible for any particular infections. It can, however, be taken as certain that the character of the diseases associated with war has gradually changed. Thus typhus fever, after Frascatori's clear description, can be traced through a long succession of wars. During the Thirty Years' War (1618-48), in which most of Europe became involved, it accompanied the armies in the East; it was prevalent during the War of the Polish Succession (1733-5) and again in the Seven Years' War (1756-63), when Austria, France, Russia, and Sweden were aligned against Prussia and England. The Napoleonic Wars were followed by the most severe epidemic in the history of Europe, while in the Crimean War (1853-6) many thousands of Russians died of typhus. It again played havoc in the Russo-Turkish War of 1877-8. Thereafter typhus and war parted company till 1914-18, when the disease was rampant in Serbia, Poland, and Russia, though in both the German and Allied armies the incidence was negligible. So far in the present war only small outbreaks of typhus have been reported—in Poland, Mecklenburg, Albania, and Spain. Small-pox was a menace for the last time in the Franco-Prussian War of 1870, typhoid in the Russo-Japanese War of 1904. Bubonic plague has not played a major part among war pestilences since the Russo-Turkish War of 1827-9. Plague

¹ *F.M. Rev.*, Wash., 1941, 55, 527.

would seem to follow the trade routes rather than the army. Cholera also became negligible after the German-Austrian War of 1866, when about 100,000 persons died of the disease.

Dysentery and malaria, however, are two diseases which still occasion a considerable morbidity if not mortality among troops in wartime. Dysentery was especially prevalent in the Thirty Years' War and in the Crimean and Franco-Prussian campaigns. In the Sino-Japanese War of 1894 it was responsible for 38,000 deaths. There is no need to recall its frequency at the Dardanelles, while in the German Army on the Eastern Front it was one of the most important causes of illness, with more than 155,000 cases and a fatality rate of about 12%. Malaria was prevalent in East Africa, Palestine, Southern Italy, and Salonika during 1914-18, but its incidence was as nothing compared with the American Civil War, when over half the troops contracted the disease. In East Africa, however, among 50,000 men there were more than 72,000 admissions of malaria to hospital. Yellow fever has not played an important part in any major campaign, but it is well to remember that in Santo Domingo, the modern Haiti, it successively annihilated a British and a French army in 1794 and in 1801, leaving the immune negroes in possession of an independent republic.

During the war of 1914-18, when in both the Allied and the German armies more deaths were due to wounds than to disease, the influenza pandemic overshadowed all other infections, causing in the whole world some 21½ million deaths. In the British Army, apart from acute diseases of the respiratory system, tuberculosis either attributable to or aggravated by conditions of service was responsible for the invaliding of 35,000 men; and in the French Army, among 8,400,000 men mobilized, 110,000 were discharged with tuberculosis. There was a considerable increase of venereal diseases among all the armies. In the U.S. Army the largest number of primary admissions were due to influenza, venereal disease, mumps, and measles: the leading causes of death were influenza, tuberculosis, measles, and cerebrospinal meningitis. Measles, with 2,370 deaths, was especially prevalent in training camps. The aftermath of the war of 1914-18 showed its worst effects in Russia and Poland, when from 1919 to 1921 millions suffered from typhus, typhoid, dysentery, relapsing fever, and cholera, a condition of affairs which almost beggars description.

During the present world war there has as yet been little to record among the warring nations beyond mild influenza, German measles, and cerebrospinal meningitis, which was already showing an upward trend in 1937 and 1938. In England the shelters have so far not been responsible for any epidemic. In June and July, 1940, there was, however, a very distinct rise in the notification of typhoid fever. This rise was almost certainly due to paratyphoid, but it is only within recent weeks that at long last the weekly returns of the Registrar-General for England and Wales have recorded typhoid and paratyphoid separately. In the regular Army prophylaxis against small-pox, typhoid, and paratyphoid, and, except in the Home Guard, against tetanus, should control these diseases; and the new chemo-

therapy is expected to reduce the hazards of gonorrhoea, cerebrospinal meningitis, and pneumonia. In the general population diphtheria and T.A.B. immunizations are being popularized, but colds, influenza, pulmonary tuberculosis, and dysentery all present problems which must be carefully investigated.

ANAESTHESIA IN CHEST SURGERY

Anaesthesia in chest surgery is difficult, and those who have to undertake it will be grateful for Dr. Nosworthy's review of the subject and for his expert elucidation of many of its problems. There are two chief groups of cases in chest surgery: the civilian sick, who seldom need emergency operations, and war casualties. Although the condition of the former can to some extent be built up before operation, they include many cases of chronic toxæmia, sometimes even with amyloid disease. A non-toxic agent is therefore necessary, and of those which will produce satisfactory anaesthesia cyclopropane is the best. Operation on some war casualties can be deferred until anti-shock measures have proved effective, but there are others—in which, for example, the chest is full of blood-clot or there is an open pneumothorax—where operation should be undertaken without delay and while anti-shock treatment is being carried on. The anaesthetist's duty in every operation is to maintain efficient respiration. This is particularly difficult to accomplish in cases in which the pleura is open. During a thoracotomy a drip blood transfusion should be in progress to maintain circulatory efficiency.

Nosworthy deals at length with the problems of an open pneumothorax. There is collapse of the lung on the affected side with movement of the mediastinum to the other side, and some compression of the sound lung as a result. When the size of the opening in the chest is small respiration may not be greatly hindered, for there is partial expansion of the deflated lung. With a wide opening, however, on expansion of the thorax during inspiration, the lung on the affected side collapses still further, air being drawn from it into the sound lung, and sputum also if this is present. During expiration the sound lung discharges partly into the collapsed lung and partly into the trachea. This is known as "paradoxical respiration," as the lung on the affected side collapses further with inspiration and expands on expiration. Even the one sound lung does not work efficiently. This condition is made much worse by a sudden fit of coughing, with its accompanying dyspnoea, and coughing may be stimulated when there is disease of the lung with secretions which pass on to a sensitive area of mucous membrane. Dyspnoea increases the ill effects of paradoxical respiration, and Nosworthy suggests the phrase "vicious circle coughing" to describe this sequence of events, which may progress to death from asphyxia. For cases with open pneumothorax he recommends that inhalational anaesthesia should be used, that this should be deep enough to abolish the cough reflex, and that respiration should be "controlled"—that is, active respiratory movements should be abolished and the anaesthetist should thereafter continue oxygenation and anaesthesia by rhythmic squeezing of the bag of the anaesthetic apparatus. "Controlled respiration" may be achieved by depressing the respiratory centre by sedative drugs and anaesthetic agents until it fails to respond to normal concentrations of CO₂; or by reducing the alveolar CO₂ by over-ventilation in a closed circuit (CO₂-absorption) apparatus; or by a combination of these two methods. Nosworthy uses the second method. Cyclopropane with

controlled respiration as described abolishes the dangers of open pneumothorax, and is an agent from which, after anaesthesia, patients recover quickly and soon regain the cough reflex. In discussing spinal anaesthesia Nosworthy points out that as the cough reflex is not here abolished "vicious circle coughing" may be established. Other agents in regular use are discussed, and the cases in which local anaesthesia is satisfactory are mentioned. Nitrous oxide is not favoured because of the low oxygen percentage with which this form of anaesthesia is associated. The use of tracheo-bronchial suction for the removal of excessive sputum is discussed. Nosworthy's important paper ends with a valuable section on chest casualties in war.

MASS RADIOGRAPHY AND EARLY PULMONARY TUBERCULOSIS

The technique of making a photographic reproduction of the x-ray screen on a miniature film has now been so far perfected that mass radiography of the chest is a practical possibility. The films so obtained are sufficiently detailed to show even very small lesions. Sparks,¹ after viewing over a hundred miniature films and then comparing them with the full-sized radiographs, found that when a pathological lesion existed, its presence, if not its nature, was almost always recognized in the miniature film. Galbraith² has by this method examined over 100,000 recruits for the Australian Army; as a result 2.7% of these were suspected of having some abnormality and were referred for examination by a full-sized radiograph. It was found that one man in every 200 (0.56%) had active pulmonary tuberculosis. This figure compares closely with those of other workers. Dudley and Fitzpatrick³ reported that mass radiography of over 18,000 men of the Royal Navy showed a somewhat lower incidence (0.24%) of active tuberculous lesions, while Ellman⁴ found 0.83% of active lesions in 601 recruits. S. H. Graham and M. Davies⁵ found that of 1,869 recruits referred by medical boards in Wales, 112 (6%) had active tuberculosis: the lesion was pulmonary in 108 (5.7% of all those referred). Full-size radiographs were taken. The authors stress the value of miniature radiography and the importance of examining contacts. Heaf⁶ has pointed out that mass radiography should not be used merely as a means of determining the incidence of tuberculosis, but rather as an instrument for combating the spread of infection by revealing the hidden active cases among the apparently healthy population. This would necessitate the presentation of the method to the public as part of a general fitness campaign, unassociated with any stigma of tuberculosis, and also the provision of adequate relief for those found to be suffering from the disease and for their families. Heaf suggests that there should be facilities for the investigation of suspects without removing them from their work, and that a national rehabilitation board should be established to investigate and control the domiciliary conditions, training, and employment of the tuberculous. Some such scheme is essential before any progress can be made in eradicating the disease. That it is a practical proposition has been shown by Dublin,⁷ who described a similar scheme in operation among the employees of a large American insurance company. The present system of patching up the tuberculous subject and then allowing him to return to unsuitable work, so that he only breaks down again and infects his family and colleagues, is both inefficient and expensive.

It is a truism that the treatment of pulmonary tuberculosis would be simplified if the disease could be recognized in its early stages. This object is now to some extent being achieved, for modern radiological technique, applied to large groups of apparently healthy persons such as tuberculous contacts and recruits, is producing a steady stream of patients with very early lesions and often with no symptoms. As Graham and Davies make clear, the indications for reference of cases for diagnosis should be comprehensive. Kayne⁸ in a recent article shows that the very early lesion presents many problems which are by no means solved. His use of the term "bronchogenic" applied to the isolated pulmonary focus will not meet with universal approval, as the origin of such a lesion is still obscure and may well be haematogenous (Chien-Liang Hsu,⁹ Terplan¹⁰). The management of the patient with an early tuberculous lesion is also a vexed question; to advise bed rest and sanatorium treatment, with or without collapse therapy, is a counsel of perfection, because for economic reasons, coupled with his feeling of well-being, the patient will rarely agree to such a course; and in many instances it is unnecessary, as the lesion will heal spontaneously. On the other hand, Heaf rightly states that periodical medical and radiological examinations may not be successful in preventing a breakdown in health; only too often a relapse occurs in the interval, however short, between such examinations. Both Heaf and Kayne agree that these measures must be combined with a reorganization of the patient's environment, the removal of sources of infection, the proper control of leisure, and the provision of suitable employment. These factors can be regulated only by a sound programme of rehabilitation, and thus the solution of the problem of early tuberculosis brings us once again to the importance of planning such a programme in the control of this disease.

LYMPHOCYTIC CHORIOMENINGITIS AS AN "INFLUENZAL" SYNDROME

Since the virus of lymphocytic choriomeningitis was first described in America in 1934 by Armstrong and Lillie¹ its existence has been demonstrated in England (Findlay, Alcock, and Stern²), France (Lépine and Sautter³), and Japan (Kasakura *et al.*⁴); the disease may thus be regarded as world-wide in its distribution. As a rule the nervous symptoms are comparatively benign, but on occasion they may be severe and neurological sequelae may be present. Both in America and in England evidence has accumulated to show that infection in both animals and man may occur in the absence of all symptoms. In mice, Traub⁵ and more recently Haas⁶ have shown that inapparent infection may be passed in *utero* from the mother to her young. In dogs infection is also symptomless, but the virus may apparently be harboured for considerable periods in the spleen (Dallorf,⁷ and Findlay *et al.*⁸). In man the disease may be characterized by mild influenzal symptoms. Thus of nearly 2,000 sera from persons living in various parts of the United States of America no less than 11% showed protective immune bodies against lymphocytic choriomeningitis virus, the majority of those with positive serology having no history of any involvement of the central nervous system (Woolley, Armstrong, and Onstott⁹). This is in conformity with the results obtained by Lépine, Mollaret, and

¹ *British Medical Journal*, 1941, 1, 917.

² *Proc. Roy. Soc. Med.*, 1941, 34, 401.

³ *Ibid.*, 1941, 34, 401.

⁴ *British Medical Journal*, 1941, 1, 920.

⁵ *Lancet*, 1940, 2, 611.

⁶ *Brit. J. Tuberc.*, 1940, 34, 8.

⁷ *British Medical Journal*, 1941, 1, 917.

⁸ *Amer. J. Hyg.*, 1934, 22, 162.

⁹ *Publ. Hlth. Rep. Wash.*, 1934, 49, 1019.

¹⁰ *Lancet*, 1936, 1, 650.

¹¹ *C. r. Acad. Sci. Paris*, 1936, 222, 6, 1623.

¹² *Kinzwiss. Arch. exper. Med.*, 1939, 16, 24.

¹³ *J. exp. Med.*, 1936, 63, 533.

¹⁴ *Publ. Hlth. Rep. Wash.*, 1941, 55, 235.

¹⁵ *J. exp. Med.*, 1939, 74, 19.

¹⁶ *J. E.A.M.C.*, 1940, 75, 8.

¹⁷ *Publ. Hlth. Rep. Wash.*, 1937, 52, 1107.

Kreis²⁰ from the inoculation of human beings with emulsions of infected mouse brain. In about half the cases there was no meningeal involvement, fever and malaise of an influenzal type being the only symptoms. In one instance the influenzal picture was completed by slight bronchitis and cough with mucopurulent expectoration, probably due to changes in the lungs similar to those found in guinea-pigs inoculated with the lymphocytic choriomeningitis virus. Recently Armstrong and Hornibrook²¹ have succeeded in isolating the virus from a spontaneous case in which there were no nervous symptoms of any sort. The patient was a laboratory worker who developed fever, malaise, backache, and prostration, with a leucocyte count of 2,900 cells per c.mm., the differential count showing only 45.3% of polymorphonuclear leucocytes. From blood removed on the fifth day of illness the virus of lymphocytic choriomeningitis was recovered, and the patient subsequently developed immune bodies to it.

When in 1933 Wilson Smith, Andrewes, and Laidlaw²² isolated a virus from the nasal washings of patients with clinical influenza it was hoped that the problem of the aetiology of influenza had been finally solved. Further investigation, however, showed that from many outbreaks of clinical influenza no virus could be obtained, and it was therefore suggested that the virus obtained by Wilson Smith, Andrewes, and Laidlaw should be termed "influenza virus A," while any others isolated from influenzal cases should be designated by other letters of the alphabet. Francis²³ has more recently isolated another virus from "influenza" patients which is unrelated antigenically to influenza virus A and is termed "influenza virus B." Now, lymphocytic choriomeningitis may easily be mistaken for influenza, and the same confusion has been made with Rift Valley fever virus (Francis and Magill²⁴). Mild cases of yellow fever may also be, and in fact have been, mistaken for influenza. "Influenza," in fact, is merely a clinical syndrome which may be occasioned by an ever-increasing number of different viruses. There is an obvious moral to be drawn: if a new virus is isolated by someone who is primarily interested in influenza viruses the new arrival will probably be labelled as an influenza virus; if its discovery is due to someone who is not specially concerned with influenza the virus will be given an independent name. It may be said that there is nothing in a name, but, since we are all to some extent influenced by names, confused nomenclature is only too likely to lead to confused thinking.

INCREASE IN SALARIES OF NURSES

It was evident that with the increase in the salaries of members of the Civil Nursing Reserve (*Journal*, April 12, 1937) some comparable concerted action by voluntary hospitals would be necessary to improve the rates of pay of their nursing staffs. At the same time it was obvious that voluntary hospitals were not in a position to shoulder the increased burden which higher salaries for nurses would entail. Acting on this latter view the British Hospitals Association, in co-operation with King Edward's Hospital Fund for London and the Nuffield Trust, promptly took up the matter with the Minister of Health, with the highly satisfactory outcome that increased expenditure by voluntary hospitals on nurses' salaries will rank for grant. In an explanatory memorandum to all voluntary hospitals in England and Wales the British Hospitals Association states that its council at a recent meeting decided to advise hospitals to adopt the following minimum scale of salaries:

probationers, first year £30, second year £35, third year £40, fourth year (until State Registered) £50, fourth year (State Registered) £70; State Registered staff nurses £90 per annum. A hospital will be eligible for the grant if it either adopts this scale of salaries as from August 1, 1941, or has, since April 11, 1941, increased salaries in such a way as to make these minimum rates effective. The grant will be 50% of the expenditure incurred in bringing the salaries up to this scale or, where the new scales exceed these minimum rates, up to £95 for State Registered nurses and £40, £45, and £50 for probationers in their first, second, or third year. The medical profession will welcome this long overdue improvement in the meagre pay of nurses and will congratulate the British Hospitals Association on the success which has attended its efforts to safeguard the interests of voluntary hospitals in this matter. Two gratifying features of the negotiations are that for the first time some uniformity has been secured on the initiative of a body representing all voluntary hospitals, and that the Government has recognized the British Hospitals Association as that representative body and has entrusted it with the allocation of a substantial Exchequer grant. The B.H.A. points out, in the memorandum already referred to, that the scheme is provisional pending the findings of a national committee on nursing salaries which is to be appointed by the Minister. This committee will consist of two panels representing employers and employed, and the B.H.A. has accepted the Minister's invitation to be represented on the employers' panel in association with the King Edward's Hospital Fund and the Nuffield Trust.

MINISTRY OF HEALTH AND MINISTRY OF PENSIONS

Sir John H. Hebb, C.B., C.B.E., retired at the end of August from the posts of Director-General of the Emergency Medical Service of the Ministry of Health and of Director-General of Medical Services at the Ministry of Pensions. On retirement Sir John Hebb has agreed to make his services available to the Ministry of Pensions. He will be succeeded as Director-General of the Emergency Medical Service of the Ministry of Health by Prof. F. R. Fraser, who has for some time been acting in that capacity. Sir Wilson Jameson, Chief Medical Officer of the Ministry of Health, will continue to be responsible, on the medical side, for the co-ordination of the Emergency Medical and Hospital Services with the general medical and hospital services of the Ministry.

On page 351 will be found a notice relating to the publication of a Fourth Addendum to the *British Pharmacopoeia*, 1932. We are asked by the Pharmacopoeia Commission to draw special attention to the paragraph stating that no additional monograph or emendation of a monograph is official until the new Addendum has appeared.

We regret to announce the death at the age of 81 of Dr. Herbert R. Spencer, consulting obstetric physician to University College Hospital and emeritus professor of obstetric medicine, University College, London. He was an old and valued friend of this *Journal*. We hope to publish a memoir next week.

A liaison committee between the British Medical Association and the British Hospitals Association is shortly to be set up. This committee, which will meet as and when required to discuss matters of mutual interest, will consist of three representatives from each Association and their respective secretaries.

²⁰ *C. r. Acad. Sci.*, Paris, 1937, 204, 1846.

²¹ *Publ. Hlth. Rep.*, Wash., 1941, 56, 907.

²² *Lancet*, 1933, 2, 66.

²³ *Science*, 1940, 92, 405.

²⁴ *J. exp. Med.*, 1935, 62, 433.

MEDICAL SCHOOLS IN RAIDED AREAS PROGRAMME FOR THE NEW SESSION

For the third year the winter session of the medical schools opens under war conditions. Two years ago in London, when it was believed that air bombardment was imminent and the hospital population, actual and potential, was largely evacuated, arrangements were made for the dispersal of the students in the sectors for at least a part of their medical training. Last year it was hoped to resume more normal working, but air attack suddenly started in earnest, and among the buildings which suffered conspicuously were the large teaching hospitals. It is common ground that the task of medical education must go forward whatever happens. Present conditions cause inconvenience to staffs and students, chiefly in the matters of travelling, billeting, and splitting up into small groups, and to deans and administrators there is the constant anxiety of ensuring adequate clinical instruction out of London.

Nevertheless the volume of teaching has not been lessened nor its standards lowered. Indeed, it is surprising to what slight extent the work, judged by examination results, has been affected by the distractions of war. Difficulty has been experienced here and there, but much less than had been expected. In some respects the new framework of teaching has proved advantageous, for it has given the student a more varied clinical experience, has acquainted him with expedients of a kind which he may have frequently to employ in practice, and has brought him, in the outlying hospitals, into closer co-operation with his teacher. One dean says that the students work harder, are more closely supervised, and are much more content. The new situation has useful elements which may well remain in the post-war pattern of medical education. Is it likely that London will see again its twelve large teaching hospitals with their total of 6,100 beds entirely concentrated between London Bridge and Hyde Park Corner, Paddington and Denmark Hill? Several of the hospitals have already built country annexes, and possibly at some time the annexe may become the main hospital for in-patients and the town building merely a clearing station and out-patient department, the students distributing themselves between the one and the other.

Pre-clinical Education

The pre-clinical students of the London schools have, as a rule, gone further afield; many of them are the guests of another university. The pre-clinical school of the London Hospital remains at Cambridge with its own pre-war staff for anatomy and physiology. The St. Bartholomew's school is also at Cambridge, the students residing at and being attached to Queens' College, where they have the use of common-rooms, dining hall, and athletic facilities. The pre-clinical students of the Middlesex have gone to the University of Leeds and the Leeds Medical School, and there, by the courtesy of the Vice-Chancellor, they continue to be taught by their own professors for the London degree in medicine and the examinations of the Conjoint Board. King's College Hospital students, with their teaching staff, have been evacuated to the University of Birmingham, and the students of Westminster Hospital and of St. George's take their pre-clinical subjects with King's wherever King's happens to be. The pre-clinical students of the London (Royal Free Hospital) School of Medicine for Women continue to work in the laboratories of the University College of the South-West at Exeter; a certain number of the students are living in college halls of residence, and others are in lodgings in the city.

St. Thomas's pre-clinical studies are carried out in temporary quarters at Godalming, where huts and converted buildings have been equipped with fittings from the medical school in London, including x-ray apparatus for the teaching of anatomy. The teaching staff and technicians have all been transferred to Godalming, and, by the kind co-operation of that old foundation, pre-medical subjects are taught in the new science wing of

Charterhouse School. Guy's pre-clinical students, both medical and dental, are at Tunbridge Wells, where senior members of the pre-clinical staff and about 170 students are housed in hostels.

The Clinical Years

Only Charing Cross Medical School has been completely evacuated, though the building in Chandos Place is still being used for administrative purposes. A large property has been purchased in Hertfordshire—Chaulden House, Boxmoor—for use as a residential school with sixty students. It is arranged with dormitories, common-rooms, and classrooms, a pathological laboratory has been built, and the textbook section of the old library and many specimens from the museum have been transferred. The principal centre of clinical instruction is Ashridge Hospital (1,200 beds); other hospitals in the sector are also used. The entry of students is limited to thirty each year, and each student is assured of a large number of cases under his personal supervision during his time as clerk or dresser.

At all the other London hospitals some, if not the bulk, of the teaching is carried out in London. The "London"—which was the first of the large hospitals to be severely damaged, receiving direct hits in one night almost a year ago, and others since, not to speak of incendiaries—still maintains its medical school in the old quarters, and the 300 beds in the hospital are the main teaching centre for "London" men. Three hospitals across the London border—the E.M.S. hospital at Goodmayes, Chase Farm Hospital, Enfield, and St. Andrew's, Billericay—are also used. All students go to one of these hospitals for their first six or nine months, where they have experience of the wards under the supervision of members of the honorary staff attached to the hospital in an E.M.S. capacity. They are then transferred to the Chase Farm Hospital, where a pre-war course in pathology is held twice a year. During this same period they go each week to a fever hospital and to a mental hospital for instruction in infectious diseases and in mental disorder. They are then posted to hospitals where the necessary facilities exist for the teaching of obstetrics and gynaecology, mostly at the London Hospital's new annexe at Brentwood, where there are 348 beds. A group of senior students are at certain outlying hospitals, such as the North Middlesex, which is a large county hospital at Edmonston with normally 1,300 beds; another group act as student house officers or E.M.S. dressers at sector hospitals; and the most senior return to live either at the London Hospital itself or else at one of six large hospitals in the vicinity, where they work in the morning and go on to the "London" for systematic instruction in the afternoon. The dean, Dr. Clark-Kennedy, says that the organization of the medical school is sufficiently elastic to be adaptable to any circumstances that may arise during the coming winter, and the students are all getting valuable and varied clinical experience.

No hospital suffered more grievous wounds than St. Thomas's, but here again it carries on busily with a limited number of beds and with out-patient departments working almost normally, and its clinical students in small batches are detailed to work there as well as in the country. They all pass through an excellent period of elementary teaching at Woking, then a period at Godalming. The new-linked St. Thomas's at Hydestile, Godalming, which was opened in April of this year, permits the students to work as in-patient clerks and dressers. Parties of students are also based for three-month periods at other hospitals where members of the honorary staff of St. Thomas's are working. The teaching of midwifery is done at a maternity hospital in Woking, and the final-year subjects, systematic lectures, and revision classes are centred at Guildford, where a large school has been leased, and where the medical school library will be established, as well as a residential hostel.

More Use of Sector Hospitals

The "New Westminster," completed just before the war, was hit, but the medical school, which has happily remained intact, serves for all lectures, demonstrations, tutorial classes, and laboratory work, while the students distribute themselves between the hospital, with what clinical material remains there, and the Staines Emergency Hospital (Middlesex County Council). Until last December the school carried on with practically pre-war arrangements, although the reduction of

honorary staff and available beds was a handicap; but after the hospital was hit a new departure had to be taken. The arrangement now is that six months' clinical appointments are taken at Staines, and the rest in London, where, although the material is scanty, it still allows sufficient scope for representative education. Midwifery is being taken at Ripley, Surrey, where expectant mothers of the Westminster district have been evacuated. The number of clinical students is at its maximum—namely, 120.

St. Bartholomew's clinical students are housed in three places. The first-year batch are at Hill End, Hertfordshire, where they carry out their pre-medical courses, serve as dressers and clerks, and do their pathological work. Improvements have been made in the pathological laboratories there, and the museum has been transferred to that institution. Second-year students go back to Bart's, where they do the whole of their out-patient work (the out-patient departments are in practically full swing), and during the same period their midwifery, facilities for which have been much improved. Final-year students go to Friern Hospital, New Southgate, where they do their second period as clerks and dressers, and also gynaecology. Here better facilities for lectures have been provided and common-rooms installed.

The majority of the Middlesex students are still at the Middlesex Hospital; others are attached to Tindal House Emergency Hospital, Aylesbury, Mount Vernon Hospital, Northwood, and the Central Middlesex Hospital, Acton Lane, for clinical instruction, and the students are moved between these and the Middlesex according to the stage reached in their studies. Some are receiving instruction at the Royal Hospital, Wolverhampton (292 beds).

At Guy's the working conditions are much the same as they were a year ago. Teaching facilities have not suffered through the bombings which Guy's has taken. The first six months of the clinical period are spent in the pleasant neighbourhood of Pembury Hospital, Kent, and later years at Pembury, Farnborough, and Guy's itself, according to the special facilities offered at each centre. The dental students spend their last two years at Guy's.

Innovations which will Remain

St. Mary's is fortunate in that hospital and school have not so far been affected by the war. St. Mary's students are taught at their own hospital and at three large L.C.C. hospitals—two of them in the immediate neighbourhood—also at Harefield, a Middlesex county hospital with 1,000 beds, which represents for practical purposes a second St. Mary's in the country. The students live at all these five hospitals and work at St. Mary's at certain periods of their training. Here again the dean (Sir Charles Wilson) states that contact between students and members of honorary staff is much more intimate than in peacetime. Five of the honorary staff live at St. Mary's and a number reside quite close to Harefield, so that the students see more of their teachers than formerly. Moreover, the smaller number of students at each hospital enables them to extract the fullest possibilities from the new arrangement. This is the only innovation of moment in medical education during the war years, and in Sir Charles Wilson's opinion it has come to stay. The number of resident appointments available annually at St. Mary's before the war was thirty-one; now there are 101 resident appointments made annually at the various large hospitals in the sector. These are made by St. Mary's, and the holders work under members of the honorary staff; every man who wishes to have a resident appointment can get one. St. Mary's has for some years had a restricted entry in order to preserve the ratio between beds available and number of students; the entry in the academic year 1940-1 was sixty-eight, and the number working was approximately 430.

The St. George's students in their first year have been taught at an emergency hospital and at King Edward VII Hospital, Windsor; in their second year at the West Middlesex County Hospital, Isleworth (where there are excellent facilities for obstetrics and gynaecology), and in their final year at Hyde Park Corner. Recently, however, the tendency has been to allow the first-year men to work in the wards at St. George's, and unless there is much more severe bombing than has been lately experienced, it seems probable that most of the first-year and final-year men will do the greater part of their work there. The students of the London (Royal Free Hospital) School of Medicine for Women carry on mainly at the hospital itself and at the Three

Counties E.M.S. Hospital at Arlesey, Bedfordshire. A small number are working at other hospitals in and near London, and a few at the Royal Devon and Exeter Hospital.

Town and Country Experience

University College Hospital Medical School, which is for clinical studies only, has taken over Stanboroughs Hydro Annexe, near Watford, where it has established bacteriological laboratories, lecture room, library, and museum. Accommodation is available in the building for sixty resident students. They carry on their clinical work at Leavesden E.M.S. Hospital, close to the school, and Stanboroughs Hydro itself has been taken over as a hospital of seventy-five beds under the charge of Sir Thomas Lewis. While carrying out their medical and other appointments the students return to Gower Street for periods of three weeks, during which time they form part of the E.M.S. scheme and assist in the treatment of any air-raid casualties. Arrangements have also been made for them to attend consultative out-patient clinics held by members of the University College staff at Watford Peace Memorial Hospital.

Since last September King's College clinical men have begun their work at one of the sector hospitals, with the usual pathology course and elementary medicine and surgery classes, lasting for about three months. They are then moved for ward work to another of the sector hospitals, where they have spent the next six or nine months, returning to the first hospital to serve as dressers and clerks for their second year. The third year is spent at King's College Hospital itself, where attendance is made in the out-patient department and at the senior tutorial classes in preparation for the final examination. Midwifery cases are attended by students at three hospitals in the sector, including the one at Denmark Hill.

West London Hospital Medical School reports very little disorganization, beyond diminution in teaching staff owing to members joining the Services. Teaching is continued in all departments. Entries have been smaller, but this is no disadvantage owing to the necessary curtailment of beds available. The actual turnover of patients, however, is not much less than in peacetime, as the average stay is reduced by evacuation to other hospitals. So far it has not been necessary to make use of the sector hospitals for teaching, and the entire work of the school, where forty students, the majority of them women, are taking the clinical course, goes on at Hammersmith.

The British Postgraduate Medical School, although here again the number of beds is reduced and the full-time staff to some extent depleted, is continuing its teaching on pre-war lines, with bedside tuition and lectures rather than specific courses. The teaching is of a high standard, suitable both for those who wish to refresh their knowledge and for candidates for higher examinations. Special courses on war medicine and surgery and other subjects have been held in alternate weeks. These intensive courses, lasting a week and suitable for officers in the Services, are advertised in advance in the medical journals. It is proposed, if circumstances permit, to start the special course for the London University diploma in clinical pathology in October.

Provincial and Scottish Schools

Provincial medical schools in areas which have suffered from air raids have been much less disturbed. At Bristol, for example, there is no change in the general arrangements, and adequate provision is made for both clinical and pre-clinical students. At Birmingham the school is full to capacity, and many applications are having to be refused; this is probably due to the difficulties of some of the medical schools in London in taking their normal numbers. The University of Durham is carrying out its clinical studies at hospitals in Newcastle-upon-Tyne, and in the medical school there the pre-clinical students are being taught as usual. All the students remain at hospitals in the city. Even the maternity hospital, where obstetrics is taught, although it has been transferred to temporary premises, is still within the city boundary. The same is true of the Scottish schools. Glasgow has been raided, but there have been no changes in the disposition of the students or arrangements of courses, and the routine of the medical faculty has not been interrupted.

At Liverpool the arrangements are almost normal, apart from minor adjustments of the time-table and the transfer of clinical

clerks and dressers from hospitals which have been seriously damaged to those which have not. Classes for both pre-clinical and clinical students continue to be held at the university and its teaching hospitals. At Manchester the usual curriculum is being followed; fees, scholarships, and resident appointments are the same. Owing to the depleted wards in the Royal Infirmary arrangements have been made for teaching to be given at the E.M.S. Hospital at Baguley, a short distance from Manchester, and teaching is also being given at other voluntary and E.M.S. hospitals.

The medical course at Leeds has not so far been affected by enemy action. Here, as at other schools, several members of the staff are absent on war service, but their loss has been largely offset by the valuable help received from the emeriti. The number of students has not greatly fallen; women students now form one-quarter of the total. The past session saw the introduction of a revised curriculum, which allows students who have gained the Higher School Certificate in chemistry and either physics or botany to omit the pre-registration course in those subjects and begin at once the medical course proper, which has been extended by three months to five years and nine months.

Sheffield, in spite of heavy air raids at one period, has experienced remarkably little interference with the normal routine of the medical school. The university suffered minor damage, which was soon repaired and did not interrupt teaching. Clinical work continues at all the teaching hospitals, although the number of in-patients has been reduced. For about a month after the heavy air raids out-patient material was scanty, but the situation gradually improved. The number of in-patients is now from about one-half to three-quarters the peacetime level, but Sheffield has always prided itself on the provision of the maximum number of beds per student, and claims still to be in advance of most other schools in this respect. Maternity cases have been removed from the centre of the city, but there is ample living accommodation for students near hospitals where this work is done.

In Cardiff the arrangements for the clinical school of the Welsh National School of Medicine have had to be somewhat altered because of raid damage to the Royal Infirmary. The infirmary now takes 150 in-patients as compared with its normal 400; other patients are received at the Whitchurch Emergency Hospital four miles away, and here are the beds of the medical and of the surgical units, for which good pathological and radiological services are arranged. A number of other beds are provided at the convalescent home of the infirmary, also four miles out. Thus the normal bed service is practically continued, and school time-tables have been altered to meet the new distribution. The school has a full complement of students (about 350). Out-patient work is done in the morning at the infirmary, and the new Pathology Institute in the infirmary grounds is partly completed and available for use for pathology teaching.

With the reservation of medical students from military service it became a particular obligation upon those responsible to see that medical education was maintained at the highest possible level. How well they have risen to the occasion, even in areas where difficulties were extreme, is evident from the foregoing account.

Special vocational training courses are shortly to be available for all disabled persons whatever the cause of their disability, although for the present they will be confined to those who appear likely, when trained, to obtain and keep employment under ordinary industrial conditions. The courses and the centres where they will be given are being arranged by the Ministry of Labour, but the Ministry of Health in a circular (No. 2449) asks hospitals in the Emergency Hospital Service to notify the nearest Employment Exchange of any patient suffering from some disability which will prevent him from following his original employment. In the case of a hospital which is an Orthopaedic Centre or Fracture Department a special form (W.D.1) should be completed and sent to the Employment Exchange which has been scheduled to serve that hospital (a list is attached to the circular); the Employment Exchange will then arrange for one of its officers to interview the patient. Form W.D.1 is in two parts: the first to be completed by the hospital and the second, a confidential document, by the medical officer.

TESTING NIGHT VISION

BY

N. BISHOP HARMAN, M.B., F.R.C.S.

In the *Journal* of April 26, 1941 (p. 636), I gave an account of a method of testing night vision, and of its assessment by definite measurement, that might be of value in judging the night vision of individuals generally. This summer the black-out has not troubled many of us. Soon we shall all once more be affected by it, so that any means of measuring the safety of individuals in such feeble light as there will be out of doors at night is worth considering.

During the summer months I have been able to test large numbers of normal healthy folk, from childhood to the seventies, with the Disk-spotting Night-vision Test (made by Theodore Hamblin, Ltd., 15, Wigmore Street, London, W.1). A total of 700 subjects have been examined and their reactions recorded.

The Disk-spotting Test

The nature of the test is easy to understand. It is a simple imitation of what we see when we look into the sky on a clear starlight night. Sir James Jeans, in an address given in March, 1941, said that the light we see from all the stars, just as with the moon, is a reflection from the sun. "The old idea of Jupiter being a boiling mass has been destroyed, for it has been established that the total radiation of the planets was always equal to the radiation received from the sun." In the disk-spotting test the "sun" is a standard candle burning 120 grains in an hour: this is shielded in a box arranged so that a beam of light radiates in one direction only. The "stars" of the test are white disks mounted on black velvet. Each disk measures half an inch in diameter, and is separated from other disks by an eighth of an inch. The disks are grouped in similar patterns, but the number in each group varies. That these groups of white disks look somewhat like stars was evident when a small boy came into a room where a number of them were hanging on a screen and asked: "What are those stars for?" The distinction of these disks in good daylight is notable. Normal-sighted subjects can count them at 25 metres and more. One young man counted them at 50 metres. There are four groups of disks numbering from four to seven, and since the baseboard can be hung from any corner there are sixteen possible variations. In the night-vision test the disks are hung at a distance of 5 metres from the candle-box. Both are on the same level. The room in which these tests are carried out is totally dark, except for the candle beam and the reflected light from the disks. The subject is required to count the number of disks in the group shown in the candle rays. He begins at a distance of 5 metres from the test and moves either backwards or forwards according to his reaction.

The Illumination.—The reflected light that reaches the eyes in this test is very small; at 3 m. it measures $1/688$ foot-candle; at 4 m. = $1/871$; 5 m. = $1/1075$; 6 m. = $1/1302$; 7 m. = $1/1550$; 8 m. = $1/1816$. Since reflection from a white surface is 84% of the incident light, the glow of the disks at 8 m. is less than $1/2,000$ f.c. Moonlight is $1/50$ f.c. When one comes out of the daylight into the darkened room the candle beam and the lighted white disks are quite invisible. In making the tests on military drivers the contrast between indoors and outdoors was most striking. These tests were made in a Nissen hut some 10 metres long, in a coppice of thin brushwood. Stepping from the brilliant sunshine out of doors into the darkness of the hut was an almost painful experience. One was quite blind. But more disturbing was the whitish glare that filled the central part of one's field of vision. Slowly this glare faded, and then one could see the candle beam. Fifteen minutes was ample time for this recovery. Every subject had fifteen minutes in the dark before being submitted to the test.

Routine in Making the Test.—The subjects were brought into the dark room in groups of a score. The test was explained to them. They were told that the white blobs they would see in the candle glow were made up of sixpences which they were to count.

For testing large numbers there are certain conveniences: (1) a double room—one for collecting subjects, the other for the test; (2) two capable helpers—one, in black clothes and black gloves, to alter the position and number of the disks constantly, and one to register the results on the prepared charts. Each subject was allowed six trials. Since they saw, or heard, each other's test there was keen interest in the results. Some schoolboys who did poorly asked for a second trial. They were given this, but their reactions did not vary.

A colleague put this question to me: Would it be possible to judge the number of disks in a group by estimating the size or area of the white patch? The answer is, Yes and no. To a new subject there is no knowledge of the difference of size in the groups from four to seven. But to one who has been watching hundreds of reactions, as I have, it is possible to judge the numbers when the difference is considerable—e.g., I can distinguish four and seven beyond my proper distance, but six and seven I cannot separate by size. Counting is necessary for a correct reaction.

Age Groups of Subjects Examined

The subjects were divided into three age groups: Group I from 10 to 18; Group II from 19 to 40; and Group III 41 and over.

Group I.—By the courtesy of Dr. J. Ferguson, medical officer of health for Surrey, I was allowed to examine all the children in a first-class country secondary school. The children were well bred and well kept, and they were expected to give a standard reaction to the test for night vision. They numbered 210.

Group II.—By favour of Colonel E. A. McCusker, M.C., R.C.A.M.C., A.D.M.S. of a Canadian Division, I was permitted to examine large numbers of troops. In civil life Colonel McCusker was an ophthalmic surgeon at Regina, Canada, so his help in arranging for this test was of particular value. These men were a fine class for the test. Their ages ranged from 19 to a little over 40. They were all of first-class physique, and with their full Army rations and outdoor life they were expected to give an excellent night-vision reaction: 427 of these men were examined, 177 of them being drivers of tanks, trucks, and lorries. This group was subdivided into those aged from 19 to 30 (Group IIa) and those from 31 to 40 (Group IIb), the men over 40 being included in Group III.

Group III.—Dr. J. R. Bentley, medical officer of health for Godstone Rural District Council, kindly gathered a number of residents for testing. These and the "over forties" of the Canadian troops numbered 51.

Selecting the Subjects

To get something like standard returns of night vision a standard daylight vision is needed; therefore all subjects had their day vision tested. The day test was made by the use of a modification of my rotary E test. On a two-inch card a letter E (of the size that should be seen at 5 metres) is set on each of the four sides with the "fingers" of the E pointing up, down, right, or left. The card is pivoted on a baseboard, so that it can be rotated freely. It is shifted for each subject. The subject toed the line at 5 metres, with both eyes open. If he gave the correct position of the letters he went on to the black-out room. The test is speedy. Children and soldiers stood in groups awaiting their turn; they saw what they had to do, but no one could learn the order of the letters. It is of interest to note that of the 427 Canadians all passed the test except one N.C.O. aged 43 who was engaged in office work.

Night-vision Reactions

Group I, aged 10 to 18.—The curve of the children's reactions (Fig. 1) is the best of the lot. No less than 48.5% did the test at from 5 to 6 metres. The rise of the curve to these reactions is sharp and distinctive: 29.5% had poorer reactions, but the number of bad ones was small. The reactions were recorded separately both for age and for sex: there was no material distinction for either, except that the very high reactions, at 7.5 and 8 metres, were made only by boys—four each. Six girls did the test at 6.5 metres and four at 7 metres, but none got beyond that. These high results were checked several times.

Group IIa, aged 19 to 30.—In this most important group there were 301 subjects. Their curve (Fig. 2) shows a sharp peak at

5 metres. This peak is slightly lower than that of Group I. The main mass (66%) ranged from 4 to 6 metres, and 22% had poorer reactions. The high reactions, from 6.5 to 8 metres, totalled 12.6%. The actual numbers of these high reactions are more distinctive: twenty-three reached to 6.5 metres; thirteen to 7 metres; four to 7.5 metres, and one to 8 metres. These high reactions were not quite so numerous as in Group I.

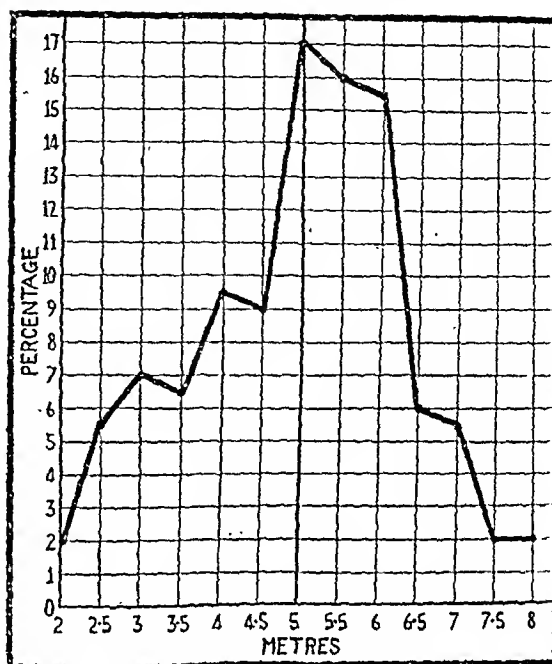


Fig. 1.—Group I.

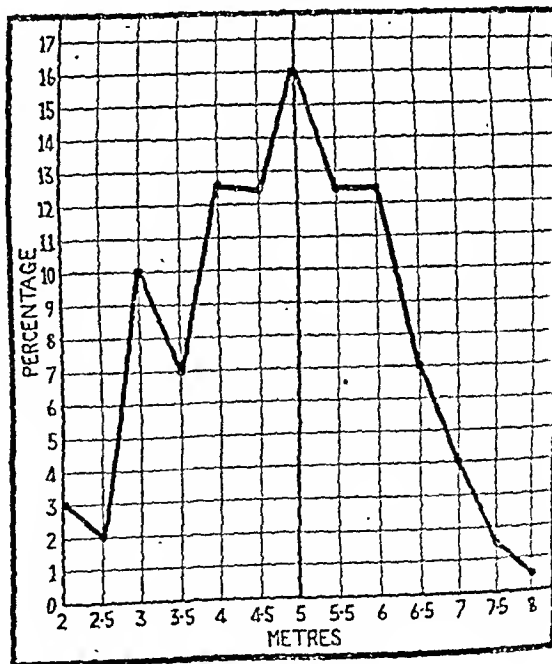


Fig. 2.—Group IIa.

Group IIb, aged 31 to 40.—The curve of this group (Fig. 3) also has its peak at 5 metres, but the mass are more inclined to the lower reactions. No less than 36% reached only 3 to 4 metres. On the high-reaction side the numbers are smaller. Reactions at 6.5 to 7 metres totalled only 4%; and no one reached the highest reaction of 8 metres.

Group III, aged 41 and over.—Of these, 70% were in the forties, but despite their nearness in age to the vigorous adolescents their returns show a distinctly poorer reaction (Fig. 4). An even

space on the chart had to be made for reactions under 2 metres. The peak in this group is at 4 and 4.5 metres. Their loss of night vision is most distinctly shown when the figures of better reactions than the average of 5 metres are compared. In Group I no less than 47% did better than 5 metres, whereas in Group III only 18% did better than 5 metres. The decline in night vision with age is the natural effect of the increasing density of the crystalline lenses and the contraction of the pupils. Something

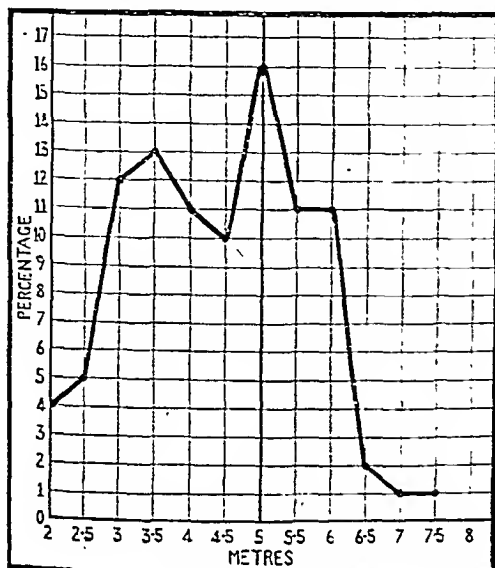


Fig. 3.—Group IIB.

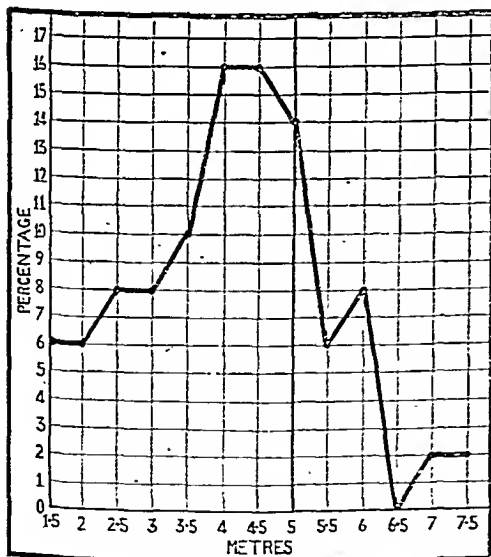


Fig. 4.—Group III.

of the same effect is shown by those of all ages who wear distance spectacles; glass cuts off some light. There were two good cases in this group: a local man who reached 7 metres and a Canadian soldier 7.5 metres. The latter was aged 45 and had exceptionally keen sight.

General Reactions

Certain general reactions were noted in the responses to the test. Those who had a poor reaction showed every sign of trying

hard to see. They craned their heads, bent forwards, moved slightly from side to side, and were only too willing to step closer to the test; whereas those with high reactions—6 metres and more—stood upright and gave their answers quickly and smartly, as though the test was quite easy. Of the soldiers the 14 with the highest reactions were re-examined a week after their first test. A few did slightly better on the second test and some slightly worse. It was found that the latter had just come off night duty; so fatigue accounted for their slight decline. Of these 14 half had blue or grey eyes and half brown; one was colour-blind.

Brewer's *Dictionary of Phrase and Fable* records the term: "Cat-eyed—able to see in the dark." This may well describe those who, in the night-vision test, could see at from 6.5 to 7.5 metres and certainly the few who could see at 8 metres. The Canadian N.C.O. who entered up the records sat outside in the light. He said he noticed that the men with the highest figures seemed most blinded by the light when they came out of the dark-room, while those with low figures did not appear to be bothered. This is a confirmation of the keen sense of light in those with a high reaction. The most astonishing finding in these reactions is the wide variations in the ability of normal-eyed healthy persons of all ages to see in the dark: from 1.5 m. to 8 m.

In my earlier paper I wrote: "I find a fair average for normal-sighted persons is 5 metres. Those with 4-metres range should be safe at night. Those with 3-metres range or less had better stay indoors." These later returns confirm that opinion. I added: "Night-flying men should have a range of at least 6 metres." The later test shows that a much higher range may be attained by many young men, so that the standard for night flyers may be 7 metres or more.

Summary

A large number of normal-eyed subjects of all ages have been given a severe night-vision test which requires ability to count small white disks in a minimum candle-light at a maximum distance. The results show that the average person can count these small disks in light of only 1/1075 candle-power at a distance of 5 metres. They also show that there are some folk with exceptionally keen night vision: some young persons can pass the test even up to 8 metres distance in a light of only 1/1816 candle-power. Safety in the dark demands a fair reaction to this test and ability to see the disks at not less than 4 metres. The extended trial of the disk-spotting test shows that it can be of use in testing large numbers of people with comparative ease and with exactness.

Nova et Vetera

NAPOLEON'S DERMATOSIS

Did Napoleon suffer from scabies? This question has been debated by Napoleonic students at great length but has never been satisfactorily settled. Perhaps the chief reason for the persistence of uncertainty about this interesting point in the great man's medical history is the fact that it was not until several years after his death that, owing to the efforts of Renucci, the parasitic nature of scabies was finally accepted and the itch mite, or the *Acarus scabiei*, was recognized as the one cause of the disease. Two undoubted facts stand out in regard to the skin disease from which Napoleon certainly suffered during his third and fourth decades: one that it was an eruption attended with severe attacks of pruritus, and the other that scabies was rife in the armies of revolutionary France. The legend is that during a critical action at the siege of Toulon Napoleon seized a ramrod from the hand of a dead gunner, used it himself, and from it contracted scabies, which afflicted him for many years until finally cured by the celebrated Corvisart. Among the countless memoirs and biographies of Napoleon there are numerous references to his skin complaint, and it is suggested that his favourite pose with

one hand inside his waistcoat is due to his delight in putting it there to scratch! Dr. R. Friedman, who has contributed much to the history of scabies, has written a most interesting brochure on Napoleon's dermatosis¹ in which he sums up critically the evidence of contemporary writers (no light task!), and comes to the conclusion that the correct diagnosis should really have been dermatitis herpetiformis, a disease first described by the American dermatologist Duhring in 1885.

Dr. Friedman's thesis naturally falls into two parts: (a) the argument that Napoleon did not suffer from scabies; (b) his suggestion of the alternative diagnosis here given. Perhaps the strongest reason for supposing that Napoleon did not have scabies is the absence of any suggestion that Josephine ever caught it from him. But the siege of Toulon took place in 1793, while his intimacy with Josephine (which preceded his marriage with her by a few months) did not begin till 1796. During three years there was ample time for scabies to be cured, and it is known that Napoleon took sulphur baths for his complaint. There is no need to dispute the fact that he certainly suffered from some skin eruption of an irritating nature for a long time afterwards; this may have been an eczematous dermatitis set up by the sulphur treatment, or possibly dermatitis herpetiformis as suggested by Dr. Friedman. We shall never know now. Corvisart was called in to treat Napoleon not before 1800, perhaps as late as 1803. Josephine summoned him, primarily on account of cough and pain in the right side (which he was lucky enough to cure with the application of two vesicants); for the skin eruption he prescribed a lotion containing *sabadilla* powder—derived from the seeds of *Schoenocaulon officinale*—which contains certain alkaloids but is devoid of anti-parasitic properties. It could not have cured scabies, and, moreover, it seems that the so-called cure could not have been permanent, for there are many allusions to Napoleon's habit of scratching himself long afterwards. Antommarchi describes his pruritic crises at St. Helena and refers to the scars which were left on his skin. These scars are certainly a point in favour of the diagnosis of dermatitis herpetiformis.

Dr. Friedman has written a fascinating little book which will amuse and interest all students of medical history.

ANCIENT BURIAL RITES AND MODERN CURRENCY

At a meeting of the Manchester Medical Society Prof. F. WOOD JONES, F.R.S., gave an address entitled "Mana and Money."

He described the finding of red patterns on the uppermost bones in predynastic Egyptian burials due to haematite used to impregnate textiles, the similar use of red ochre in Australia in native burials, and of the vegetable bright red dye from *Morinda citrifolia* employed in Honolulu. This widespread custom of associating redness with funerary observance dates back into the palaeolithic period, and the "Red Lady of Paviland" is one of the best-known British examples.

Red Pigments, Cowries, Gold

Throughout the world the importance of red in burials was almost universal, and is seen to-day among the remnants of humanity still living in a palaeolithic stage of culture. If mineral or vegetable dyes were not available, then red coral or other substances were employed. Associated with the use of red pigments in predynastic Nubian burials other apparently irrelevant objects were found. Thus, cowrie shells or imitations made from hard black porphyry were present, and can also be found in graves in other parts of the world, often hundreds of miles from the tropical seas where the cowrie shells are found. These cowries are considered as necessary adjuncts in the preparation of the corpse for burial. In lands far from

the sea imitation cowries may be made of clay, stone, ivory, shell, or wood, and painted, glazed, or gilded. Some may be fashioned from gold. Gold in small pieces, lumps, or articles, fashioned by the craftsman has always been buried with the dead the world over when obtainable.

Prof. Wood Jones said that the reason for placing in the grave with the body (a) something red, (b) a cowrie, and (c) gold is to be found in an understanding of the symbolism embraced in sympathetic magic. Red, which is a rare colour in nature, symbolizes fire (the source of heat) and the redness of the life blood; it is also associated with the setting sun (and the rising sun as it is reborn in the morning). Thus redness was the earliest rebirth symbol. The cowrie, resembling the female pudenda, is likewise a charm to ensure rebirth. Gold is incorruptible, does not tarnish, cannot be made by man, and a lump of native gold in the hand has a remarkable quality of feeling almost alive: Gold is the symbol of life and rebirth owing to its redness; it has always been the symbol of the sun and of life.

The Quality of Mana

These three things—redness, cowries, gold—have strong *mana* (or *kunta* in Australia) with the dead. The quality of *mana* or *kunta* implies "potency" or "value" (as distinct from the degraded meaning of price); thus red things, cowries, and gold are valuable (strong *mana*) to primitive people because they are potent symbols of life and its renewal after death. Objects possessing *mana* have also become good luck symbols. Thus red is lucky for the bride and red garments the luck symbol of honoured old age. The cowrie as a good luck symbol is very widespread and worn by peoples in many lands, on breast-plate ornaments of horses in Europe, on idols in New Guinea. The good luck symbolism of gold is universal (e.g., the golden wedding ring). Further, these *mana* objects by extension have become symbols of royalty (royal purple, red carpets, etc.), white cowries are worn only by chiefs (as in the Friendly Islands, etc.), while gold is everywhere associated with it (golden crowns, thrones, sceptres, etc.).

Gold as Money

Finally, there is the debasement of all objects invested by *mana* as vehicles of currency. This follows their perpetual removal from circulation by burial with the body, thus maintaining a standard of rarity, which leads to their becoming the media of exchange and ultimately the currency of primitive commerce. Thus three phases of definite currency standards have existed—(1) redness (e.g., the barter value of red ochre among Australian natives), (2) cowries (e.g., in New Guinea) or shell (Pacific Islands), and (3) gold. Probably alluvial gold was used first as a standard of currency, but the first attempt to standardize it was the official stamping of lumps of gold by the Kings of Lydia (700-545 B.C.) conducted at Sardis in Smyrna, which was at the end of the great caravan route from the Far Orient. From this gold gradually derived its name of money, and ultimately only the Aztecs and the Chinese preserved their aesthetic appreciation of gold and escaped the snare of degrading its value to that of a medium of currency.

Thus (said Prof. Wood Jones) the story of *mana* and money is curious: the hoarding of red ochre by the Australian native, of red feathers or of cowries or *Tridacna* money by the Pacific Islander, gives rank and privileges to individuals and to classes in various parts of the world. Will future generations look back on us likewise as deluded savages, immobilizing our one god, gold, and prepared to sacrifice thousands of lives for its possession? Is the preservation of privilege by the possession of gold in any way more worthy than the preservation of privilege derived from the possession of cowrie shells or red ochre?

The *Journal of the American Medical Association* records that books on medicine published in 1939 amounted to 1,868,592 volumes, according to the biennial census of manufactures conducted by the United States Bureau of the Census. The biggest year was 1937, when 3,923,532 volumes were published. The total number of all books published in 1939 was 180,142,492.

¹The Emperor's Itch. The Legend Concerning Napoleon's Affliction with Scabies. By Reuben Friedman, M.D. (Pp. 82; \$1.50.) New York: Froben Press. 1940

BRITISH PHARMACOPOEIA, 1932 PUBLICATION OF A FOURTH ADDENDUM

The General Medical Council will publish shortly a Fourth Addendum to the *British Pharmacopoeia*, 1932, in which certain new monographs and certain modifications of existing monographs will be included. Under normal conditions, when a new *Pharmacopoeia* or an Addendum to a *Pharmacopoeia* has been ready for publication it has been customary to give facilities for advance copies to be inspected, during the three months immediately preceding publication, by medical practitioners, pharmacists, analysts, manufacturers, and others who may be interested. The Fourth Addendum to the *British Pharmacopoeia*, 1932, like the Second and Third Addenda, has been prepared to deal with conditions arising from the present emergency, and it is expedient that it should be published, and thus made official, without delay. It is not possible, therefore, to provide for the preliminary inspection of the completed Addendum, but arrangements have been made for a limited number of advance proofs to be available for supply, on application, to manufacturers of the preparations described therein.

New and Amended Monographs

The following new monographs will be included:

Acidum Mandelicum	Morphinae Sulphas
Acidum Nicotinicum	Pamagnum
Benzyl Benzoes	Paraffinum Liquidum Leve
Bismuthi Subgallas	Phenylhydrargyri Nitrates
Digoxinum	Proflavinae Sulphas
Ephedrina	Sodii Metabisulphus
Injectio Calcii Gluconatis	Sodii Morrhuas
Injectio Nikethamidi	Sodii Sulphas Exsiccatus
Injectio Procainae et Adrenalinæ	Sulphanilamidum
Injectio Quininae et Urethani	Suramiolum
Injectio Sodii Morrhuas	Unguentum Hamamelidis
Liquor Sodii Hydroxidi	Unguentum Hydrargyri Dilutum
Magnesium Trisilicis	Urethanum

The Addendum will contain, in addition, certain monographs, or amendments to monographs of the *British Pharmacopoeia*, 1932, which became official by virtue of notices in the London, Edinburgh, Belfast, and Dublin *Gazettes* of February 28, 1941.

Sodii Lactas	Oxymer Scillae
Urginea	Scilla
Valeriana Indica	Tinctura Scillae
Acetum Scillae	Tinctura Valerianae Ammoniatæ
Cataplasma Kaolini	Valeriana
Mepacrinae Hydrochloridum	

and emendations to the following monographs, which will become official on the date of publication of the Fourth Addendum:

Aquæ Aromaticæ	Injectio Bismuthi Oxichloridi
Aqua Anethi Concentrata	Injectio Bismuthi Salicylatis
Aqua Camphoræ	Injectio Ferri
Aqua Chloroformi	Injectio Hydrargyri
Aqua Cinnamomi Concentrata	Injectio Hydrargyri Subchloridi
Aqua Menthae Piperitæ Concentrata	Injectio Mersalyi
Elixir Cascarae Sagradae	Liquor Sodae Chlorinatae
Ephedrinae Hydrochloridum	Chirurgicæ
Glycerinum Acidi Tannici	Liquor Sodii Chloridi Physiologicus
Glycerinum Aluminis	Mel Boracis
Infusum Aurantii Recens	Menthol
Infusum Buchu Recens	Mistura Magnesi Hydroxidi
Infusum Calumbæ Recens	Mistura Sennæ Composita
Infusum Caryophylli Recens	Oleum Hippoglossi
Infusum Digitalis Recens	Syrupus Pruni Serotinae
Infusum Gentianæ Compositum Recens	Tinctura Cardamomi Composita
Infusum Quassia Recens	Tinctura Ipecacuanhae
Infusum Sennæ Recens	Tinctura Rhei Composita
Infusum Sennæ Recens	Unguentum Acidi Tannici
Injectio Bismuthi	Unguentum Hydrargyri

Revised Appendices relevant to the monographs named above will be included.

It must be understood that no additional monograph or emendation of a monograph is official until the Fourth Addendum has been published.

Manufacturers interested in the production of the articles named above are invited to apply to the Secretary, British Pharmacopoeia Commission, University College Hospital Medical School, University Street, London, W.C.1, for advance copies of the monographs.

Reports of Societies

ORTHOPAEDIC MISCELLANY

The summer meeting of the British Orthopaedic Association, under the presidency of Prof. T. P. McMurray, was held at the Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry, on August 9. A large number of members attended, and among the guests were representatives of the American Hospital in Britain. The scientific programme consisted of a clinical demonstration and the presentation of several short papers, of which the following is a summary:

Slipped Upper Femoral Epiphysis.—Mr. N. W. NISBET (Oswestry) reported that in a twelve-year period at the Robert Jones and Agnes Hunt Hospital twenty-six patients suffering from epiphysiolysis had been treated by traction. There had been a long period of symptoms of a fleeting nature before medical advice was sought, and radiographs in two planes always revealed a greater or lesser amount of displacement. He found that traction did not change the position in those cases with mild displacement, but sometimes produced considerable, although not complete, correction in those in which displacement was severe. Prolonged heavy traction appeared to have an adverse effect on the hip- and knee-joints, and in this series seemed to have some responsibility for the development of arthritis in the hip-joint. Mr. Nisbet concluded that: (1) When displacement was slight no effort should be made to correct it; the hip should be protected and weight-bearing avoided until the epiphysis had fused. In this way normal function could be achieved. Perhaps the insertion of a Smith-Petersen nail would hasten recovery, provided it did not damage the blood supply of the capital epiphysis. (2) When displacement was pronounced and not of long duration sufficient correction might be achieved by cautiously applied traction to ensure a very satisfactory, although not perfect, result. (3) If severe displacement could not be corrected by traction or was of long duration the best results followed a subtrochanteric osteotomy to correct deformity, and this treatment was much to be preferred to persistent and vigorous traction.

Pseudo-fracture of the Tibia.—Mr. N. L. CAPENER (Exeter) described the case of a child aged 7 who had complained for a month or so of discomfort about the ankle. Radiographs at that time were negative. Three weeks later a further x-ray examination showed a crack in the lower diaphysis of the tibia with subperiosteal new bone formation, appearances strongly suggestive of a "fatigue" fracture. Recovery was uneventful.

Operative Treatment of Intra-articular Fracture of Upper End of Tibia.—Discussing this subject, Mr. CAPENER maintained that because of the soft texture of the cancellous bone in this region bone pegs and screws were mechanically inefficient. He showed radiographs of three patients treated by wire applied circumferentially around the upper end of the tibia through two incisions, while longitudinal skeletal traction was applied. Early active movements were initiated and the functional and anatomical results were most gratifying.

Arthrography in Congenital Dislocation of the Hip.—Mr. RONALD FURLONG (London) showed radiographs of a series of congenitally dislocated hips in which a contrast medium (perabrodil in pure solution) had been injected within the capsule before and after reduction of the dislocation. Among many stimulating observations Mr. Furlong indicated what valuable information could be gained about the possibilities of a successful manipulative reduction, the accuracy of reduction, and the development of an adequate acetabular roof.

Treatment of Fractures of Olecranon by Excision of Detached Fragment.—Mr. D. WADSWORTH (Stoke) presented a careful analysis (illustrated by radiographs and a cinematograph) of forty patients treated for fracture of the olecranon. Twenty patients treated by excision of the detached fragment and efficient repair of the extensor apparatus were compared with twenty treated by other methods (chiefly by suture). Excision resulted in a powerful, fully mobile, and stable elbow capable of withstanding the heaviest strain in a shorter time than could

be achieved by other methods. Mr. Wainwright considered excision to be the treatment of choice in all patients approaching middle age, whatever the size of the proximal fragment, provided the coronoid process and the head of the radius were intact.

Local News

ENGLAND AND WALES

A Scheme of Training for Nurses

The Manchester Public Health Department has issued a memorandum of proposals for a State scheme of training for nurses, which has been prepared by Miss J. M. Calder, secretary to the local emergency committee for the nursing profession, at the request of Dr. Veitch Clark, medical officer of health for Manchester. Briefly the memorandum, which is very detailed and is intended to form a basis for discussion, proposes a four-years training course, the first part or basic course covering three years, and the second part or specialized course lasting one year, full registration being granted only to those candidates who complete both parts successfully. The scheme is built up on a regional plan of Central Schools of Nursing established in co-operation with the local hospitals and public health services. Each school of nursing would be part of a "Faculty of Nursing" in the University, and this faculty would arrange, with the approval of a "fully representative" General Nursing Council, the curricula for the courses, and would be the examining body. A very full syllabus for all four years is given, beginning with six months in the preliminary training school and ending with eight months' specialization in one of the following: clinical nursing, midwifery, domiciliary nursing, health visiting (including tuberculosis and school nursing), and industrial nursing. The transfer from classroom to the wards, the memorandum states, should be gradual, beginning with two hours daily in the first week, increasing to an eight-hour day inclusive of lectures and study. The memorandum concludes by stating that, on the basis of a recommendation in the interim report of the Interdepartmental Committee on Nursing, "it may be presumed that the recognition of nursing as an essential national service will secure an allocation of State funds for schools of nursing approved as training institutions for student nurses."

The *Nursing Mirror* of August 23 publishes a fully worked out scheme for the reconstruction of the nursing profession, and a reprint in the form of a folder leaflet has been received from the office, Dorset House, Stamford Street, London, S.E.1. The scheme deals in detail with methods of attracting recruits, and with the training of candidates on a regional basis in order to produce two grades of nurse; and there is a section on organization and control, with a view to the ultimate setting up of two registers, one for each of the two types of nurses. The scheme was drawn up by Miss Evelyn C. Pearce, Mrs. B. A. Bennett, Miss L. Snowden, and Miss G. B. Carter.

Central Shelter Sick Bay for City of London

A central shelter sick bay was opened by the Lord Mayor of London (Sir George Wilkinson) on August 27 at 66, Cheapside. In all the principal shelters of the City there are sick bays, but it was felt by the corporation that there should be a larger central clearing bay to which cases of illness occurring in the shelters could be brought for observation and later on removed to hospital if necessary, or sent home, supposing the patient to have a home, which is not always the case with these shelterers. Provision of this kind was at first arranged in Leadenhall Street, but the premises were required for another purpose connected with A.R.P., and eventually the Cheapside basement was acquired and adapted. It is actually a basement below a basement, and is regarded as one of the safest places in the City. It has been partitioned off into two wards, painted white, one for men and the other for women, with six beds in each, though the number of beds could be doubled if need arose. There is also a nurse's duty room with a doctor's table, and a well-equipped kitchen. The place is well lighted—each bed has its individual head-lamp; there is a carpet by each bed, and the

patchwork quilts and other pleasant features give a private-nursing-home touch to this subterranean refuge. There is also a small sterilizer, an electric cooker, a sink with warm water laid on, and a central heating installation. At this level there are chemical closets for use if necessary, but water closets are installed on the floor above. The Lord Mayor stated that the Ministry of Health had supplied the beds, the W.V.S. the bed drapery and clothing, and Messrs. Evans Sons Leseher and Webb the drugs and dressings, surgical instruments, trolleys and trays, cupboards and lockers, and the kitchen equipment. Alderman Key, commissioner for shelter for the London Region, speaking appreciatively of the corporation's action, said that having visited the areas of all the ninety-five local authorities in the London area it was no mere formality to say that some of the best shelters were in the City.

Middlesex Hospital Standing Up

Annual reports of hospitals, which used to be dull reading, are now often pages of adventure. Thus the report of the Middlesex Hospital describes two occasions on which the hospital was damaged in air bombardment: the first when two upper floors of the central block of the out-patient department were rendered unsafe for use, and the second, early this year, when there was a direct hit on part of the cancer wing. The report pays tribute to the magnificent work of the hospital staff, medical and lay, in these emergencies. To exemplify them it refers to certain members of the medical staff. Dr. H. E. A. Boldero, Dean of the School, adapted the work of the hospital to wartime conditions before taking over the duties of a group officer in the sector which is based on the Middlesex. Dr. H. L. Marriott further developed the wartime organization until his special work on blood transfusion took him into the R.A.M.C. Dr. Alan Moncrieff made the final preparations for the great test of air bombardment. "He [Dr. Moncrieff] stands for all sides of our work—tireless, firm, patient, and good-humoured in all circumstances." At the end of last year he left the hospital on transfer to Aylesbury, where the Middlesex staffs two hospitals, wholly in the one case, almost wholly in the other, with a total of some 1,500 beds. An annexe of 200 beds, capable of immediate expansion to 400 in the event of the hospital being put out of action, has been opened at Mount Vernon. The number of medical casualties attending the out-patient department during 1940 was 7,558, and the number of surgical casualties 11,013. In brief references to research the report states that investigations on the new chemotherapeutic drugs, particularly their effect upon war wounds, have been proceeding at the Bland Sutton Institute. In the Barnato Joel Laboratories problems of dosage in radiology have been studied, while in the Courtauld Institute of Biochemistry a number of studies have been made, including an investigation into the profound chemical disturbances of the body found in air-raid casualties. The preclinical students of the School are at the University of Leeds; the clinical students are posted at the Middlesex and at three sector hospitals, to each of which members of the honorary staff are attached and are continuing their regular courses of instruction.

Coroners' Inquests in London

The number of deaths reported to London coroners in 1940 was 10,129, being almost 1,000 more than in the previous year. Of these deaths, 3,747 occurred in hospitals and other institutions, including mental hospitals. Inquests were held in 2,979 cases. There was a small decrease in the number of suicides, and nearly one-third of the total of 538 were of persons over 60 years of age. Post-mortem examinations were made in 2,650, or 88.9%, of the inquest cases, and in 5,514, or 77.1%, of the cases in which it was decided that no public inquiry was necessary. In three cases a verdict of murder was returned, and seven inquests were held in connexion with executions. The number of people who met their deaths by accident was 1,695, being fifty-five fewer than in 1939. Only sixty-eight of the deaths were from drowning; fifty-eight were due to excessive drinking.

Dr. J. C. Drummond, professor of biochemistry in the University of London and scientific adviser to the Ministry of Food, has been elected Fullerian professor of physiology in the Royal Institution in succession to Sir Frederick Keeble.

Correspondence

Voluntary Hospitals

SIR,—I had a letter a few days ago from a friend who is greatly interested in our voluntary hospitals. In this letter he said, "I want to preserve the best features of our voluntary hospitals." I have heard and read the same words over and over again. Like many other phrases, such as "the freedom of the Press," "the public school spirit," etc., etc., there is a real danger of such phrases becoming mere parrot-like cries to be repeated *ad nauseam* in wartime, or with regard to important questions which are under consideration in connexion with post-war national policy.

Whenever I ask my voluntary hospital friends, lay and medical, what they mean "by the best features of the voluntary hospital system," I am either stared at with an expression of withering contempt, presumably for my complete ignorance, or I am overwhelmed with a Niagara-like cataract of words which are entirely meaningless, and I find it best to retire from the unequal contest. What I really want to find out, of course, is this: We have two parallel hospital systems in this country—the municipal and the voluntary. What are the particular virtues of the voluntary hospital system which are conspicuous by their absence in the municipal hospital system?

I wonder, Mr. Editor, whether one or more of your readers can supply the answer to this very important question?—I am, etc.,

Griceith, Aug. 23.

FREDERICK MENZIES.

The Mental Defective in the Army

SIR,—In his paper on the mental defective in the Army (August 9, p. 187) Dr. F. J. S. Esher refers to three low-grade mental defectives who had been accepted for the Army by the National Service Recruiting Board. He found the mental age of these men to be 5½ years, 6 years, and 4½ years respectively. It would be interesting to know how the education authority dealt with them when at school. In my opinion, if the section of the Education Act relating to mentally defective children had been properly administered, they would have been notified to the mental deficiency authority. If this had been done, they would have been exempted from military service. While acting as No. 1 of a medical board, I was surprised when two of my former patients presented themselves for examination, for they had been under my care for years in the institution for mental defectives, but had been liberated since my retirement. Of course they were promptly placed in Grade IV. From these and other cases it is clear that there is some flaw in the present method of registration.

Dr. Esher discusses at some length the evidence that mental defectives are a hindrance to a modern Army, and commenting on his three cases says: "It would not have been difficult to discern that these men would never make soldiers if those responsible for their acceptance had been aware that mental deficiency was a definite hindrance to military efficiency." I have met several medical men who feel that this paragraph hardly does justice to the ordinary intelligence of members of the medical profession.

However, having established his first point, he proceeds to his second, which he describes as a discussion on easy and quick methods of detecting mental defectives. After thirty years' experience in examining all persons suspected of mental defect in a population of 250,000, I have come to the conclusion that there is no quick and easy method of detecting mental defectives; that in examining these suspects time and patience are essential and all hurry must be avoided; that while graduated tests are most helpful as contributory evidence too much reliance must not be placed on them—they may lead to erroneous conclusions—and that the claims for their mathematical accuracy cannot be sustained. I was therefore keen to read about this new discovery for detecting mental defectives by quick and easy methods. But, alas! from the development of the argument it is clear that *suspicion* and not the *detection* of mental deficiency was intended. Put quite simply, Dr. Esher's "aid in spotting the defective" is to inquire from the man how he got on at school and at work. This method is certainly quick and easy, but it

has the grave objection that the examiner has no means of verifying the truth of the replies given, unless, in the case of work, he write to the employer, whose response is uncertain and not necessarily unprejudiced.

To prevent the examiner being misled, Dr. Esher takes some pains to elucidate the vagaries of educational nomenclature, but I am not sure that this does not add to the confusion. For example, he tells us that in some schools the children in the "A stream" are the clever ones, while in other schools they are both clever and dull. He does not tell of the many other pitfalls for the uninitiated. One might think that since the elementary schools are divided into junior, intermediate, and senior, the children in the intermediate division would be intermediate in age or ability; but no, they are the academic cream and look upon the seniors as duds. Again, some authorities have classifications which are peculiar to themselves. In one city there is a large experimental school which is intended for children with behaviour problems. Another important special school, which Dr. Esher does not mention, is the industrial school—now called the Approved School—which title may be very misleading. I once said to a boy who was to go to one of these schools: "You have been in trouble a good many times for thieving; how were you punished the first time that you were in the hands of the police?" "Oh," said he, "they don't punish you up there; they put you on what they call 'approbation,' and now I am going to the Approved School."

With regard to work histories, it is obvious that among the unemployed many mental defectives will be found, and if other conditions as a cause of unemployment are excluded it is clearly due to mental deficiency; but to investigate "other conditions" would take a considerable time. With regard to unremunerative work, statements about income are proverbially unreliable, and no deductions can be drawn from these without verification.

With regard to types of occupation, all will agree that men engaged in the occupations mentioned in the paper are often mentally defective. Dr. Esher is certainly right in saying that holding one of these jobs does not in itself constitute a pointer to mental deficiency, but I would go further and say that many of these persons are thus occupied from choice, disliking any form of discipline or regular work; they like to be out of doors, free from restraint—nomads, who live by their wits. The gipsy cannot tell you how much money he earns, but in my experience is nearly always quick-witted, with a ready answer.

While it is quite true that data relating to school and work histories are useful as complementary evidence in suspecting mental deficiency, the basis of such suspicion should be obtained by direct observation of the person's general behaviour under examination and during conversation. The way in which he has filled up the questionnaire and signs his name in the examiner's presence is some indication. Without paying any regard to so-called stigmata of degeneracy, much may be read in the man's face. Is he slow to comprehend and respond? When asked to imitate the actions of the examiner, does he do so correctly? Is he slow and deliberate in speech and action? Instead of asking how he did at school, give him a passage to read and subsequently ask him to tell you what it is about. Terman's "lost ball in a round field" problem is a good one for testing comprehension, foresight, and judgment, and does not take long to apply.

It is well for the examiner to remember that while a person who is innately dull will make a poor soldier, it is also true that the highly educated man often appears stupid in simple matters. Excessive concentration, if it fits for analytical study, may unfit for the world and the Army.—I am, etc.,

Desford, Aug. 18.

ALLAN WARNER.

SIR,—We have read with interest Dr. F. J. S. Esher's article on the mental defective in the Army (August 9, p. 187), and also your editorial comment on this problem. We should like to subscribe our experience on this topic to the Lancashire area. Initially our attention was directed to this question in the early months of the war by the Mental Welfare Association for the area, who were astonished to find that many cases similar in type to those described by Dr. Esher had been passed as physically fit into the armed Forces. The Welfare Association communicated with the Ministry of Labour and National Service for the North-West, emphasizing the problem which such cases would create under military conditions. In the score of cases which were submitted it was noticeable that the patient's conduct and characteristics

had frequently obtruded themselves, and their records therefore were not only informative but clearly established how undesirable it was to recruit such individuals into the armed Forces. It is also noteworthy that in many instances the parents or relatives had approached the Mental Welfare Association to obtain discharge, fearing that the men's propensities would endanger the lives of their comrades—one, for example, told his mother that he was like James Cagney, the film star, when he sat behind his machine-gun, and she lived in terror lest he should mischievously press the trigger. One irate father exclaimed that it was cruel to take a boy away from home who had never previously been out of the family custody and, as we knew, had never learned to feed himself properly. These cases had been conscripted before the outbreak of war, and in many instances the parents admitted that the history of mental defect had been obscured from the medical board, as they had thought the six months under military discipline would greatly benefit the mental condition. After all, medical men can only make a minute examination when their attention is directed to some abnormality of history, and, when it is remembered that the majority of adult low-grade feeble-minded persons can maintain a fairly intelligent conversation, it seems unfair to hold the boards responsible. Such cases, with an average mental age of 6 years, should not be admitted to the Army; as Dr. Esher observes, this war is one of machinery, and in one or two instances such individuals were apt to get under the wheels and be killed.

Anxious to follow the fortunes of other mental defectives, we asked the various committees and workers interested in their social welfare to draw our attention to known cases of mental deficiency which had been passed as medically fit into the armed Forces. Just under 200 cases were collected. We were rather surprised to learn that many had enlisted prior to the outbreak of war, and according to the reports given to the visitors the majority had been retained in their units without their disability having been noticed or questioned. Their mental ages ascertained by school medical officers or ourselves averaged about 9 years. All had carefully concealed from the medical boards their unfortunate history at school or elsewhere. We sympathize with them. The rather indefinite label of mental defect attached to facilitate their educational disabilities or to aid a boy through adolescence because of wretched home conditions is not only a stigma but a handicap. These recruits from personal knowledge were well integrated and good natured, and those who had institutional records were known to work like galley slaves. Admittedly in our series there was a proportion of military misfits, but it was manifest from their histories that they were conspicuous on account of their abnormal mentation or inherent temperamental disabilities or, more particularly, their low-grade mentality. If they had been properly investigated these military rejects, amounting to 8%, would never have been admitted to the armed Forces.

In the ordinary community it has been ascertained that 8 in every 1,000 are mentally defective, but in practice 2 or 3 are notified. This would account for roughly 25% who would be able to give a history of mental defect, so that it is our opinion that it is not a satisfactory method of detection. The remainder attend ordinary day-schools until the age of 14 years, when they are allowed to leave from Standard VI as normal children. We are taught that our mental ages do not increase much after school age, and what we acquire is worldly sophistication—foresight, judgment, wisdom, prudence, and especially ethical considerations—and when one compares the subnormal population under restraint with the actual total it is clear that 97% transform themselves from backward scholars to successful adult citizens as and when they reach maturity. For example, many successful dockers are stated to have mental ages of 8 years, and the average mental ages of many races is about the same, but we would not cast the slur of mental defect upon them. Professor Cyril Burt in his *Subnormal Mind* (p. 89) states: "With adults the mental age can be taken as it stands for diagnostic purposes. Roughly speaking, a mental age of 8 years marks the borderline for the feeble-minded." Investigations have shown that three-quarters of the community have mental ratios between 30 and 110.

From all these evidences we are therefore of the opinion that the base-line suggested by Dr. Esher is far too high, ignores the cross-section of normal youths with low mental ages doing well under Service conditions, and would include a large proportion

of responsible citizens in the poorer quarters, and many now classified as dull would have to be labelled "mental defective." However, the position has to be faced that the 0.5% who slip through the medical boards form a formidable number of mental problems when the armed Forces reach into several millions. Our experience prompts us to make the following suggestion for weeding them out or grading them into their proper military niche. Reading tests, thanks to our psychologists, are thoroughly standardized; and the ability to read is a very complex mental process. If this test can be successfully passed by a candidate a diagnosis of mental defect can be almost excluded. If a base-line of 8 years is adopted a rough estimate of military fitness can be established. Having established a *prima facie* case of mental subnormality, the medical board could readily complete and interpret six further tests. For example, the ability to repeat six digits indicates roughly a mental age of 8 years, the ability to repeat seven digits a mental age of 11 years. The "cube imitation test" has been our main test; it is quickly applied, covers a wide range of mental ages, and its execution is most instructive. Our objection to group testing is that the whole process of studying mental suitability to military purposes is an individual one, and that many successful candidates would be excluded by their use and many unsuitable included.

We would stress that, where there is a wide variation in the ascertained mental ages—innate, reading, arithmetic, and on performance scales—the mental disability is such as to render the individual unfit for military service, and if he is put in the Army deterioration quickly ensues. In other words, the tests should result uniformly—if they do not, more than examination of intelligence is required. If tests such as Dr. Esher seems to advocate were adopted we feel that the British Army might soon be restricted to commissioned and non-commissioned ranks.—We are, etc.,

W. J. S. REID.
DAVID RUSSELL.

Manchester, Aug. 28.

Air-raid Noises in Psychotherapy

SIR,—Dr. J. C. Mackwood concludes his letter on air-raid noises in psychotherapy (August 23, p. 279) with the words, "It would be a catastrophe if we regressed to an orientation to neurosis that prevailed during the last war." I wonder why. I was in charge of the 350-bedded Scale Hayne Military Hospital for war neuroses during the last two years of the war of 1914-18, and I am sure that all who saw the working of the hospital will agree with me that the results obtained by my ten medical colleagues were extremely good. From what I have heard from several senior medical officers who have had extensive experience in both wars, the modern methods of treatment, however useful they may occasionally be in peacetime civilian practice, are much less successful than the treatment commonly used both in France and at home during the latter part of the last war. The very simple rapid methods of explanation, persuasion, and re-education were almost uniformly successful in the treatment of hysteria, so that it was rare for a patient to show hysterical symptoms for more than twenty-four hours after admission, and recurrences were extremely rare. The simple forms of psychotherapy so well described by the late Dr. T. A. Ross gave excellent results in the anxiety neuroses. From the end of 1917 we very rarely used such accessory methods of treatment as hypnosis, gross suggestion by faradism, etc. We found that simple persuasion was enough to induce our patients to take sufficient food, so that we should never have employed such undesirable methods as insulin poisoning, had insulin been then available—a treatment seriously advocated by two writers from an E.M.S. neurological unit in the *Lancet* of August 23.

Dr. Mackwood states that "the use of any method to produce further abreaction is not, as was held during the last war, merely to 'de-tension' by an escape of psychic pressure." Who believed in this (to me) quite meaningless jargon during the last war I cannot imagine.—I am, etc.,

Oxford, Aug. 24.

ARTHUR HURST.

SIR,—Dr. Frederick Dillon (August 16, p. 243) makes a fanciful flight to Mount Olympus. This parergastic excursion cannot be undertaken so light-heartedly by many in times such as these.

The method of treatment described by Majors McLaughlin and Millar appears to be a serious contribution to wartime

psychotherapy; it may deserve criticism, but certainly not derision. Clearly, the intention of the authors is to use every possible method to conserve our available man-power—I am, etc..

London, W.1, Aug. 18.

I. H. MELLOTT.

Flat-foot in the Army

SIR.—In two recent articles on flat-foot in recruits medical officers in charge of training regiments have reported attempts to improve the efficiency of substandard men (Captain R. T. Burkill, June 28, p. 267; and Captain S. B. Sachs and Lieut. L. Gibson, July 26, p. 137). It is to be regretted that in neither instance do they appear to have planned their investigations in the light of current knowledge of the mechanism of the foot.

The men who formed the material of their researches were not sufficiently analysed in regard to postural disturbances. We are not told in how many subjects there were "squinting" knees, nor to what extent the feet were "pronated." Such data are indispensable if we are to assess the value of treatment. It is only by a preliminary study of the material under investigation that we can determine which flat-feet require treatment, and what should provide a rational basis for treatment.

It is well known that the longitudinal arch of the foot varies in height as an inborn or hereditary feature. There are racial differences: it is flatter in negroes than in Europeans. There are individual differences among the British, just as there are individual variations in the width of the foot or length of the heel. No disability occurs, and no treatment is required.

To be distinguished from a low arch of this kind is the flattened arch of the so-called "pronated" foot, in which the tibia, along with the talus (astragalus), is rotated inwards with reference to the foot. The connexion of this rotation with foot postures is dependent on the form of the joints between the talus and calcaneum (os calcis) and the obliquity of the axis of movement between the bones. The back of the heel becomes tilted inwards, as may be recognized on external examination; and, as a secondary effect, the fore part of the foot becomes *inverted* and abducted on the back part.

The fundamental character of the distinction between the naturally low arch and the pronated foot had already attained the textbook stage in Fick's work on the joints in 1911. Numerous references are to be found in more recent literature—for example, Morton, D. L., *J. Bone Jt. Surg.*, 1924, 6, 385; and Steindler in his monograph on *Locomotion in Man* (1955). Wiles (*Lancet*, April, 1937, p. 916) pointed out the association of a pronated foot with postural disturbances of the pelvis and lumbar spine.

One would have liked to have further information from the authors on various points to which they make reference. How often was "the high-arched foot beginning to give way" a foot with the pronated posture, and what were the degrees of pronation? What was the torsional form of the tibia in the subjects examined? What were the talo-calcanean postures in those men who had "a marked degree of flat-foot" but had no complaints?

What we do know of the pronated foot entitles us to doubt whether a direct raising of the arch by pressure strikes at the root of the trouble, and whether the fault in a pronated foot is attacked by providing a pad that tends to "massage the arch of the foot" (Captain Sachs and Lieut. Gibson). Nor are satisfactory results to be expected from "deviation of the body weight to the outer edge of the foot."

It must be emphasized that disturbances of posture at the talo-calcanean joint require attention to the orientation of the knee. A method of making a direct attack on the inversion and abduction of the fore part of the foot has been indicated in the exercise "(f) High Sitting or Sitting," p. 32 of the War Office publication *Physical and Recreational Training*, 1941.—I am, etc..

St. Thomas's Hospital Medical School,
Godalming, Aug. 21.

ARTHUR B. APPLETON.

Burns from Penetrating Bomb Fragments

SIR.—I was very interested in Surgeon Commander Stabler's comments on my article of July 26 in your *Journal* (p. 119), and I think it more than likely that his explanation of burn necrosis of part of the colon may well have been correct. I must admit that this had not occurred to me. I agree with him also on the question of free drainage of the injured colon: this is generally regarded nowadays almost as a surgical axiom.

The comments on my treatment of the wound, however, I find to be severe and, as I think, unsound. The pack (which he harshly calls the surgeon's foreign body) which I inserted into the wound served three good purposes. (1) It arrested by simple pressure the many small venous haemorrhages which were taking place in the depths of the wound. (2) By being impregnated with sulphabacilamide it probably had some minor antiseptic value. (3) It served to provide a track to the surface along which any infection which may have been introduced at the time of the injury might reach the surface rather than give rise to a deeply placed abscess. All these functions might be said to have been fulfilled by the fourth or fifth day, when such a pack is usually removed.

Lastly, I still think that the man was very lucky in that the perforated colon did not give rise to a spreading peritonitis, and had I realized at the time that the colon was injured or burnt I should still have opened the peritoneum and exteriorized the injured bowel.—I am, etc..

London, W.1, Aug. 20

GEOFFREY E. PARKER.

Hypertonic Sodium Sulphate for Wounds

SIR.—Following on Dr. J. C. Lyth's references (July 26, p. 138) to his article on the application of hypertonic sodium sulphate to wounds (July 13, 1940, p. 53) I venture to offer my small experience to show the efficacy of this treatment in a variety of cases. In septic flogers, even with a pin-point puncture, relief is felt in the limb immediately on applying the soaked dressing. Dressings, moreover, may be left *in situ* for longer intervals than is usual with hot fomentations, provided evaporation of the sodium sulphate solution is prevented. In the case of varicose ulceration the ulcer heals and the indurated tissues surrounding it become supple. In hyperaemic conditions with no skin abrasions—as in sprains of the joints—there is relief of tension in the tissues: would this be due to action on the lymph fluid through an excessive secretion by the sweat glands in response to the application? And, lastly, in a variety of insect bites relief is immediate, and prolonged application reduces the swelling. Would it not be advantageous at the very least to make a wider use of so simple and effective a substance?—I am, etc..

Burham-on-Sea, Aug. 25.

T. PIRES.

Lectures on First Aid

SIR.—I offer the following comments on Mr. H. M. Stratford's remarks on the subject of first-aid lectures (August 23, p. 284).

If he is still an advocate of the use of the long Liston, may I call his attention to a paragraph in a recent work on fractures, which sums up the trend of modern thought: "In the Crimean War the mortality of gunshot fracture of the femur was 96%. In the early days of the great war it was 80%, but this was ultimately reduced to 20%, largely due to the introduction of the Thomas splint to the front line. The use of this splint on the battlefield itself accounted for an almost unbelievable improvement in the physical condition of men brought to the casualty clearing stations."

Such a statement may equally apply to first aid in A.R.P. and road accidents: in the latter many of us have had convincing proof. Why, then, is the use of this splint not more consistently taught by all first-aid lecturers? If thoroughly instructed, a first-aid party should be able to apply this splint, *in the dark*, in five minutes. Every house or row of houses should have at least one Thomas, and a T exhibited in the same way as stirrup pumps are advertised. There are many forms of folding Thomas already invented, but if price is the all-important factor 5s. is an absurd amount to be paying for the rigid type, which could easily be produced for half this price unpadded. This splint should be readily available, and is useless stored away in depots and posts. It is high time we got away from the bow-and-arrow days and profited by modern experience.

As to the tourniquet, this can be made by anyone, with automatic hold-fast, for about 6d., but here again thorough instruction should first be given in the use of a firm pad and bandage. The danger of the tourniquet cannot be overstressed, since it is such an obvious way out of a nasty mess. It must be the last resort and not the first. It is quite unreasonable to expect a

first aider who has never had any experience of bloodshed not to be somewhat panic-stricken when the real moment of action arrives. The only hope of efficiency is to give him or her the opportunity of attending, for at least one whole day, the casualty department of a reasonably large hospital. The method of sending large numbers on a personally conducted tour of an out-patient department is quite useless and merely hampers the work of the hospital.

Fractures of the upper arm can be efficiently controlled by pads and a broad bandage round the body, together with a collar and cuff for the arm; by a properly adjusted sling for the forearm. All fractures of the leg above the ankle are controlled and relieved by the Thomas. Padding and suitably applied bandages are sufficient for the ankle. If all the so-called long Listons (for many have not even got holes for an extension band) were collected to replace some of the iron palings and the latter made up into Thomas splints, many lives might be saved and much suffering averted. I am assuming that the instructor is not one of those who have never seen a Thomas in use outside a surgical ward.

It is unfortunate that there is not any small clip for the control of torn vessels at present available. A small soft metal seal attached to a coloured tape, which could be clamped on quickly and left in the wound, might be the means of saving many lives; artery forceps are expensive luxuries to throw away and are not too easy to obtain in large numbers. Innovations are, however, not much in favour unless there is a large contract for someone to handle!—I am, etc.,

Uley, Gloucestershire, Aug. 27.

J. G. FAYRER HOSKEN,
Major, R.A.M.C. (T.F.) (ret.).

Cardiac Arrest during Anaesthesia

SIR.—It is with the greatest reluctance that I comment upon Mr. Hamilton Bailey's article (July '19, p. 84) and subsequent letter (August 16, p. 243), and I hope that he will not think that I am criticizing him personally, as obviously he was not responsible for this disastrous series of tragedies.

No one will disagree with the excellent technique recommended for the treatment of cardiac arrest, which is, indeed, very similar to that given in modern books on anaesthesia. The omission to point out the importance of the right auricle as the site of cardiac puncture has already been commented upon. Two suggestions are made, however, which are so erroneous that I do not think they should pass unchallenged.

The first is the incidence of primary cardiac failure under general anaesthesia. Many full-time anaesthetists have passed the whole of their professional careers without seeing such a disaster. Others have had from one to four of such incidents. I personally have had two cases under general anaesthesia (one of which recovered completely after cardiac massage), and have seen one under a combination of rectal basal narcosis and local, and one under a pure local analgesia. As the average anaesthetist gives at least 60,000 administrations during his life, it seems unlikely that with reasonable skill the incidence of primary cardiac failure under general anaesthesia exceeds 1 in 20,000. Mr. Hamilton Bailey states that he has performed cardiac massage forty times in twenty years. Assuming that he has craged 1,000 operations per year, the suggestion is that primary cardiac failure has occurred about once in 500 cases, an incidence 40 times as high as the estimated average.

In his subsequent letter Mr. Hamilton Bailey states that *pure* chloroform has not been used, thus implying that chloroform diluted with ether and other drugs is less likely to cause cardiac arrest. This is an error which is unfortunately widespread and has been the cause of many avoidable fatalities.—I am, etc.,

St. Albans, Herts, Aug. 20.

C. LANGTON HEWER.

SIR.—Mr. Hamilton Bailey's reply (August 16, p. 243) that *pure* chloroform (the italics are mine) was not used on his cases evades the point of my letter, and suggests that he holds an old-fashioned and fallacious belief in the greater safety of chloroform mixtures. In fact, chloroform is liable to cause sudden unexpected cardiac arrest whether it is given alone or in combination with any other anaesthetic. It is for this reason that English teaching hospitals have discouraged its use for so many years. A similar tragedy is virtually unknown under ether anaesthesia.

I repeat that Mr. Hamilton Bailey's host of catastrophes could only result from grossly incompetent anaesthetists or, and far more probably, from the widespread use of chloroform.—I am, etc.,

Manchester, Aug. 21.

H. J. BRENNAN.

Chloroform - Ether Sequence

SIR.—I was interested in the letter by Dr. L. S. Woolf (August 23, p. 282). I am one of the nearly extinct species—namely, a rag-and-bottle anaesthetist. After forty years' experience I still prefer the chloroform and ether sequence, and my cases run well into five figures without any accidents (touch wood). I quite agree with Dr. Woolf in his remark, "Why do away with open ether?" The great objection to ether is its unpleasant smell, but apart from this it is very safe, and, personally, I have found in the open method no inconvenience from its use by causing bronchial troubles afterwards. Because of its smell I always induce with chloroform.

Chloroform is safe if you give 100% attention to your patient and none to a machine. My patients find it quite a pleasant induction, and I have used it for every kind of operation—from small ones in my surgery and children at a dentist to removal of the tongue and empyema of lung and even for diabetes. My patients have very little vomiting, and the method is not extravagant in ether if the right quantity of gauze on the mask is strictly adhered to; I use three folds of three-ply gauze.

My main tips are: (1) Give confidence to patients, especially children, by a friendly chat during induction. (2) Watch the breathing carefully. (3) Don't touch the patient's face with mask till unconscious. (4) Give atropine in elderly or bronchial subjects. (5) Never use a chloroform-ether mixture.

I am not in any way writing against the use of other methods, and realize their value in other hands, but I do maintain that my simple method compares very favourably with the more mechanical methods. My deaths are nil, and patients and surgeons seem satisfied. I might add that I have had experience in the use of various types of machines, although I do not pretend to be an anaesthetic specialist.—I am, etc.,

Dorking, Surrey, Aug. 26.

A. H. FARDON.

Treatment of Impetigo Contagiosa

SIR.—In the treatment of impetigo I am interested to see at last in the article by Dr. Carslaw and Mr. Swenarton (August 16, p. 225) a reference to the use of an aniline dye. For years now I have used a 20% solution of gentian violet, as recommended to me by Dr. Heimburger in China at the Shantung University Medical School. I presume it is in common use in the U.S.A. I have found it valuable in any staphylococcal infection. Remove the scabs and paint on the dye, which will dry up the serous discharge. Then simple ung. zinci usually suffices to complete a cure. Impetigo, so commonly associated with pediculosis capitis, is only curable after dealing with the nits in the hair by kerosene.—I am, etc.,

Liverpool, Aug. 20.

FRED R. CRADDOCK, M.B.

SIR.—Much controversy seems to have arisen recently about the treatment of impetigo contagiosa. In a recent letter published in the *Journal* Lieut. E. Snell (August 2, p. 178) suggests that failure of improvement with routine treatment is due to reinfection from the "dirty, greasy, high-collared neck of the tunic." I would like to point out that, as the name implies, impetigo contagiosa is a contagious streptococcal skin infection, and that good results are only obtained in the sick bay or a camp reception station and if all precautions for isolation are taken. The patient's clothes and bedding should be treated by steam to check possibility of spread and reinfection.

Recently I have used Squibb's quinolor ointment daily with the scabs cleaned with a concentrated solution of sodium bicarbonate before application of ointment. The results have been very satisfactory and the patient is usually discharged cured after a week.—I am, etc.,

M. H. L. DESNIARIS,
Captain, R.A.M.C.

Aug. 8.

Antiseptic Snuffs

SIR.—I was interested to read the paper by Drs. Delafield and Straker (August 16, p. 221).

Thirty years ago I experimented with a number of formulae, when the choice of suitable drugs was more limited than it is to-day. No attempt was made to verify their efficiency bacteriologically, but in actual practice I found that the most efficient were the most objectionable to use because iodoform was the chief ingredient. There was a time when every hospital reeked of iodoform, and for some reason or other the public used to associate the smell with syphilis, which was an added objection. Yet many patients who had derived benefit from "iodoform snuff" continued to use it in spite of its abominable smell. With regard to colds, my experience was that in many cases they were rapidly aborted and, apparently in some, prevented.

The following are some of the formulae I used: (1) CHI., 1 part; acid. boric., 20 parts. (2) CHI., 1 part; bismuth. subnit., 20 parts. (3) CHI., 1 part; bismuth. subgall., 20 parts. (4) CHI., 1 part; bismuth. salicyl., 1 part. Their rapidity of action appeared to be increased if used about an hour after irrigating the nose with one pint of normal saline.

All the formulae appeared to be equally effective, which was attributed to the iodoform, so No. 1 was commonly employed for the sake of economy. I eventually abandoned its use because most patients objected to the abominable smell.

It would be interesting to learn the effect of iodoform on the pneumococcus *in vivo*.—I am, etc.,

Brookwood, Surrey, Aug. 16.

H. M. STANLEY TURNER.

Somatic Taeniasis and Cysticercosis Epilepsy

SIR.—To the six records noted by Dr. Cecil W. Ewing and to his own case (August 23, p. 263) can be added two others recorded in the *British Medical Journal*.^{1,2} The diagnosis in my case was made because I happened to remember a paragraph in Choyce,³ which mentions "a case of this kind under the care of Rose Bradford, the patient, a soldier aged 30, was admitted to hospital on account of epileptic attacks. Multiple small tumours, one of which was excised and proved to be a cysticercus, were present in the subcutaneous tissues of . . ." I wrote to my patient about one year after his illness, and to my surprise he replied that he was well and working.—I am, etc.,

Harrogate, Aug. 23.

T. VIBERT PEARCE.

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- ¹ Aitken, C. J. Hill (1928). *British Medical Journal*, 1, 943.
- ² Pearce, T. Vibert (1928). *Ibid.*, 2, 442.
- ³ Choyce, C. C. (1923). *A System of Surgery*, 1, 637, London.

Emetine in Liver Abscess

SIR.—There are one or two points to which I would like to refer in the very interesting article on the surgical complications of amoebic dysentery (August 23, p. 261).

Mr. H. W. S. Wright states that paracentesis is necessary in the diagnosis and treatment of liver abscess. I suggest that after full physical examination with x rays to help, such a proceeding is quite unnecessary where the abscess grows upwards, and even less so when it tends downwards. Another point is that these abscesses are often multiple, and who, having found the first and nearest abscess, would go on searching for others? Yet under emetine the whole condition clears up. Mr. Wright emphasizes that the amoebic abscess is a cold abscess and should be treated as such. Does Mr. Wright recommend repeated aspirations in a psoas abscess or only when there is a risk of rupture or of damage to adjacent structures?

For many years I have urged moderation in the use of emetine, and I gave emetine in liver abscess cases: 1 grain for three consecutive days, missed four days, emetine 1 grain for two days, missed five days, emetine 1 grain for two days or one day, according to progress, missed five or six days, and then wound up the course with 1 grain on one day in each of two weeks. This method produced very satisfactory results, whereas after the heavy doses suggested by Mr. Wright and generally recommended I have had to deal with patients suffering from overdosage with this very wonderful drug. I regard emetine as the nearest approach to a miracle-worker that I have come across, but the resistance of the individual, which has grown and multiplied

during the slow growth of the abscess, is of very great importance and should be taken into account. The case which made me realize that there was such a factor was that of a patient who had been expectorating liver abscess pus for two months, and whose expectoration stopped four hours after giving emetine 1 grain. Finally I would add that my last case of liver abscess was successfully treated as an out-patient on the lines I have given above.—I am, etc.,

Southwater, Sussex, Aug. 23.

V. S. HODSON.

Diagnosis of Yellow Fever

SIR.—In his letter in your issue of August 16 (p. 247) Dr. G. E. H. Le Fanu has done well to draw attention to the old but very important problem of the diagnosis of yellow fever. A medical practitioner who works in an endemic area is faced with a serious question when he encounters a possible case: He cannot escape from the task of endeavouring to make a diagnosis. During my period of service on the Gold Coast medical officers in their efforts to reach a decision were accustomed to place considerable reliance on frequent examination of the urine. The history of outbreaks showed that early cases were generally overlooked. Later on, when an increasing sick rate or death rate from a fever aroused suspicion, the finding of a marked and increasing amount of albumin in the urine of such cases from the second or third day onward together with a diminution in the quantity passed was in practice considered as conclusive in favour of yellow fever.

For the benefit of medical officers in East Africa, who may before long find themselves confronted with yellow fever, I would say that in West Africa a diagnosis was usually made in the presence of the following group of symptoms: sudden pyrexia, 101° F. (or less) to 105° F. (or more); prostration, early and marked; headache, severe from the start, mostly frontal or orbital with congested eyes and turgescence of the skin of the face; loin ache or backache; urine—a rapidly increasing albuminuria from the second or third (or, rarely, the first) day onward with a steady reduction in the volume of urine passed; the urine was tested frequently and measured daily. Other symptoms, such as epigastric pain and tenderness, or a small pointed tongue red at the tip and edges, were taken as confirmatory. Jaundice and haemorrhages were later symptoms. Jaundice is often hardly noticeable, especially in mild cases.

The importance of the urinary findings in the clinical picture of the disease was stressed by Dr. H. Beeuwkes of the Rockefeller Foundation in a paper on the clinical manifestations of yellow fever in the West African native as observed during four extensive epidemics of the disease in the Gold Coast and Nigeria (*Trans. roy. Soc. trop. Med. Hyg.*, June, 1936, 30, No. 1).

Apart from the importance of an early diagnosis in the interests of public health the question of treatment arises. It is vitally necessary to withhold all food in the early days of the illness. African patients often object to such a restriction. I have seen the ingestion of food followed rapidly by a profuse haematemesis and death.

There is unfortunately as yet no quick and easy test for the disease in the early stages. It follows, therefore, that medical men who practise in an endemic or threatened area ought to make themselves as familiar as they can with its clinical manifestations so that they may be in a position to take action when they meet with a possible case. In an endemic area a sudden pyrexia with severe headache from the start and with early and increasing albuminuria should be regarded as highly suspicious and sufficient to justify the prompt application of local preventive measures.—I am, etc.,

Bristol, Aug. 23.

D. DUFF.

Subcutaneous Ligature of Varicose Veins

SIR.—I have followed with great interest the correspondence arising from Dr. Russell's paper on subcutaneous ligature of varicose veins. From personal experience I can support Dr. Russell's claim that his technique is simple, painless, and safe. It must be admitted, also, that the immediate results are generally very satisfactory, but they are no more effective and no more reliable than the results that can be obtained by injections alone.

There is nothing new in subcutaneous ligature of varicosities. Heister (1683-1758) used it and states that it was practised by

Gaueus. Davat (1833) reported several cases treated by subcutaneous ligation, as did Schede (1887). I used the method on many occasions before the introduction of sclerosing therapy. Like many others, I hoped that injection therapy was going to prove a panacea for all varicosities. Time, however, brought disillusionment, and in 1927, in an endeavour to improve on the results obtained by simple injection in cases of gross varicosities with valvular incompetence, I started to combine injection with subcutaneous ligation of the saphenous vein in the thigh, using a technique almost identical with Dr. Russell's. Like Dr. Russell, I was greatly impressed by the immediate results, and during the following three years I used the method between sixty-five and seventy times. I gradually abandoned the method because I found that equally good immediate results could be obtained by the simple non-operative technique which I learnt from my friend Dr. Stuart McAusland and which he described in the *Journal*. Moreover, I found that recurrences, though often delayed for two to three years, eventually appeared in over 60% of cases.

The next step in my endeavour to find a cure for cases of gross varicosities was to divide the saphenous vein in the thigh above the varicosity and at the same time inject the distal end. Here again the immediate results were excellent, but of 160 cases treated in this way between 1930 and 1936 20% eventually showed gross recurrence, and in many more minor degrees of varicosity returned. Not more than 50% could be classed as permanent cures.

In 1932 I started to tie and inject the saphenous vein at the saphenous opening, and by 1937 I was convinced that this procedure (described in conjunction with Mr. Dodd in the *Lancet* of June 6, 1940) gave the best results. Unlike all the other methods, the merits of this technique have impressed me more and more as my experience increases and the years go by. Unfortunately the war and my Service commitments prevent my making an accurate follow-up of the 462 cases I have treated by high ligation and injection, but at all events the recurrence rate has been negligible.

It is remarkable how many of those who have the largest experience of treating varicose veins (Dickson Wright, Oehsner and Mahorner, H. Dodd, Faxon) have, in dealing with varicosities in which the Trendelenburg test shows valvular incompetence, independently been forced by experience to the conclusion that:

1. Injections alone are followed sooner or later by recurrence in a very high percentage (about 60) of cases.
2. Ligation combined with injection of the saphenous vein in the thigh is followed eventually by nearly as high a percentage of recurrences as simple injection.
3. Ligation and injection of the saphenous vein at its junction with the femoral vein gives a permanent cure in not less than 90% of cases. If Trendelenburg's test is positive, then to divide or block the saphenous vein anywhere below its junction with its terminal tributaries and with the femoral vein is as futile as to be content with removing the distal half of a hernial sac.

It will indeed be unfortunate if its simplicity should popularize a method which is based on the results obtained in only some fifty cases, none of which have been followed up for more than two years.

Dr. Russell's method is not only based on a complete misunderstanding of the mechanics governing the formation and recurrence of varicose veins, but has been tried and found wanting by many surgeons who have given it a longer and larger trial than he has.—I am, etc.,

J. B. OLDHAM, F.R.C.S.,
Surgeon Commander, R.N.V.R.

AUG. 15.

Activity of Tuberculosis

SIR.—In his letter (August 16, p. 245) with reference to activity of pulmonary tuberculosis Dr. Lawrence Roberts raises a question on which there is evidently some difference of opinion. He suggests that "when a patient has a demonstrable tuberculous lesion in the lung and when he has sputum which contains tubercle bacilli then the lesion is, by definition, active." It would, I think, be unwise to adopt the suggestion that the presence of tubercle bacilli in the sputum should be regarded as an indication of activity, as if the conception of activity is related too

closely to the presence of positive sputum it will lose much of its value; a negative sputum has no relation to activity.

As Dr. R. Wright points out in a letter in the same issue of the *Journal* (p. 246), patients with positive sputum are often able to continue their work without harm to themselves; if the disease in such cases is regarded as being active then the description ceases to have any practical value, since a diagnosis of activity implies that rest and treatment are needed. I would agree that a case with positive sputum is potentially active, but then so may be a case with negative sputum, so that no useful purpose is served in drawing a distinction.

I would suggest that if the word "activity" in this connexion is to have any practical value it must mean constitutional disturbance resulting from the tuberculous lesion, and the assessment of this in a doubtful case not showing the more obvious signs of pyrexia and toxæmia would be made by clinical observation and by such investigations as the blood picture and response to exercise.—I am, etc.,

Northwood, Middlesex, Aug. 21.

D. G. M. EDWARDS.

Communal Feeding in Schools

SIR.—Dr. Letitia Fairfield's letter (August 9, p. 211) deserves support. Dr. G. W. Fleming (August 23, p. 282) enumerates the two main points of Dr. Fairfield's letter and answers each one. First, there is the suggestion that the taking of meals together is a strong binding element in family life, and against this is placed the fact that in the middle and upper classes the majority of children spend their lives at public schools, and the disastrous effects of this communal feeding have never become manifest. Secondly, there is the idea that the mother should be helped in her task of feeding children rather than be relieved of the task, against which is placed the suggestion that the mother is helped if the children are given properly balanced school dinners. Dad and Mum, Dr. Fleming suggests, can still preside at breakfast and tea without the loss of the healthy vitamin diet so difficult to ensure when all the meals are taken at home. Dr. Fleming, as medical officer of health, naturally looks at life from the physical side. Far from deploring this at the present time, it can almost be said that we can assume medical officers of health are looking after the nourishment of children just as they are preventing the outbreak of preventable infectious diseases.

It will be a great mistake, however, to think that in answering Dr. Fairfield's main points in this way the sting of truth has been taken out of her letter. In my opinion an extremely important problem has been raised—one which could be discussed at great length. In this letter I would only ask those in Dr. Fleming's position to bear in mind the possibility that there may be things in heaven and earth not dreamt of in their philosophy. Evacuation has taught many who were formerly unprepared for the complications arising out of feelings, fantasies, and superstitions to recognize and respect these phenomena. Now, instead of holding that they are beneath contempt, people are a little more prepared either to try to understand them or to consult those who make it their job to study the whole human being instead of the body only. For instance, can Dr. Fleming say offhand how important to a mother is the cooking of a dinner for her husband and children? How far, if she does not cook their main meal, is she deprived of a test of her own goodness, which she needs, and how far does the substitution of communal for family feeding increase the incidence of maternal depression? If he knows the answer to these questions and a few similar ones, he is entitled to influence our opinion of Dr. Fairfield's suggestions. I can myself state that, whereas the voluntary and somewhat irregular communal feeding of children can be successful, not only physically but also in regard to emotional development, the same thing as a compulsory and permanent feature would lead to some surprising disappointments to those who provide lovely and cheap meals.

My suggestion, then, is that no one doubts that what Dr. Fleming says is true so far as it goes, but that it is dull if we as doctors always stop short as soon as we finish the purely physical sides of a problem. If we do this we cease to be consulted—as happened over the problems arising out of evacuation, which were tackled by the teachers and not by the doctors—and we lose our right to expect our advice to be followed by the parent that be.—I am, etc.,

London, W.1, Aug. 21.

D. W. WINNICOTT.

SIR.—I regret that my copy of the *Journal* did not reach me in time to permit of an immediate reply to Dr. G. W. Fleming's letter (August 23, p. 282). Fortunately another letter on the same page must have helped your least imaginative readers to picture the future planned for the working-class child by our municipal Führers. Dr. Joan McMichael puts in an eloquent plea for the "extension of the crèche and day-nursery system not as a necessary evil but as a useful and permanent contribution to child welfare." She further quotes with approval the example of Soviet Russia, "where perhaps the majority of women prefer to continue their careers after marriage," while doctors and nurses and other trained staff pursue them in caravans laden with suckling infants. Then we learn from Dr. James Kerr (July 26, p. 137) that nursery schools are "the right of every child from 2 to 5 years of age" (a proposition for which there is more to be said than for any other in the programme, if restricted to town children). At 5 years Dr. Fleming peremptorily demands "compulsory and universal school feeding," even though this means that the task of providing food does ultimately go out of the mother's hands altogether, a prospect which he does not consider "calamitous."

Work out this programme in terms of (a) cost to a war-exhausted nation and (b) the amount of time a mother would spend with her children and the influence she would have over them. To quote middle-class experience with public schools is no answer, for the whole social background is different. Moreover, Dr. Fleming should be aware that the cost of educating and feeding children away from home has become such a serious burden on the middle and professional classes that it is very doubtful if the system can continue after the war. Its spread in this century has certainly not improved home life, and it is considered to have had a serious dysgenic effect on the nation, as Dr. Leybourne shows in her excellent study of *Education and the Birth Rate*. The statement that there is no reason why "school dinners should appreciably increase the taxpayer's burden" is astounding, especially if the dinners are to be used for teaching cookery. He admits that only about 11% of school children are noted as ill nourished. Even if the figure were 20% it would be worth while to see what the working mother, helped by family allowances and improved education, could do before burning down her home to get one roast pig. She would surely be happier cooking a dinner than in the factory or field or day-dreaming at the pictures.—I am, etc.,

Aug. 30.

LETTIE FAIRFIELD.

Speed and Road Casualties

SIR.—It is to be hoped that the improvements in the social order to which we look forward after the war will include a sweeping and drastic reform of our road arrangements. For over twenty years the British people have regarded a fatal accident on the Great Western Railway as front-page news for days, and a single murder case as affording excitement for weeks, but have accepted, apparently with resignation if not equanimity, the daily killing of over twenty people by (or "arising out of the use of") motor vehicles. Probably this attitude is largely the result of motoring propaganda centred around the famous slogan, "Speed in itself is not dangerous" (nor is morphine so long as it remains in the bottle!). Surely our profession, through the B.M.A., has an important part to play in "debunking" that slogan and getting speed relegated to its proper category.

The effect of speed on the mind inadequately equipped to indulge in it is typified by the driver who hurtles through a country village with a scowl on his face and his finger hard down on the horn-button, as if the outcome of the war and continued progress of civilization depend on his not taking his foot off the accelerator. The furious indignation aroused by any circumstance causing him to apply his brakes implies that his senses of proportion, humour, dignity, and even decency are temporarily anesthetized. The risks he will run for the sake of overtaking the car in front (for what purpose he would find it hard to explain) are not such as would be incurred by anyone in his right mind. I suggest that speed should be regarded as a psychological intoxicant and subjected to something analogous to the Dangerous Drugs Act Regulations.

Whatever may be one's feeling about motoring, the fact remains that the motor vehicle has during the past twenty years

killed far more people in this country than all the dangerous drugs plus all the railways; and what makes it worse is that the drugs only injure their addicts, whereas speed kills other and innocent people. The railways are safe because those deputed to drive potentially lethal machines, even on private tracks, are restricted to a relatively small number of men of long experience and proved reliability who, after that, stand to lose their job if they make one mistake. If motoring is not to remain a blot on our civilization second only to war some such methods of regulation will have to be applied to the roads.—I am, etc.,

Saltash, Aug. 22.

W. H. SPOOR.

Control of Venereal Disease

SIR.—The editorial on this subject in the *Journal* of August 9 (p. 208), which commented on the discussion at the meeting of the Medical Society for the Study of Venereal Diseases of July 26, reads as follows:

"It appeared to be the majority feeling at the meeting that some measure of control was called for, but . . . there was not a near enough approach to unanimity to make it seem advisable to send a resolution to the Government."

This contrasts oddly with the annotation appearing in another medical paper, from which I quote:

"Is any form of compulsion practicable? Though no vote was taken the meeting appeared to be unanimously of the opinion that it was."

Is it mere coincidence that the policy of the *Journal* has been consistently one of opposition to compulsion, whereas the policy of the other paper has tended to favour it?—I am, etc.,

Brentwood, Essex, Aug. 12.

ROBERT FORGAN.

* We fail to follow Dr. Forgan's observations on coincidence. The article on control of venereal diseases published on August 9 was, we believe, a correct account of what took place. Our reporter took down verbatim the following remarks made by the president of the society, Colonel L. W. Harrison: "I feel that there is not enough unanimity for us to instruct our secretary to write in the way I have suggested, but I could myself say that there was a strong feeling expressed. . . . I do know that there has been a fair amount of feeling expressed at this meeting that something should be done if it could be properly safeguarded. However, we will not go any further with it." It would seem that our summary was accurate; and we expressed no opinion on the matter.—Ed., *B.M.J.*

Diagnostic Bacteriology

SIR.—It is not "impossible to dispute" anything. Your reviewer of *Methods for Diagnostic Bacteriology* is particularly opinionated in stating (March 29, p. 482), "It is impossible to dispute that Pugh's or Albert's stain gives a much more characteristic picture" in diphtheria diagnosis than methylene blue. I have no experience of Pugh's stain, but I have found Albert's open to the objection which, though perhaps in greater degree, applies to Neisser's: over-emphasis of the metachromatic granules at the expense of differential staining of the bacillary body, which is a much more important diagnostic feature, and which is better displayed, and the granules sufficiently well, by a good Loeffler's methylene-blue technique.—I am, etc.,

Public Health Laboratories, Cairo, June 6.

B. R. SANDIFORD.

An appeal for salvage, particularly for waste paper, has been issued by the salvage department of the Ministry of Supply as a forerunner to the salvage drive to take place throughout Greater London from September 13 to 27. Businesses are asked to turn out all old correspondence, records, ledgers, price lists, etc., which have been put on one side against possible use "some day"; also those old directories and guides still retained but infrequently used. This appeal may also be made to doctors, since it is not unusual for them to have records, ledgers, trade circulars, packing material, etc., stored away in such places as the back of the surgery or the garage. Not only are all kinds of waste paper required, but any quantity, large or small, since even one old envelope will make a cartridge wad.

Obituary

JOSEPH NELSON, L.R.C.P.&S.Ed.

On August 16 (writes a colleague in Hull) there suddenly passed from our midst Dr. Joseph Nelson, one of the best-known and most highly respected general practitioners in the East Riding of Yorkshire.

"Joe," as he was familiarly known to all, was born in Limerick of Protestant parents, and came to England with a brilliant school reputation to study medicine at the Westminster Hospital. He qualified in 1894, and held a post at Lewes Infirmary and Warwick County Asylum before coming to Hull as resident surgeon to the Hull and Sculcoates Dispensary. After ten years in this post he took up general practice. Although not in robust health for some years, he had been for many months especially well, and indeed, although somewhat indisposed for a day or two, he was on a medical board the very night before he died. He played an extremely active part in all that pertained to general practice, and more especially to panel practice. He had always taken a very great interest in the work of the British Medical Association, and was chairman of the East Yorkshire Division in 1922-3 and president of the East Yorkshire and North Lincolnshire Branch in 1928. In national health insurance he was not only profoundly interested but was quite an authority on all the Health Insurance Acts. He was a member of the Hull Insurance Committee for nearly thirty years, and for twenty-one years he was secretary of the Local Medical and Panel Committee. The last meeting which he attended, strange to say, was the twenty-first anniversary—day and date—of his taking over this position. He carried out his duties with such skill and enthusiasm that he practically was the Hull Panel Committee. His opinion on vexed questions was very much sought after and very willingly given. Indeed, he enjoyed a national reputation, and was one of the best-known figures at the Panel Conferences and Panel Dinners for many years. He was possessed of a marvellous memory, a quick wit, and very ready spontaneity of speech, making many remarkable extempore contributions to discussions. As a secretary he had an infinite capacity for taking pains, and his efforts were so wonderful that no one can certainly be found to equal him as secretary of the Hull Medical and Panel Committee. He was originally appointed chairman of the East Yorkshire Medical War Committee, but felt he could not carry on and resigned after a few months. He was co-guarantor of the war agreement for absentee practitioners, and continued an enthusiastic member of the committee until the end. He attended at the recent Panel Conference in London as a delegate from Hull, and was very disappointed indeed with its result. He was a fearless and outspoken critic, and his criticisms, especially on the present capitation question, are well known to the I.A.C. He felt much disappointment at the introduction of the new group into health insurance, and was very indignant that the profession was not consulted before it was introduced. He was chairman of Group C of the Standing Joint Committee and was to have convened a meeting at Leeds shortly to discuss methods of tackling the capitation question.

Dr. Nelson contributed many papers to learned societies in Hull, and was a great student of Nature, especially of bird life in Yorkshire. For many years he was a pillar of the Labour movement in his district, although recently he did not take any active interest. He remained exceedingly friendly with Robert Blatchford, and was on the friendliest terms with Hyndman and many whose names were household words in Socialist circles. He and his wife were instrumental in organizing the great Hull dock strike some thirty-three years ago, and at one time he was trustee of the Dockers' Union. His pleasant Irish intonation will be much missed at medical meetings in Hull. Indeed, his loss is an irreparable one to the whole profession, which mourns the loss of one who truly gave his life for his fellows, and the sympathy of all goes out to his family of three daughters and a son, who is now serving as a flight-lieutenant in the R.A.F.

The death occurred on July 24 of DAVID HUEY, F.R.C.S., J.P., at his home, Bushmills, Co. Antrim, in his eighty-fourth year. He had been for over half a century the local dispensary doctor, and throughout those years he was the embodiment of all the characteristics of the country doctor. He was guide, philosopher, and friend to a large district and his influence was felt in every sphere. Such was his keenness in his work that he proceeded to his Fellowship of the Royal College of Surgeons, Edinburgh, at the remarkable age of 67. He was a regular attendee at clinical meetings of the Ulster Medical Society and B.M.A. He had been a member of the Association since 1908, had been a representative at ten Annual Representative Meetings, and was chairman of the North-East Ulster Division in 1928-30. Dr. Huey's main hobbies were salmon fishing in the River Bush and golf—he had been for years captain of the Bushfoot Golf Club, for which he provided a new clubhouse. He was a prime mover in everything to benefit his community, and took an outstanding part in the management of local education, particularly as a governor of the local secondary school. He had presided regularly at the local petty sessions for many years. He was more than a pillar—almost the foundation—of Dunlacy Presbyterian Church, where he worshipped without fail every Sunday and to which he was the principal benefactor throughout his life.

We regret to announce the death at his home in Wimpole Street, London, on August 8 of Dr. BERTRAM SHIRES, who was well known for his work as a radiologist during the past twenty years. Bertram Shires had been a medical student at the University of Edinburgh and graduated to M.B., Ch.B. in July, 1914. Soon after the outbreak of the last war he received a commission in the R.A.M.C. Special Reserve and reached the rank of major. On returning to civil practice he decided to specialize in radiology and studied for the Cambridge D.M.R.E., which he took in 1921. Joining the x-ray department at St. Thomas's Hospital in 1924 as chief assistant, he was appointed assistant radiologist three years later, and became director of the department in 1939. Dr. Shires was also honorary radiologist to the Hospital for Sick Children, Great Ormond Street, and consulting radiologist to the Infants' Hospital, Vincent Square. He went on living in London during the present war, and spent much of his time travelling to and from Godalming after St. Thomas's moved part of its work there last April in consequence of the severe bombardments.

Dr. SPENCER SMITHSON DUNN, who was driven out of Southampton by enemy action, died recently at the age of 82, after years of suffering patiently borne. He graduated M.B., C.M. of the University of Aberdeen in 1888, and practised for a time at Sheffield. While on military service in the South African War he went forward into heavy fire with two volunteer stretcher-bearers to bring back a severely wounded sergeant, and got him to a place of safety. For this gallant deed he is believed to have been recommended for the Victoria Cross. During the last war Dr. Spencer Dunn did good work in various capacities. Gradual deterioration of health caused him to retire from active practice some years ago.

The death of Dr. T. J. L. FORBES of Whitworth deprives the Rochdale Division of its senior member. After graduating M.B., C.M. of Glasgow University in 1894 he held resident posts as house-physician and house-surgeon at the Western Infirmary, Glasgow, assistant medical officer, Riccarton Asylum, and Glasgow, assistant medical officer, Glasgow Royal Maternity Hospital. In 1899 he went to Whitworth as partner to Dr. A. Welch, whose daughter he married, and spent the rest of his life in this Lancashire upland valley. He devoted almost the whole of his activities to the service of his patients in his extensive practice, and this devotion was returned in large measure by the whole-hearted affection of the patients whom he served so faithfully. The house he practised from is of considerable interest, as it was originally the home of the "Whitworth doctors," a dynasty of bone-setters whose fame was widespread, and whose patients included a future Archbishop of York and a member of the Royal Family; the first of the line was a qualified medical man. Thomas Forbes was a man of fine physique and handsome appearance, quiet and courteous but friendly in manner. His later years were dominated by ill-health, which compelled his retirement from practice some

two years ago. He was J.P. for the County of Lancaster and for many years M.O.H. for Whitworth, and was a Fellow of the Society of Medical Officers of Health. Apart from these duties he took no active part in public affairs. He declined office in the local Division of the B.M.A., but was a very loyal member of the Association, and consistently upheld by example a high ideal of professional behaviour in his relations with his patients and colleagues. He was cremated at Rochdale on August 4. The service was attended by the members of the Whitworth Urban District Council and a large number of his old patients and professional colleagues. He is survived by his widow and two sons.

The following well-known medical men have died abroad: Dr. MAX BJORKSTEN, a famous Helsingfors epidemiologist, aged 75; Dr. JAKOB SZWACER, formerly director of the Czyston Hospital, Warsaw, aged 90; Prof. JOSÉ DA COSTA CRUZ, director of the Oswaldo Cruz Sanatorium, Rio de Janeiro; Dr. BRANSFORD LEWIS, emeritus professor of urology at St. Louis University School of Medicine, aged 78; Dr. JOHN TEMPLETON BOWEN, an eminent dermatologist of Boston, emeritus professor of dermatology at Harvard University, whose name has been given to a precancerous dermatitis, aged 84; Dr. SIVUEL W. BECKER, assistant professor of dermatology, University of Chicago, author of *Common Diseases of the Skin*, aged 47; Prof. W. A. JOLLY, a Zurich psychiatrist; and Dr. CHARLES WALLIS EDMUNDS, a leading member of the Council on Pharmacy and Chemistry of the American Medical Association and co-editor with Prof. J. A. Gunn of Oxford of *Cushny's Textbook of Pharmacology and Therapeutics*, aged 68.

Universities and Colleges

UNIVERSITY OF OXFORD

The Theodore Williams scholarship in anatomy, 1941-2, has been awarded to P. P. H. Schmidt, St. Catherine's Society.

UNIVERSITY OF LONDON

The headquarters of the University of London administrative staff has moved from Royal Holloway College, Englefield Green, Surrey, to Richmond College, Richmond, Surrey (telephone, Richmond 2301).

The title of Professor Emeritus of Physiology in the University has been conferred on Dr. Winifred C. Cullis on her retirement from the Sophia Jex-Blake Chair of Physiology at the London (Royal Free Hospital) School of Medicine for Women. Miss Esther M. Killick, M.Sc., M.B., Ch.B., has been appointed to succeed Prof. Cullis.

SOCIETY OF APOTHECARIES OF LONDON

At a meeting of the Court of Assistants of the Society of Apothecaries Sir Stanley Woodward, M.D., F.R.C.P., was elected Master for the ensuing year, Prof. F. G. Parsons, D.Sc., F.R.C.S., Senior Warden, and Mr. V. Warren Low, F.R.C.S., Junior Warden.

The following candidates have passed in the subjects indicated:

SURGERY.—K. J. Adams, G. J. Ambrose, E. D. C. Davies, S. Fink, S. E. Gordon, S. Hashim, H. G. King, Pak So.

MEDICINE, PATHOLOGY, AND FORENSIC MEDICINE.—K. J. Adams, H. P. Anderson, B. Berman, E. D. C. Davies, M. C. Hannon, A. Hannun, J. H. C. Hill, D. W. Mayman, S. S. Zohar.

MIDWIFERY.—K. J. Adams, G. R. Boyes, E. D. C. Davies, S. Hashim, N. F. Murphy, T. W. Renton, B. E. O. Williams.

The diploma of the Society has been granted to K. J. Adams, H. P. Anderson, B. Berman, E. D. C. Davies, S. Fink, A. Hannun, S. Hashim, J. H. C. Hill, and D. W. Mayman.

The Services

HONORARY PHYSICIAN TO THE KING

Lieutenant-General Alexander Hood, C.B.E., late R.A.M.C., Director-General, Army Medical Services, has been appointed an Honorary Physician to the King, in succession to Lieutenant-General Sir William P. MacArthur, K.C.B., D.S.O., O.B.E., retired.

COLONEL COMMANDANT, R.A.M.C.

Major-General H. P. W. Barrow, C.B., C.M.G., D.S.O., O.B.E., retired pay, late R.A.M.C., has been appointed Colonel Commandant of the Corps, vice Major-General R. S. Hannay, C.B., C.M.G., D.S.O., retired pay, late R.A.M.C., who has attained the age limit for the appointment.

CASUALTIES IN THE MEDICAL SERVICES

AUSTRALIAN ARMY MEDICAL CORPS

Captain STEWART IRVINE WEIR, who was killed in action in Greece in April, was educated at the University of Melbourne, where he graduated M.B., B.S. in 1930. He became a Fellow of the Royal College of Surgeons of Edinburgh six years later. He had been a member of the British Medical Association since 1935. He leaves a widow and one daughter.

DEATHS IN THE SERVICES

Colonel ANTHONY HENRY WARING, D.S.O., late R.A.M.C., died at Maresfield on August 9, aged 69. He was born on November 28, 1871, and took the M.R.C.S., L.R.C.P.Lond. in 1895. Entering the Army as surgeon lieutenant in January, 1896, he became lieutenant-colonel in the long war promotion list of March 1, 1915, and colonel on October 15, 1916, was placed on half-pay on December 26, 1919, and retired on January 8, 1921. He served throughout the war of 1914-18 in France and Flanders, was mentioned in dispatches in the *London Gazette* of October 10, 1914, and May 20, 1917, and received the D.S.O. in 1917, and was also appointed Commander of the Portuguese Order of Avis. After his retirement he lived for many years at Antibes, in the Alpes Maritimes, France.

TUBERCULOSIS IN INDIA

To assist tuberculosis work in India a subcommittee of the Tuberculosis Association of India has issued a report on classification of pulmonary tuberculosis. The recommendations include taking into account the anatomical extent of the disease judged by both physical and x-ray examination, and the subdivision of patients into two groups, according to the history—"acute initial" and "chronic recrudescence." By the term acute initial is meant a case with acute onset, a course of illness more or less continuous, without healthy intervals, with a duration not exceeding two years. By chronic recrudescence is meant a case slowly developing with healthy intervals, and cases of the acute-initial group with a duration of illness of more than two years. The classification recognizes three stages according to anatomical extent, special regard being paid to cavitation and complications; and each stage is subdivided into A, B, and C according to the extent of systemic disturbance. Recommendations are also made in regard to classification of results of treatment at the time of discharge. This includes the term "arrested" (which in Great Britain cannot be applied until two years after a case has been pronounced quiescent). In the Indian classification both the terms "arrested" and "quiescent" require that no tubercle bacilli should have been found in the sputum for the last three months, and this implies that "before the sputum is declared negative it should have been examined on four separate days in each of three months, using the ordinary smear method." It is, however, strongly recommended that culture methods should be used when no tubercle bacilli are found by the smear method, and that in all reports from institutions it should be stated, when giving figures for positive or negative sputum examination, whether culture methods have been used. The report also contains four informative and very useful appendices on radiography of the lung, sputum examination for tubercle bacilli, blood examinations in tuberculous patients, and on the taking of temperature in tuberculous patients.

INFECTIOUS DISEASES AND VITAL
STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 9.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (London included), (b) London (administrative county), (c) The 13 principal towns in Eire, (d) The 10 principal towns in Scotland, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	144	18	38	5	8	141	18	44	2	2
Deaths	18	1	1	1	1	23	26	296	47	30
Diphtheria	677	40	199	15	31	817	26	296	47	30
Deaths	18	1	2	2	3	23	26	296	47	30
Dysentery	40	10	43	—	—	45	1	42	—	—
Deaths	1	1	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	3	—	4	2	—	3	—	1	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Enteric fever*	38	3	6	6	1	195	13	16	4	1
Deaths	3	2	—	—	—	7	—	—	—	—
Erysipelas	—	—	37	5	—	—	21	44	7	4
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	51	3	8	23	1	31	4	10	9	12
Deaths	—	—	—	—	—	—	—	—	—	—
Measles	2,276	84	26	102	1	9,048	51	518	—	18
Deaths	2	—	—	1	—	6	—	7	—	—
Ophthalmia neonatorum	72	3	14	2	1	104	11	11	3	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid A and B ..	150	2	13	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† ..	408	21	6†	1	—	435	14	4	1	7
Deaths (from influenza) ..	2	12	2	1	3	6	—	2	—	—
Pneumonia, primary ..	—	—	120	9	—	—	13	133	9	4
Deaths	—	—	2	—	—	—	—	—	—	—
Polio-encephalitis, acute ..	2	2	—	—	—	2	1	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute ..	30	—	5	1	1	24	1	4	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	1	1	10	2	—	8	8	8	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	126	112	16	2	2	165	10	7	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	804	27	118	32	20	1,275	38	133	35	39
Deaths	2	—	—	—	—	—	—	—	—	1
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	3,138	206	84	37	28	828	14	44	—	16
Deaths	19	3	5	1	1	3	1	—	—	5
Deaths (0-1 year) ..	252	22	63	38	17	265	29	44	21	24
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) ..	3,420	436	518	182	116	3,915	677	566	138	116
Annual death rate per 1,000 persons living ..	—	—	11.3	12.1	5	—	—	11.4	9.2	10.2
Live births	4,392	340	841	290	166	5,647	875	823	333	212
Annual rate per 1,000 persons living ..	—	—	17.1	19.3	5	—	—	16.6	22.2	18.6
Stillbirths	192	14	38	—	—	228	29	32	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	43	—	—	—	—	—	—	—

* Includes paratyphoid A and B for Eire and Northern Ireland.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes one case of pneumonia not otherwise notifiable.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland can no longer be given.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Last week's decline in the prevalence of infectious diseases in England and Wales continued; the only exceptions to the general rule were those of poliomyelitis and typhoid fever, the notifications for which exceeded last week's figures by two and four respectively. The returns for the other diseases reached the lowest level of recent months, the number of cases of whooping-cough being the lowest for over six months, and of diphtheria the lowest for the past year; measles reached the lowest level for over eighteen months, and the notifications for cerebrospinal fever, dysentery, and pneumonia were fewer than they have been for almost a year. In Scotland scarlet fever and whooping-cough showed an increase of 11 and 25 cases respectively over the notifications for the preceding week.

Typhoid and Paratyphoid Fevers

The notifications of typhoid in England and Wales were 38, and were four in excess of the previous week's total. Eight of these cases were reported from Rhayader R.D., Radnorshire. The decrease in the number of cases of paratyphoid reported during the week was mainly due to the subsiding of the outbreaks in Cheshire and Lancashire, where 19 and 20 fewer cases were recorded than in the previous week. The incidence is still very high in Lancashire, which, with 76 cases (40 in Liverpool C.B.), contributed slightly over half of the total for the country. Cumberland with 12 cases has the second largest number of notifications, due to an outbreak in Carlisle C.B., 10 cases.

Dysentery

No further case has been reported from Leiston-cum-Sizewell, where the outbreak last week resulted in 37 notifications. The cases reported in England and Wales during the week were only one-third of the total in the preceding week. This large decrease brings the incidence of dysentery to the lowest level since last autumn. London with 10 cases and Lancaster with 8 accounted for almost half of the cases reported in the country. Forty-five cases, a decrease of 7, were notified in Scotland; 23 of these were recorded in Lanarkshire.

Acute Poliomyelitis

There were 30 cases of this disease notified during the week, an increase of two on last week's total. A fresh outbreak occurred in Hertford (Ware U.D.), with 5 cases. Other multiple cases were reported from Berkshire (Maidenhead M.B. 2, New Windsor M.B. 2, Cookham R.D. 2); Buckinghamshire (Slough M.B. 4, Eton R.D. 2); Lincolnshire (Lincoln C.B. 3). Two deaths have occurred in the Slough district. Five cases were recorded in Scotland.

Cerebrospinal Fever

The notifications of cerebrospinal fever in England and Wales were only three-quarters of the number recorded in the previous week, and were the lowest for almost a year, but the incidence remains at six to seven times the pre-war level. Of the 121 cases reported, slightly more than one-quarter were contributed by two counties, Lancashire 19 and Yorkshire, West Riding, 15. The number of cases reported in Scotland was 38 (Glasgow 12 cases), compared with 39 in the preceding week.

J. A. Tuta and E. F. Hess (*Amer. J. Obstet. Gynec.*, 1941, 42, 142), who record an illustrative case, state that up to 1937 168 cases of carcinoma of the female urethra were on record. Primary urethral carcinoma must be distinguished from secondary carcinoma arising in the labia majora or minora, vestibule, Bartholin's glands, clitoris, or vagina. Within the urethra the usual lesions are prolapse of the urethral mucosa, caruncle, fibroma, or sarcoma. The present case was that of a housewife aged 57, in whom the menopause had occurred eight years previously. The symptoms were general bleeding and pelvic pain, and a small red ulcerated mass was found involving the meatus. Death took place after about four months' illness. The necropsy showed that the entire length of the urethra was invaded by a tumour (squamous-cell carcinoma), and there were metastases in both lungs.

Medical News

A general meeting of the Tuberculosis Association will be held at 26, Portland Place, W., on Saturday, September 13. At 10.30 a.m. Dr. H. V. Morlock and Mr. P. R. Allison will present a paper on "Bronchial Obstruction as a Factor in Pulmonary Tuberculosis," and at 2.30 p.m. there will be a discussion on "Tuberculosis and the Examination of Recruits," to be opened by Dr. P. L. T. Bennett.

A series of five lectures on economic problems, to be given on successive Tuesdays in September, at each of which the speaker will be a member of the House of Commons, has been arranged by the Henry George School of Economics. Town planning will be discussed by Mr. Andrew Maclaren on September 9 and industrial health by Dr. H. B. Morgan on September 23. The lectures will be given at the school's premises, 13, Suffolk Street, Pall Mall, S.W.1, to which address applications for tickets (price 1s. for each lecture, season tickets 4s.) should be made.

The Ministry of Food wishes to emphasize that the directions on cartons containing national dried milk, which were drawn up with the advice of the Ministry of Health, are of a general nature only. They should not be considered suitable for every infant, but should be modified at the discretion of the medical adviser. National dried milk is not a humanized food. It is manufactured by the roller process in two varieties: a full-cream powder with a standard fat content of 26% to 27%, but without any added iron and other ingredient, and with a calorie value of 18 to 19 to one fluid ounce of reconstituted milk; and a half-cream powder with a standard fat content of 16.5%, giving a calorie value of 16 to an ounce.

The Ministry of Health has circularized local authorities (Circular 2455) on the need for co-ordinating the arrangements made by industrial concerns in their area for the treatment of air-raid casualties and for disposal of the dead with those made by the authorities themselves. To this end industries are being asked where possible to allow the local medical officer of health to visit their premises to see the arrangements they have made, when he will be able to judge what help, if any, they may need.

Preliminary arrangements for Hospitals Day, to be held on Tuesday, October 7, are now being made by the London Hospitals Street Collections Central Committee. It is hoped to improve on the record collection made in May, when London's hospitals collected over £10,000 more than they had done before on any previous flag day. Suggestions and offers of service will be gratefully welcomed by the chairman, Lord Luke, at the headquarters, 36, Kingsway, W.C.2.

The August issue of *Industrial Welfare and Personnel Management*, the journal of the Industrial Welfare Society (14, Hobart Place, S.W.1), contains an article on relations between doctors and industry by Dr. W. D. Jenkins, medical officer, South Metropolitan Gas Company, Ltd., whose thesis is that (a) a part-time medical service is essential for the bulk of the industrial undertakings in the country; (b) this service must be staffed by general practitioners; (c) the lack of knowledge of industry and industrial conditions among doctors is due to their early training and the lack of appreciation by employers of the need for encouraging doctors to be interested in industrial conditions; (d) any difficulties which exist can easily be overcome by good will; (e) such services are productive only of good results and are an economic gain. The recently developed miniature radiography for detection of tuberculosis is described in an article on methods of mass radiography by Dr. A. S. Hall, tuberculosis officer of the Middlesex County Council, who points out that until there is a positive demand for the apparatus it will not be manufactured.

The Kober Medal of the Association of American Physicians was recently presented to Dr. William de B. MacNider, research professor of pharmacology at the University of North Carolina.

The 26th annual session of the American College of Physicians will be held at St. Paul, Minnesota, from April 20 to 24, 1942, under the presidency of Dr. Roger I. Lee.

In consequence of his appointment as Secretary of State for Scotland, Mr. Thomas Johnston has resigned membership of the Nuffield Provincial Hospitals Trust, and other vacancies have been caused by death. Lord Balfour of Burleigh, chairman of the Medical Research Council, Lord Wigram, Mr. Tom Williams, M.P., Sir Bernard Docker, and Mr. D. Lindsay Keir, vice-chancellor of Queen's University, Belfast, have accepted Lord Nuffield's invitation to become trustees.

Professors D. Keilin, F.R.S., and C. R. Harington, F.R.S., have been appointed members of the Agricultural Research Council.

Prof. C. Lovatt Evans, F.R.S., has been elected a foreign member of the Royal Physiographical Society of Lund, Sweden.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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TELEPHONE No.—B.M.A. and B.M.J.: EUSTON 2111.

TELEGRAPHIC ADDRESSES—EDITOR, *Aitology Westcent, London*; SECRETARY, *Medisecro Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

"Cocktail" Burn

Dr. IAN F. S. MACKAY writes: Among the "casualties" at a recent Home Guard exercise was one that had received a burn from a "Molotov cocktail." This contains yellow phosphorus in solution. What is the first-aid treatment that you would advise?

Symptoms after Mercurochrome Treatment of Impetigo

Dr. NOEL C. BLEASDALE (Liverpool) writes: I have recently been treating a number of cases of impetigo contagiosa of varying degrees of severity by starch poultices in order to loosen the crusts, following which I have applied 2% solution of mercurochrome to the lesions. This treatment has proved very successful in the majority of cases, the sepsis associated with the condition clearing up very rapidly. In two cases, however, of impetigo of the back of the head and neck there was a temperature of 101° F. and relaxed stools three days after the application of mercurochrome, and in one there was vomiting on one or two occasions. I am wondering whether these symptoms could be due to the mercurochrome, but have not been able to find any records of such in the literature. Perhaps some of my colleagues will be able to clarify this point for me.

Income Tax

Payment of Interest

M. H. is paying interest on a private loan in lieu of bank interest paid in former years.

* Interest paid to a bank is an allowable deduction by statute, but interest paid to a private person, however, cannot be deducted. The reason is that in the latter case the payer is entitled to deduct tax from the interest at the time of payment and receives the allowance in that way. In other words, the fact that he cannot deduct the interest in calculating his own liability is the means by which he passes on to the Revenue the tax he is entitled to keep back when paying interest.

S. W. C. is paying interest to an insurance company instead of to a bank, as formerly.

* S. W. C.'s inquiry is similar to that of M. H., to whom a reply is given above.

Personal Allowances

J. M. has had tax deducted from military pay at standard rate without any deduction being made for "personal" allowances.

** The note which is rubber-stamped on the notice accompanying J. M.'s letter states that the personal allowances, and presumably the benefit of applying the lower rate of tax to one "slice" of income, have been applied to some other source of income—possibly to a share he may retain in the profits of a practice. If that note is correct no further allowance is due; if it is incorrect the matter should be taken up at once with the War Office income-tax authorities.

Continuance of Liability for Rent

"LEASEHOLDER'S" practice ceased on his entering war work under the Emergency Scheme, but he remains liable for rent in respect of the premises at which his practice was formerly carried on. Can he claim an allowance in respect of the payments of rent?

** If his practice cannot be regarded as having been continued we see no legal ground on which a claim could be based. If, however, some evidence can be put forward—e.g., that the plate remains on the premises and that some other practitioner is available to deal with clients—then we think that it might be possible to persuade the authorities to regard the practice as still continuing, and in that event a claim might be made under the Income Tax Act, 1918, Section 34, in respect of the loss occasioned by payment of the rent. (If an appeal *ad misericordiam* should meet with success we should be glad to hear of it.)

Car Used for Official Purposes

P. K. is employed by one of the Ministries, and receives an allowance for the use of his car which may cover running costs but not depreciation. Can he claim an allowance?

** He is assessable under Schedule E and is entitled only to expenses (including depreciation) incurred "wholly, exclusively, and necessarily in the performance of his duties." It may be that he uses a car of greater cost or horse-power, or for a greater mileage, than is "necessary" for his official use, but in any case he would find it very difficult to persuade the Income Tax Commissioners that the cash allowance he receives from the Ministry is inadequate on the very strict and limited basis indicated above.

LETTERS, NOTES, ETC.**Systemic Factors in Wound Healing**

Dr. G. ARBOUR STEPHENS (Swansea) writes: Dr. Grant Waugh's article on the systemic factors influencing wound healing (August 16, p. 236) is of importance not only because it is sound in doctrine but because it tends to emphasize the importance of the part played by these factors. In July, 1906, I showed that wounds or ulcers of the leg are helped to heal by the internal administration of calcium iodide, which has the effect of raising the pH. Dr. Waugh holds that a lowered pH of tissues, especially near the wound, is essential for good healing. Were that so, large quantities of beef and beer ought to be just the things to consume! The value of vegetables lies in their basic tendencies to raise the pH, while the cereals and carbohydrates make the tissues more acid. Balanced diets are composed of basic vegetables and acid meats, of basic milk and acid breads. The children of the poor live on acid bread, and as a result are the first to fall victims of all epidemics. It was for this reason I got the Swansea education authority to be the first to give milk to school children and set an example to the rest of the country. Metal burns or wounds heal quickly when cleaned by petrol or benzol, which is able to wash away the surface fatty substances to which the germs and half-burnt toxic tissues adhere. After the petrol has evaporated it leaves a clean and a dry wound—the two great essentials for healing. In a large local spelter works metal burns kept the workers away for six to eight weeks, but since petrol treatment was introduced loss of work is nowadays exceptional.

Treatment of Impetigo

Dr. MAURICE E. J. PACKER (Bristol) writes: With reference to the treatment of impetigo (August 16, p. 225) I did a considerable amount of experimental work on this at a school clinic. My experience suggested that the best treatment is to tear off small pieces of cotton-wool just the sizes of the sores, damp them with lotio eupro-zinica, and cover generously with elastic adhesive plaster. This is left on for a week, at the end of which time the big majority have healed; if not, repeat. Some cases proved resistant, but these were exceptional. This method is especially valuable at clinics, as it saves children attending every day. Also, if every sore is covered the danger of infection is reduced to a minimum, and attendance at school while being treated might be considered.

Cardiac Arrest during Anaesthesia

Dr. JOHN ARMSTRONG (London, W.C.2) writes: Mr. Hamilton Bailey (August 16, p. 243) must be unfortunate in his anaesthetists. In my early days in Glasgow Royal Infirmary I administered chloroform over 2,000 times with no deaths, some of the operations lasting to three hours.

Adhesive Bandages: Avoiding Painful Removal

Captain M. H. L. DESMARAIS, R.A.M.C., writes: Much discomfort and pain is experienced by the patient when elastoplast bandage is removed. The bandage sticks to the hairs and also causes some irritation of the skin. On the suggestion of my orderly the bandage is applied in reverse in cases where only support is required, and the sticky surface of the bandage is then powdered with French chalk.

Epistaxis

Dr. R. GAINSBOROUGH (Uckfield) writes: The control of epistaxis by the ordinary method of plugging is a painful process both in its application and in the removal of the plug. I was called recently to a case where a serious loss had occurred from recurrent haemorrhages. I was unable to plug on account of the patient's sensitiveness and previous experience, and decided to use a stream of hot air to accelerate clot formation. I found this at once successful, and as the patient had haemorrhage on two subsequent days he controlled it himself immediately by applying this method. The stream of hot air was obtained from a domestic hair-dryer. I do not know if this remedy has been used before, but I found it extremely effective.

Chloroform in the 'Eighties

Dr. J. N. MARSHALL (Rothsay) writes: I have been following with interest the correspondence about anaesthetics in your columns, and have been moved to add a short note of my own experience. I would like to confirm what Dr. J. T. MacLachlan—a countryman of my own from the north of Scotland, and evidently of about the same vintage as myself—said (July 5, p. 19) about the use of chloroform in the Western Infirmary, Glasgow, and the absence of fatalities in its use in the early eighties of last century. In 1882 I was house-surgeon with Hector Cameron, the other visiting surgeons being George Macleod, George Buchanan, and Alexander Patterson. As a rule the house-surgeons administered chloroform, and the senior students were carefully instructed in its use. So far as I know there were no fatalities at that time. Macleod was then at the Royal Infirmary, Glasgow, and he also used chloroform. Later I often gave it for him in private practice. During the next ten years I was engaged largely in country practice and used ten chloroform in midwifery, in minor surgery, and in the many exigencies of general practice, sometimes alone, sometimes with assistance. From 1897 I had the inestimable privilege of hospital practice in the Cottage Hospital at Rothsay, a similar privilege which all country doctors should have. From that date until 1934, when I retired from general practice, I had chloroform administered, with ether in the background, by one or other of my colleagues in the hospital with only one death, though undoubtedly there were quite a number of "near misses" of fatality which caused anxious moments. A rough though conservative estimate of the number of chloroform administrations in the above series is 3,500. Chloroform is undoubtedly a killer drug, but used with skill and care it is a friend in need to the general practitioner, and all students should be trained in its use or in the use of some other anaesthetic.

A Diabetic Chart

Dr. H. CECIL BARLOW writes: We have recently introduced into the wards at the Lincoln County Hospital a type of chart for diabetic cases, and find it very useful. It is simple to keep, it affords at a glance the progress of the case, it is a fairly complete record which can be completed by a few notes on the case sheet, and being the same size as the ordinary temperature chart can be bound up with the records in the case books. It is printed by Messrs. Heyworth and Sons, Lincoln.

Stains for Microscopical Work

British Drug Houses Ltd. have recently issued a forty-page booklet on their standard stains for microscopical work. In the first part details are given of the different routine methods of staining bacteria and preparing microscopical sections and of staining cells. This is followed by a price list of B.D.H. microscopical stains. The booklet can be obtained free of charge on application to the firm at Graham Street, City Road, London, E.C.1.

BRITISH MEDICAL JOURNAL

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A SURVEY OF ONE HUNDRED CASES OF WAR NEUROSES*

81

JOHN D. SUTHERLAND, Ph.D., M.B., D.P.M.

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In this report some observations are presented on the previous history, treatment, and results of treatment of 100 men admitted to an E.M.S. hospital suffering from psychoneurotic states occurring during or after exposure to combatant action. No commissioned officers are included in the group.

A number of workers in this field have been interested in the type of person who develops a psychoneurosis under the strain of active service. Besides having important implications regarding the prognosis and treatment of these cases, a study of the prominent features previous to breakdown is of the utmost value in the detection of possible psychoneurotics. Though as yet no scheme has emerged, their detection by some form of psychiatric examination at the time of recruitment has engaged the attention of many psychiatrists, and our survey has led us to make some suggestions towards this end. There is little doubt that the psychoneurotic can be valuable in military service as in other spheres, yet often his greater liability to panic is a constant menace to the morale of any fighting unit. More than one of our patients was acutely distressed by his effect on other men. We would not for a moment suggest that all psychoneurotics should be eliminated from the Forces, but when a strong predisposition to nervous breakdown is detected it would appear that the type of service into which the individual is to be sent should receive proper consideration.

Since the present war began sharply divergent views have been expressed on the methods of treatment of these illnesses and different results quoted. These variations appear to be due largely to the orientation of the particular workers, according to whether the symptom, or the dynamic disturbance in the personality underlying the production of the symptom, was the focus of interest—i.e., whether a short-term or a long-term policy was adopted. Which of these approaches is the more useful is a question on which our observations leave us in no doubt. The "war neuroses" are essentially the *neuroses in war*, and in my opinion the treatment and disposal of these cases can be based only on this fundamental standpoint.

Nature of the Group

It should be noted at the outset that the cases here considered must be regarded as the more serious instances of this type of illness. Most of these patients had been in other hospitals before coming under our care: on the average each man had been two weeks in hospital, followed by one week of sick leave. Thus the selective

nature of the group precludes conclusions about the incidence of certain factors in general.

Ranks.—The distribution in ranks was as follows:

P. sgt.-major	1	Corporals	7
C.O.M.S.	1	L/corporals	2
Staff sergeant	1	Other ranks	7
Sergeants	9		

This represents a proportion of 23% N.C.O.s—roughly the proportion of N.C.O.s to other ranks in the Army as a whole. (It would be unwise to stress statistical observations based on such a small number of cases; therefore many of the following remarks should be considered with this limitation in mind.)

The preponderance of sergeants is probably connected with many factors besides possibly greater strain. (This preponderance has been found to exist in a subsequent group of similar cases.) Their greater average age (36 years) and the fact that some were given this rank because of their technical experience rather than any special personal qualities would doubtless be contributory factors.

Age and Family Connexions.—The average age of the whole group was 29 years 10 months, the age distribution being:

20-24	38	40-44	3
25-29	21	45-49	2
30-34	15	50-54	2
35-39	17		

Fifty-eight men were married, 39 of these having children.

Motives for joining Army, and Attitude to Service.—The recruitment categories form an approach to the question of motives in joining, and of the attitudes to the Services. These were:

Regular Army	14	Territorials	31
Regular Reserve	12	Volunteers	26
Supplementary Reserve	6	Conscripts	12

Perhaps the most striking feature is the low incidence of conscripts. It might be expected that conscripts would form a high proportion of breakdowns as compared with volunteers, though there are, of course, factors opposing such a tendency. For example, age might offset breakdown, as the younger men are not so likely to be harassed by family ties, etc., and are correspondingly readier to respond emotionally with the "joy of battle." Again, the most common type of neurosis occurring in the younger conscripts may yield more readily to treatment, so that only the more serious cases reach us. Certainly a third of the conscripts felt definitely unhappy from the start of their service, and would not have volunteered; 6 of them had a bad early history.

Of the 14 soldiers of the Regular Army 5 had ; up impulsively to escape an unhappy situation

* A paper read to the Scottish Branch of the British Psychological Society on May 24, 1941.

regretted the step afterwards, and looked forward to the time when they would be freed from what they felt to be an irksome bondage. The Territorial and volunteer groups included a good proportion of highly conscientious men impelled to serve by a strong sense of duty despite their anxious tendencies. A few of the Territorials nevertheless showed unsatisfactory motives—e.g., to avoid conscription, to get social outlets, enlisting under what was felt to be pressure from employers or to ensure being in non-combatant service. The majority of this group had had some years of service, the median period being four years, and it is of interest that the 7 men who joined in the year preceding the outbreak of war had very bad histories of psychoneurotic symptoms. Their enlistment was more in the nature of an attempt to deal with rising anxieties than of mature consideration about duty. Among the volunteers also were several men whose enlistment was occasioned by unpropitious elements. Thus 10 joined primarily to get more money than the unemployment allowance. Two joined impulsively for no very good conscious reason, while another pair volunteered for non-combatant service. There were 7 who joined for special engineering work: these men, who were older than the others, did not expect to be engaged in battle. One man's reason for enlisting was to avoid arrest.

Altogether 37 men joined the Services with an inadequate attitude and were thus under a strain from the start. They showed poor appreciation of their roles in a time of national danger, and were subsequently too much concerned with their personal problems for the larger issues to govern their conduct. The situation of those men who, aware of their psychological limitations, volunteered for specialized work and later became involved in combatant action was an unfortunate one. The Supplementary Reservists suffered in this fashion. Mostly older men, they enrolled willingly for specialized branches, but found the unexpected strain of battle too heavy. Evidently the ease with which this situation may nowadays arise would make advisable a psychiatric scrutiny of such men before detailing them for service abroad.

Physical Condition.—Practically none of the group had any signs of systemic disease. Three with positive Wassermann reactions were found, one being suspected clinically and the others discovered in routine testing. On the average, physique was good, only 6 men being of poor development. Two of the latter were thought to be possible cases of pulmonary tuberculosis, but radiological examination was negative.

Intelligence.—Owing to pressure of time it was not possible to measure intelligence satisfactorily. Twenty men reported having been backward at school, and probably most of these were borderline defectives. When the matrix test (Raven, 1939) was given to 45 unselected cases in the group a mean mental age of 12 years was obtained. On later admissions of this type the Herring revision of the Binet-Simon tests gave an average mental age of almost 14 years.

Previous History and Prediction

Eighty of the hundred cases admitted having traits indicating previous emotional instability. They could be divided into the following groups:

Group 1.—In this group were 36 men who had a disturbance amounting to a definite and easily recognizable psychoneurotic condition before joining the Army, so that the state which developed after traumatic experience was merely an aggravation of one already well established. Included in this group are those men who had had previous episodic illnesses—e.g., previous spells of depression or transient hysterical symptoms. It is safe to say that none of this group should have been exposed to combatant action, so great was the likelihood of breakdown in view

of their previous history, and at best only a small proportion should have been admitted to any kind of service with the Forces.

Group 2.—This group comprised 33 men with a characterization pointing to a latent psychoneurotic condition or with a degree of temperamental instability, though without gross symptoms. It contained the over-anxious and over-conscientious types, the poorly adapted socially, and a number of weak personalities who had never made much of a success in any occupation. It is more difficult to forecast the behaviour of men of this type under strain. Most of them were capable of service of some kind, and probably a fair proportion would have remained well enough in home service.

Group 3.—This consisted of 11 men whose only striking characteristic was that they had always been restless. They frequently changed their jobs, yet worked with fair efficiency so that they were seldom unemployed. They, for the most part, were good soldiers until they broke down (there were a few regular soldiers among them), but showed temperamental instability with a marked lack of doggedness.

Group 4.—This comprised 20 men whose previous history was good and whose breakdown would not have been expected. There was a definite tendency for them to fall into two sub-groups of different age levels, the first consisting of men over 35 who found the pace of events rather fast, and the second of men under 25, in whom breakdown was mostly of a milder character.

A list of some of the specific symptoms and their frequency provides an instructive approach to the kind of factor to be inquired into in any brief psychiatric examination such as might be made by medical officers as a preliminary filter for the separation of these cases.

Previous Symptoms and Traits

Anxious over being aggressive	54	Previous hysterical symptoms or fits	8
"Nervousness"	41	Domestic strife or worry	1
Frequent change of type of work	27	Nail-biting	1
Phobias	24	Frequent blushing	1
Anxiety dreams and nightmares	17	Stammering	1
Shyness	17	Stealing and persistent truancy from school	1
Solitariness	13	Tics	1
Mild depressive spells	12	Previous serious accidents	1
Anxiety attacks	11	Previous serious accidents followed by emotional disturbance	4
Avoidance of females	9		
Enuresis	8		

Because a certain degree of rapport is usually necessary to elicit a full symptom-picture in the psychoneurotic examination of all men by psychiatrists is not at present feasible because of the time it would take. Nevertheless it seems to me that a useful and practicable psychiatric selection could be made in the first place by referring to the psychiatrist those patients who admit or show general "nervousness" at initial medical examinations. More often than not the anxiety manifestations in these cases during routine medical examination would make the admission unnecessary. (From experience of many other patients in this hospital who were not exposed to combatant action a useful selection could have been made in this way. As would be expected, the previous history is even more striking in these cases.) Whenever specific symptoms were found the men could be referred to the psychiatrist for fuller investigation and opinion.

Family History.—Information about nervousness in their families was obtained from the men themselves, and is thus apt to be inaccurate. However, from a description of specific behaviour in the relatives mentioned it could usually be decided whether or not the individual was abnormal enough to be recorded as such. Fifty-three men reported the presence of emotional instability either in parents or in siblings, as follows:

Both parents nervous	8	Mother nervous	14
Father nervous	17	Siblings nervous	12

In 15 of the cases with parental abnormality there was also instability in a sibling. Doubtless family history in the

psychoneuroses is of uncertain value unless information from other sources is obtained. Moreover, its significance lies in its association with the previous history of the individual rather than in an independent contribution. The importance of abnormal early environment is illustrated by these facts. In 16 homes there was serious drunkenness or parental strife, while 6 patients acquired a step-parent in early childhood, and 3 were "only children." Nine men lost their fathers by enemy action in the last war, 6 of this group admitting no specific nervous symptoms in their previous histories. Another man was illegitimate and was brought up in trying circumstances.

Precipitating Factor and Onset of Symptoms

As is well known, early in the last war the strongly materialistic standpoint of general medicine inclined to the view that the war neuroses arose from some form of *commotio cerebri*, a view gradually abandoned under the persistent barrage of facts. With our patients it was difficult to ascertain the extent of shock or whether concussion had been present or not. Many reported amnesia for varying periods, but the comparatively easy recovery of memory made it almost certain that there had been no true concussion. Further, most of these patients with amnesia recalled clearly the particular stimulus causing the loss of memory—i.e., they showed no retrograde amnesia, as would be expected in true concussion. There was 1 case of cranial injury and only 3 cases of apparently true concussion so far as previous reports show. Seventeen men had been subjected to physical violence by blast, though few of these lost consciousness. Ten others were wounded in the body—wounds mostly of a superficial character; and in those cases in which deeper structures were involved healing was rapid. Bombing of ships, with immersion in the sea, was the traumatic experience in 7 cases. For several men the critical experience was the loss of friends severely wounded beside them, while others were especially upset by the harrowing scenes of women and children being machine-gunned and bombed.

The onset of symptoms in most cases occurred during battle, though a quarter of the patients developed marked symptoms after return to this country. For the most part these latter were men who had had mild anxiety symptoms for a period, the depression which supervened being the cause of their reporting sick. A few conversion symptoms, however, also appeared after a latent period.

The majority admitted readily that their illness began as the climax to a rising feeling of fear and strain under the process of battle. With the increase of their anxiety they often became more and more afraid of loss of control, until finally some special circumstance brought about disintegration. The fundamental factors in the breakdown were the subjective significance of the trauma plus the particular psychological make-up of the individual. Thus different traumata evoked similar states, and, conversely, the same trauma gave rise to different disturbances—e.g., a conversion hysteria or a depression. As would be expected, where the predisposition seemed less marked the traumatic experience was more severe, and vice versa, an illustration of this inverse relation being given by these figures:

Traumatic Experience	30 Cases of Bad Previous History	30 Cases of Better Previous History
Fear and strain	18	6
Blast	4	11
Wounded	2	6
Death of friends	2	2
Aerial attack on ship	4	4

Symptomatology

It has to be borne in mind that the cases described were not investigated until, on the average, several weeks after the start of the illness. Anxiety manifestations were by far the commonest complaints, the symptoms in order of frequency being:

Feelings of anxiety with trembling and jumpiness	66	Panic attacks	15
Sleeplessness	47	Suicidal:	
Headache	43	Actively	5
Unsociability	37	Passively	7
Anxiety dreams	35	Hysterical conversions:	
Depression	33	Leg	16
Irritability	30	Arm	2
Preoccupation	27	Visual	6
Amnesia for whole or part of traumatic experience	25	Auditory	3
Giddiness	23	Tics	4
Effort syndrome	21	Voice	3
Spontaneous emotional outbursts	19	Stuttering	6
		Enuresis	3

There were three main groups—the anxious, the depressed, and the hysterical. Much overlap existed, yet the dominant affective disturbance usually made it possible to place a man in one of these classes. Typically, the anxiety cases showed tremors and jumpiness, especially to noises, disturbed sleep, and anxiety dreams involving war imagery. They also had frequent headaches, restlessness, and occasional giddiness. By the time the men reached this hospital the exhaustion described by many writers in the early stages of war neuroses must have been overcome.

We have included the effort syndrome group in the anxiety neuroses, as without exception they showed anxiety symptoms at some stage. In a few cases it was interesting to watch the development of effort syndrome accompanied by a corresponding diminution in the experience of anxiety—a process which could be likened to the development of a conversion symptom. Panic attacks occurred in about a quarter of the anxiety cases, usually precipitated by a passing aeroplane, train, or motor-car. Less common in this group were gastro-intestinal disturbances. 2 patients having diarrhoea and 3 vomiting and gastric pain. The 3 with positive Wassermann reactions were found in the anxiety group, but the psychological picture of these men differed in no way from that of the other cases.

As mentioned, the groups were not clearly demarcated. Thus many of the anxiety group had conversion symptoms, and 20 of them showed a well-marked depressive trend. Depression was the dominant feature in 13 men. These cases did not show the characteristic depression of melancholia, though in 2 of them a typical psychotic depressive picture with self-reproach eventually developed. The common depression appeared to be chiefly a state of futility and a withdrawal of interest from the outside world, with a consequent irritability towards its incursions. Five of the depressed cases were suicidal. Suicidal impulses, however, were not confined to the depressives, as some of the men with anxiety states reported transient suicidal impulses, mainly of a passive character, shortly after the onset of the illness. Several of those showing depression stated that if forced to return to battle they would rather commit suicide than experience again what they had undergone. The depressed group showed to a conspicuous degree the importance of constitutional and hereditary factors. Before a review of the group as a whole was made my colleagues and I were given the impression that the depressed patients tended to be the older men, especially those with families. In fact, the age and the proportion of married men with children in this group were almost identical with those in the group as a whole. There was a previous history of pronounced emotional disturb-

ance, however, in 90% of this group, and a positive family history was reported in 70%.

Hysterical manifestations occurred for the most part in the leg (16 cases). Of 4 men with ties 3 had had the symptom in earlier years. The cases designated hysteria were those in which "conversion" of the affective disturbance to a somatic disorder was superficially complete—i.e., they exhibited the paralysed function but denied any emotional upset. Their attitude typically was: "If only my leg were right I would be quite fit."

Although all patients were sent as psychoneurotics, it was found that a few were psychotic. Two proved to be hallucinating schizophrenics, while 2 depressed cases eventually revealed a typical melancholia. A few other depressed patients became so strongly suicidal that removal to a hospital for psychotics had to be recommended despite the fact that a true melancholia was not present. Mixed reactions occasionally made classification a matter of doubt, especially in the anxious-depressed cases, and since 7 of the depressed group had a history of recurrent attacks of depression they were more accurately labelled "cyclothymic."

A consideration of the total personality would have led to a different label being given to many of the cases. The long-standing histories of maladaptation, the emotional detachment of many to the revival of traumatic experiences (even after administration of intravenous anaesthetics such as pentothal or cyclonal), and, above all, the extent to which their emotional integration depended on their proximity to wives and mothers, would have made "psychopathic personality," in particular the schizoid type, more accurately descriptive of a large proportion of the cases. Exemplifying the underlying psychopathic trend in many were frequent breaches of regulations. To anyone accustomed to the over-conscientious conduct of anxiety neurotics in peacetime, the difference in behaviour of these men was most striking even when allowance was made for the compulsive character of many of the misdemeanours.

The following list shows the distribution in the symptom groups.

Anxiety neurosis ..	42	Psychopathic personality	
Anxiety neurosis with hysterical conversions ..	20	(temperamental instability)	8
Conversion hysteria ..	14	Schizophrenia ..	2
Depression and cyclothymia	13	Traumatic diathesis after cranial injury ..	1

Intelligence, as tested in a proportion of the whole group, was of the same level in the different symptomatic groups except in the case of the conversion hysterics, whose average intelligence was about two years lower than that of the other groups.

Treatment

There is no doubt that many of the unfortunate disputes over the treatment of war neuroses have arisen from the publication of so-called "cures" without adequate follow-up data. As every psychotherapist knows, certain psychoneurotic symptoms can be removed rapidly by a wide variety of methods, but the rapidity of removal by so-called "simple" procedures would appear to be closely correlated with liability to recurrence of the same or other disturbances. For example, the men with conversion hysteria had their symptoms alleviated by persuasion, suggestion, and, in a few uncooperative or unresponsive cases, by one or two cardiazol convulsions. But when the question of returning to units arose many of these symptoms developed afresh. Few of our anxiety cases showed any improvement with such "simple" procedures, even when these were combined with sedation. (It must be mentioned again that most of our cases had already resisted "simple" treatment.) Abreaction was essential with most of the anxious

patients. Often the reluctance of the patient to revive his nightmarish experiences was overcome by very slight emotional release, which produced far better results on sleeplessness than did sedatives. Sometimes the traumatic experience was scarcely verbalized, yet when brought to the threshold of articulation sufficient affective discharge appeared to take place (e.g., through all the bodily expressions of acute anxiety) for an appreciable improvement to be felt. Intravenous anaesthetics were most useful where amnesic gaps could not be filled in unaided. Nevertheless the end-product of abreactive treatment was for the most part a highly anxious individual. Usually a diffusely anxious state became canalized into phobias of certain situations, mostly connected with the noise of aircraft or explosions, with a feeling of comparative ease between the phobic experiences. Where the residual phobic anxiety was too disturbing more radical treatment, involving deeper childhood anxieties, had usually to be undertaken. Twenty-five of the cases required treatment of this more extensive character, lasting two to three months, in order to secure enough freedom from symptoms for discharge from hospital.

The depressed group tended to recover under reassurance and sedatives, and in a few slower cases one or two convulsions led to improvement.

Psychopathology

As contrasted with suggestion and reassurance, any form of analytic treatment, however slight, gives some degree of insight into the aetiology of the illness. Obviously, on account of time requirements, no case could be treated along orthodox psycho-analytic lines, so that the psychopathological factors studied tended to be those at superficial levels.

At a conscious level the common disturbing factors were fear of death and an impotent rage against what were felt to be overwhelming odds. This rage was often excited to a paralysing degree by the slaughter of women and children or by the loss of friends. On those men whose fathers had died in the last war the fear of death probably had a more profound effect. It could also be said to involve deep levels in all the cases—as though it derived from a childhood fear of attack by fantastically powerful "bogymen." The feeling of helplessness in face of danger was made more acute by the insecurity arising from the peculiar features of mechanized warfare.

The outstanding feature of the deeper psychology appeared to be a basically insecure attitude towards the outside world. This attitude was manifested in many ways, particularly in the excessive dependence upon those figures with whom security was felt—namely, their families. It was as though these men had always unconsciously dreaded the assertion of their independence as a dangerous aggressive process. To attempt it was to incur the wrath of parents, whose vengeful attitude was a magnified image of their own feelings. Rather than risk this talionic vengeance they appeared unconsciously to adopt a role of bondage to them, so that the devotion was as much a deep compulsion as a virtue. Their dependence was made conspicuous by repeated requests to be allowed to return home, usually with the explanation that a short spell there would make a great improvement despite the fact that most of them had already had sick leave. After air raids on their home areas the compulsive nature of these wishes could sometimes be pointed out successfully—e.g., when the men admitted that at home they would be far more anxious than their relatives. In the depressed cases there seemed to be a doubt even of this security with families, the result being that these men acted as though compelled to isolate themselves. They were often unable to write

home, or if they went home they were unsociable and irritable; a few lost all sexual desire in this phase.

There can be no minimizing the importance of this separation anxiety, which in our opinion is a psychopathological factor probably not enough appreciated in general on account of its being concealed in cases undergoing psychotherapy in peacetime—that is, amidst their emotional props. Moreover, it is almost certainly one of the greatest factors governing the pronounced negative therapeutic reaction of these cases compared with the neuroses of peacetime. It was the rule to have treatment accepted gratefully, with relief of symptoms, until the threat of continuing the separation by a return to duty became a menace to the patient. Then the desire to leave the Service became explicit. It could not be said, however, that malingering entered into this attitude, which was based on the powerful dread of isolation from love and security. Interpretation of this situation usually improved the symptom-picture up to a point, but to change the underlying weakness of the dependent ego was too great a task for any short period of treatment, even in favourable cases.

In those men with recurrent anxiety dreams the infantile character of the anxiety was often perceptible. For instance, though modelled on battle scenes, the dreams might be located near their childhood homes, or the manner in which the individual was the unique object of persecution by the enemy suggested childhood nightmares in which the ogre or witch was replaced by the aeroplane. Where one outstanding incident had occurred, such as shipwreck, the dream was usually a more persistent repetition of the trauma; yet soon after abreactive treatment began, perhaps with superficial explanations, there was a tendency for infantile dreads to become more transparent.

As already mentioned, the depressed cases showed a state of resignation and withdrawal plus a sense of futility rather than a feeling of loss or sadness; and they revealed a greater incidence of predisposing signs and family instability.

The factors determining the choice of illness form too large a problem for discussion here. It might be noted, however, that in the conversion hysterics there was a lower average intelligence, while wounds and blast as traumatic experiences were slightly more common. (Because of the small numbers this difference was of uncertain significance.) A general feature of the hysterical group was a strong latent feminine trend; and, indeed, deep identification with family figures, especially parents, could be discerned in several cases throughout the series—for example, in the assumption of symptoms from which a parent at one time suffered.

Results

Before describing the results of treatment some general considerations will not be out of place. If therapy aims merely at getting the patient into approximately his state before breakdown a fair percentage of "cures" might be obtained. But with simple suggestive or sedative treatment the patient is left as prone to further breakdown as before. On the other hand, with any form of analytic treatment (including abreaction) it is assumed that some lessening of the tendency to subsequent breakdown should result. Our experience has been that the treatment of patients with a view to elucidating causal factors, even when the symptom-disturbance appeared slight, showed in the large majority of cases that the personalities were structurally so weak and unstable that return to further combatant service was quite out of the question. It is possible that the circumstances in which treatment was carried out might have had a bearing on the adoption of this view. All our patients had been far removed from

the neighbourhood of battle, with a consequent heightening of the dread of return. In the last war treatment in France, with continuity of the military atmosphere and the absence of such a retreat, perhaps enabled a larger fraction of patients to return to duty. It is far more likely, however, that the greater understanding and knowledge of the psychoneuroses to-day would not have agreed with such a course, as, indeed, actual results proved by 1918.

On account of the low percentage of cures the question arises: what is the value of psychotherapeutic units in war? The answer to this may be given by referring to analogous problems in other fields of medicine. For instance, what percentage of dyspeptics, cardiac weaknesses, or a host of other conditions are "cured"? Such patients are admitted to hospital for observation and investigation followed by a "treatment" which enables them to maintain a prescribed regime. The function of psychotherapy is in many respects similar. Certain personality weaknesses are akin to many organic conditions in that they cannot be radically altered (except perhaps by a lengthy treatment of unwarrantable cost). The patient is brought to hospital in an acute state because he has been subjected to a strain beyond the limits of his emotional integration. He needs help, if only to recover his former adaptations, and in the course of treatment the environment with which he may be expected to cope successfully may be ascertained. The enormous number of pensions for war neuroses following the last war shows that mere discharge to civil life is not sufficient. Nor, in our opinion, is treatment in hospitals enough. Men have usually to be discharged to their homes when the severity of their symptoms is so reduced that they will not further tolerate the inevitable restrictions of hospital life. Sometimes symptoms are still disturbing, and it is desirable that provision for subsequent psychotherapeutic help, say in out-patient clinics, should be made to aid these men towards successful adjustment. Such help, of course, could only be an accessory in the task of placing these cases in a useful role in society—a task essentially socio-psychological.

The average period in hospital for sufficient improvement to lead to discharge was about seven weeks. By this time, in our series, 15 men were much improved, 65 improved, and 20 little changed (the last group included transfers to other hospitals).

The eventual disposal, of course, is a separate problem from the treatment of symptoms, for previous history has to be strongly emphasized when deciding the question of return to service. For example, depressed patients mostly made a complete symptomatic recovery; but where there was a history of recurrent attacks at intervals of less than a year, or where the degree of depression had been suicidal, discharge from service was recommended. Discharge from service was also advised for anxiety cases with bad histories, for gastric cases, and for most cases of effort syndrome. Strong dependence on the family was also taken as a bad prognostic sign, since Army conditions do not permit of men being categorized so as to remain near their homes. In the hysterical group visual and massive gait disturbances were thought to warrant discharge because of the total incapacity produced by any recurrence.

Of the groups based on previous history all of Group 1 (men with previous psychoneuroses) and a large fraction of Group 2 (men with character disturbances or latent psychoneurotic conditions) were discharged. In Group 3 (men with previous temperamental instability) just over one-half were returned to service, though, according to follow-up reports, not with much success; three of these men returned to hospital within a few weeks. With most of this group there seemed to be a feeling that it was time for another change, and their consciences were satisfied

with having "done their bit." The older men in Group 4 (no previous history) were discharged; but most of the younger half returned to duty, many to full service.

External factors had also to be considered in disposal; for instance, though some men might have been regarded as fit for a lower grade of service, subsequent breakdown was likely if recategorization meant doing work which did not employ their talents in some useful way, or which, in an ambitious conscientious man, would interfere with promotion.

Of those men returned to a lower grade of service it was learned from follow-up inquiries that 4 were afterwards discharged from other hospitals. Follow-up replies were not obtained for all cases, but from those received about half the men were stated to be serving satisfactorily. Thirteen men were transferred to other hospitals: 7 because of psychosis or suicidal impulses, 3 for anti-syphilitic treatment, and another 3 for other treatments. It is probable that 10 of these were eventually discharged (the 7 with psychosis or suicidal impulses, plus 3 of the others) and that the remainder returned to duty in a lower category.

The final results, then, might be stated thus: 72 men were discharged from service, 19 returned to a lower grade of service, and 9 returned to full duty.

Summary

Observations on 100 men suffering from psychoneurosis following combatant service showed that 80 of them had had previous traits indicating emotional instability. The illness of 36 men was merely an aggravation of previous psychoneurosis, and in 33 it was associated with a definite predisposition to breakdown. Temperamental instability, revealed by frequent changes of job, was present in 11. Of the 20 men with no previous history one-half were much older than the rest of the group, and the disturbances in the younger half were mild.

Some observations are made on the possible selection of these cases and on their treatment and psychopathology.

When the liability to further breakdown was taken fully into account the recommendations for future disposal led to 72 of the group being discharged, 9 returned to full duty, and 19 returned to a lower grade of service.

[Since the above paper was written a new scheme has been developed whereby it will be possible to have psychoneurotic soldiers placed in work suited to them and, if necessary, near their homes. This highly commendable innovation will be followed with much interest.]

I wish to express gratitude to the Department of Health for Scotland for permission to refer to these cases; to Dr. C. D. Bruce, physician-superintendent of the hospital, and to my colleagues, for much helpful criticism; and to my wife for most of the work involved in tabulation.

REFERENCE

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J. V. Greenebaum, W. Felson, and M. Zeligs (*J. Pediat.*, 1941, 18, 799), who give the history of a fatal case in a female infant aged 1 year, recall that acute interstitial myocarditis is a rare form of heart disease which was first described by Fiedler in 1890. The clinical picture is one of progressive myocardial failure unassociated with the usual causes of myocardial damage. In 1929 Scott and Saphir were able to collect only 38 cases in the literature, the youngest of which was in a child aged 3 years. The diagnosis is very difficult, and according to Maslow and Lederer, writing in 1933, has never been made before death. The disease should be borne in mind in cases of prolonged tachycardia in infants and children in whom no other cause for it can be found.

FRAGARINE: AN INHIBITOR OF UTER ACTION

(Preliminary Communication*)

BY

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In certain areas of Herefordshire and Worcestershire, probably elsewhere, it is a common practice for women to use an infusion of dried raspberry leaves to allay pains of labour. The same "tea" is also employed empirically, with apparently satisfying clinical results, in some cases of dysmenorrhoea. It seemed, therefore, that an investigation into the pharmacological aspects of raspberry leaves might be interesting, and in May, 1940, with end in view I approached Mr. E. C. Bennison, chair of the Advisory Committee of the School of Pharmacy, Birmingham. Mr. Withell, head of the School of Pharmacy, kindly undertook to prepare extracts and to isolate, if possible, any active principle that might be present. Work was started in August, 1940, and when crude material was obtained the extracts were submitted to F. J. H. Burn, University Department of Pharmacology, Oxford, for pharmacological trial. In March, 1941, received from Prof. Burn the following account of observations.

"I began by making experiments in the spinal cat, in which relaxation of the uterus is readily observed. If an infusion of raspberry leaves is made in the same way as tea, and if infusion is concentrated by evaporation under reduced pressure then an injection of an amount of infusion equivalent to about 2 grammes of dried leaves produces a momentary fall in blood pressure, followed by a conspicuous rise, and simultaneously a relaxation of the uterus of the non-pregnant cat. It will be remembered that the sympathetic innervation of the uterus is inhibitor.

"This effect resembled that which is produced when a dose of nicotine is injected, which simultaneously produces a rise in blood pressure and relaxation of the uterus. The action of nicotine is known to be due to stimulation of the suprarenal gland resulting in liberation of adrenaline, and also to stimulation of sympathetic ganglia resulting in a discharge of inhibitory impulses down the hypogastric nerves. It was found that the initial fall in blood pressure played no part in the action on the uterus, because in cats anaesthetized with chloralose no initial fall of blood pressure was observed.

"In further experiments, in which the suprarenal glands were first excluded from the circulation and in which the hypogastric nerves were cut, the injection of raspberry extract produced relaxation, and, indeed, the effect observed was a small but well-maintained contraction.

"Further experiments were then done on the isolated uterus removed from the body and suspended in a bath. It was found that the extract produced a contraction of the uterus of both cat and the guinea-pig, fairly prolonged in action and much more likely to represent any effect which may be observed in patients drinking raspberry tea. It is interesting to observe that the amount of extract producing an effect in the bath on an isolated organ is about 1/100 part of the dose which is taken by a patient drinking 10 oz. of a 5% infusion of dried raspberry leaves. The dose of pituitary extract which must be added to the bath to produce a similar effect is also about 1/100 part of the human dose.

"Attempts are being made to concentrate and purify the active principle responsible for the action on the isolated uterus. I do not know at present whether this principle is the same as that which produces inhibition of the uterus in the anaesthetized

* Received for publication on August 1, 1941.

cat. If one substance is responsible for both effects its properties resemble those of the alkaloid hydrastinine, which was shown by Laidlaw in 1911 to have similar effects to those we find exerted by raspberry extract.

"It remains to add that raspberry extract has no action on the isolated cat heart."

On June 14, 1941, Burn and Withell (1941) brought before the Physiological Society of Great Britain, at a meeting held in Birmingham, a more detailed account of the work so far accomplished. On that date also the first clinical observation was made in my department at the University of Birmingham.

To obtain a record of the clinical effect of "fragarine"—the name we propose for the active principle in question—the intra-uterine-bag method described by Bourne and Burn (1927) and modified by Chassar Moir was employed. It is unnecessary to describe in detail the earlier experiments.

diminish their frequency and strength and to eliminate secondary contractions. This is indicated in the lower tracing in Fig. 2.

Case 3.—An 8-para. Fifth day of puerperium. Uterus anteverted and fundus extended two inches above the symphysis pubis. The cervical canal admitted two fingers. At 3.15 p.m. the intra-uterine bag was adjusted. The blood pressure was 100/62. At 3.30 p.m. 10 units of pituitrin were given. At 3.50 p.m. the blood pressure registered 112/58, and 20 grains of extract (49a) were administered by mouth. At 4.10 p.m. the systolic blood pressure showed a slight fall to 106. A tracing of uterine contractions similar to that shown in Fig. 2 was obtained.

Discussion

These experiments, *inter alia*, seem to confirm in the case of the human puerperal uterus the observations made by Burn and Withell on the uterus of the non-pregnant cat. The main effect is one of relaxation of the uterine

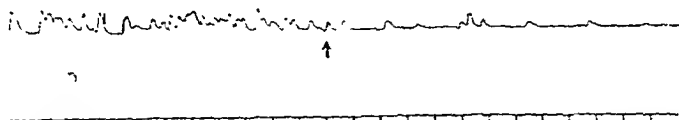


FIG. 1.—Showing the inhibitor effect of the administration of 40 grains of crude extract of dried raspberry leaves containing fragarine upon the spontaneous contractions of the human uterus on the fifth day of the puerperium. The arrow on the tracing marks administration of the extract. The divisions of the base line show intervals of one minute.

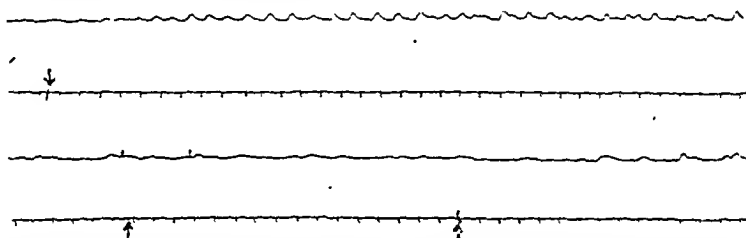


FIG. 2.—Uterine contractions after pituitrin are shown in the first tracing. The poor response of the uterus to pituitrin given after fragarine is shown in the second tracing. The arrow on the upper tracing marks administration of pituitrin 5 units. The first arrow on the lower tracing marks administration of raspberry-leaf tea 20 oz. 5%; and the second arrow, pituitrin 5 units. Divisions of the base lines show intervals of one minute.

but the following records provide in our opinion adequate clinical evidence of the inhibitory action of fragarine upon the human uterus.

Case Reports

Case 1.—A 1-para. Fifth day of puerperium. The uterus was anteverted and the fundus extended two inches above the symphysis pubis. The cervical canal admitted two fingers, and the intra-uterine bag was introduced without difficulty at 2.50 p.m. Spontaneous contractions of the uterus were recorded as shown in Fig. 1. The blood pressure registered 110/58 mm. At 3.15 p.m. 40 grains of raspberry extract (Ext. 49a) were administered by mouth. At 3.45 p.m. the blood pressure showed a reading of 106/58. The effect of fragarine upon the uterine contractions was to inhibit them. At first the contractions became less frequent, and finally they ceased altogether (see Fig. 1). No toxic effects of the extract were evident.

The effect of fragarine upon uterine contractions initiated by the administration of pituitary extract is shown in Case 2.

Case 2.—A 7-para. Eighth day of puerperium. Uterus involuted to size of twelve weeks' gestation and retroverted. The cervix admitted one finger, and the intra-uterine bag was inserted at 5.30 p.m. The blood pressure registered 120/70. Five units of pituitrin were administered at 5.55 p.m. At 5.45 p.m. the blood pressure was 126/72, and 20 grains of extract (49a) were administered. At 6 p.m. the blood pressure registered 112/70, and a second dose of pituitrin (5 units) was given. The effect of fragarine upon the uterine contractions was to

muscle. Contractions are diminished in force and frequency, secondary contractions are eliminated, and such contractions as occur are evenly spaced. The effect of fragarine upon the blood pressure is less pronounced in the human species in such concentrations and doses as have been applied. It is true that a very slight fall in the systolic pressure is noticeable, but there is no subsequent "conspicuous rise" as noted by Burn in the spinal cat.

It is obvious that further work remains to be done both from the pharmacological and from the clinical aspect, but apparently in fragarine we have available an active principle that may have a useful clinical application in the treatment of irregular routine action during labour and menstruation. In the absence, as yet, of any more elegant preparation, crude raspberry-leaf tea is being used in one of the Worcestershire maternity hospitals, and the nursing staff report favourably upon its effect in "making things easier."

In concluding this preliminary report of work still in progress my thanks are due not only to Mr. Bannison, Mr. Withell, and Prof. Burn for their active co-operation, but also to Prof. Gilding of the Department of Physiology, University of Birmingham, Prof. Chassar Moir, Oxford, and my registrar, Miss Terry, for valuable help in completing the clinical investigations.

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SOME CONTRIBUTIONS TO WAR SURGERY FROM THE U.S.S.R.*

BY

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War surgery is the continuation of the surgery of peace under somewhat different conditions. War demands adaptations, modifications, and development of technique and organization. It stresses the importance of some fields of surgery at the expense of others. It should be possible, however, to get some idea of the capacity of the surgical services of a State to react to war conditions from a study of their functioning in times of peace. I shall therefore introduce a description of the work of certain Soviet institutions, the consideration of which should lead us to expect from the Soviet Union a high standard of war surgery. At the same time it is important to consider developments in Soviet surgery in their relation to progress elsewhere, to the general evolution of surgical knowledge and technique. Our past ignorance must not allow us to regard Soviet surgery as something peculiar. Up to a point methods of research are similar and work advances along orthodox channels. We have to see the similarities as well as the differences.

As a start, then, I shall refer briefly to the past. It is impossible to assess the importance of what is happening to-day unless we can achieve some sense of historical perspective. Nowhere is this fact so well recognized as in the Soviet Union. The new Soviet State has been continually alive to the need to preserve the best from the past. Great attention is paid to the work of early pioneers and outstanding individuals in the history of science.

Historical

In this connexion one man stands out in Russian history—Nikolai Ivanovich Pirogoff (1810-81). He is regarded as the founder of Russian surgery. His chief individual contributions were concerned with wound infections in hospitals, ether anaesthesia, and the details of the organization of surgical aid for the wounded in war. It is claimed that he was the first to introduce the plaster wound dressing into military field practice, in the Crimean War in 1854 (Shmarevich). He recommended plaster as the best dressing for amputation stumps in 1855 and advocated the windowless plaster cast for open gunshot wounds of the legs. Pirogoff was a great man, and in the French literature has been compared to Ambroise Paré himself. No insignificant monument to him remains in the Military Academy of Medicine in Leningrad, which he developed into the finest school in the country. The school has continued, and only recently has produced important studies on the prevention and treatment of painful amputation stumps and scars by the early injection of novocain (Astvatsatourov, 1938).

Worthy upholder of the best traditions of the past and a link between the past and the future is Nikolai Nilovich Burdenko (see reference: VOKS), head of the Neuro-surgical Institute, member of the Academy of Sciences, awarded the Order of Lenin for outstanding services in the field of surgery, active as President of the Medical Council of the People's Commissariat for Health, Chairman of the All-Union Association of Surgeons, and Deputy to the Supreme Soviet of the Union of Soviet Socialist Republics. Here is a man who obtained his initial experience and training before the revolution but has since been able to develop his work in all spheres of surgery. Recently his

attention has been concentrated upon the establishment of a Russian school of neurosurgery. But his life's work has ranged over many fields in anatomy, physiology, experimental surgery, pathology, and general surgery. He is responsible for original work relating to the surgery of the lungs, gastric ulcer and carcinoma, shock, etc., as well as in the more limited field of neurosurgery. In addition to all this he is one of the outstanding experts on military hygiene and surgery, and his book on military field surgery is regarded as a classic.

Soviet Institutions

Typical of the best in the organization of Soviet medicine and directly relevant to a study of Soviet preparedness for war surgery is the Central Emergency Hospital in Moscow (the Sklifasofsky Institute) (1937) (Sigerist, 1937; Band 1937-8). The Moscow district is served by five emergency motor ambulance stations, one of which is placed centrally at the institute, where there is a special telephone exchange. Urgent calls are received here, and the central station is responsible for sending out ambulances to accidents and cases of sudden illness.

There are two types of ambulance service. The first is for emergencies such as street accidents, factory disaster and sudden collapse, and for genuine surgical emergencies when the call comes from a doctor prepared to make definite diagnosis. The ambulance is sent immediately, and the medical and surgical staff are informed so that full preparation can be made. If a delay of more than two minutes occurs before the ambulance leaves the hospital an inquiry is held. The second type of service is used when a call is put through by relatives or strangers—if the call sounds convincing but is clearly not so urgent. Such cases have to wait their turn for a car, which will probably be sent within two hours. When the case is not considered to be the doctor on telephone duty to come under this category the station recommends that a local doctor be called in, or gives the telephone numbers of local doctors and of the nearest hospital. It is important to note that no doctor employed on the staff of the institute who has been qualified less than ten years. Long years of practice have made possible to elaborate a series of leading questions and other means of eliminating serious error from this system of telephone sorting. In 1936 this ambulance service made 59,156 trips. The number of beds available is about 70 of which more than half are surgical. The medical staff numbers 100, with another 70 available for shifts on first aid duty. The concentration of cases allows the surgical staff to amass a wide experience. Adequate records enable this material to be available for study and assessment of the results of different techniques (Grey Turner, 1938).

The most remarkable surgical work of the institute, apart from the original work on stored cadaver blood, is that of Prof. Judin. During a nine-year period 1,400 perforating peptic ulcer cases came under the care of his unit. These, 75% were treated by partial gastrectomy. In 1933 the mortality figure for gastric resection in 331 perforating ulcers was 7.8%. Prof. Judin is also an advocate of early resection in bleeding ulcers, claiming a total mortality 4.4% for all gastric resections performed in the institute. The main factor responsible for these results is the organization which makes early operation possible in a high proportion of such cases. Mr. David Band (1937-8), in an account of his visit to the institute, expresses his surprise and interest that under a State medical service "it was possible for emergency surgical specialist to extend his sphere of work to include not only the whole field of gastric surgery but in addition the many-staged plastic operations necessary for the rehabilitation of cases of oesophageal stricture subjected by him to emergency gastrostomy." We can only hope

* A paper delivered at a meeting held on July 25, 1941, at the Medical Society of London under the auspices of the Society for Cultural Relations with the Soviet Union.

that at this present time the Moscow Casualty Services have been developed along similarly efficient and elastic lines.

A second institute, of a rather different type, illustrates the planned clinical research into the treatment of injuries. The Leningrad Traumatological Institute (Dott, 1937-S), with only 80 beds, is the centre for this research throughout the Union. It has a statistical department which assembles and studies figures for injuries incurred in various industries—in agriculture, transport, etc. The results are passed on to the Commissariat for Health, which is able to proceed with energetic steps for the removal of remediable causes. Key clinical problems—e.g., some particular type of fracture—are selected for special study, and cases of this type are concentrated at this institute. When completed the results are published in pamphlet form and sent out to all the hospitals in the Union. A system of orthopaedic clinics linked with the main hospital extends its sphere of influence and helps to provide clinical material. Postgraduate teaching is an important feature of the institute.

Here, then, we have two examples of specially planned institutions, working as an integral part of the general medical organization. I think we can assume that the adaptation of such hospitals and teams of experts to war surgery should not be difficult.

I propose now to deal with examples of recent Soviet contributions to war surgery which illustrate among other things the planning of research and the provision of opportunities for full clinical trial of the results of such research.

Local Anaesthesia

The struggle to perfect the technique of local anaesthesia has stimulated the development of surgery since the days of Halsted's original work. The use of local anaesthesia for major surgery demands a high degree of surgical skill, with particular need for gentleness and delicacy, such as characterizes the modern school of neurosurgery founded by Harvey Cushing, himself a product of the Halsted school. In recent years the range of possible use of local anaesthesia has been extended. Finster developed its use in gastric surgery, and Ogilvie has popularized his methods in this country. Böhler demonstrated its value in closed and open fractures. Many surgeons have increasingly extended its application, particularly as proposed by Crile in association with some form of general anaesthesia sufficient to produce unconsciousness.

The Soviet contribution in this field is threefold: (1) a new technique; (2) the new application of a new drug; and (3) the demonstration of the practicability of using local anaesthesia in all types of cases, even under war conditions.

The new technique was originated by Vishnevsky (1938). Injecting large quantities of a weak solution (equal parts of 0.25% novocain and 1/4,000 percaïne), he takes advantage of the normal anatomical fascial pockets surrounding muscles, viscera, etc., to get wide diffusion of the drug and rapid contact anaesthetization. Each aponeurotic layer is left intact until the underlying fascial compartment has been distended and anaesthetized. The fascial and aponeurotic anatomy of each region needs to be understood so that wide anaesthesia may result from a single continuous spreading infiltration from a chosen point. This technique of spreading infiltration can, it is claimed, be used everywhere except for the head and the extremities of the limbs. Vishnevsky describes in detail its application to the thyroid, to breast cancer and ventral hernia, abdominal cavity, biliary tract, renal fossa, and limbs. In the case of the fingers and toes a variation is used. Isotonic solutions are employed, and the soft tissues at the base of the digits are distended at first so that the risk of gangrene from circulatory interference is avoided. An important effect claimed is the minimization of post-operative shock. Already in

1938 Vishnevsky proposed that this technique should be tried out under war conditions. He quotes Crile's figures for major amputations during the 1914-18 war as illustrating the great reduction in mortality following the introduction of local anaesthesia. These conclusions are fully substantiated by the reports of Henry (1940) and Abdelsamie (1936) of their experience in the treatment of major limb crushes at Cairo. Vishnevsky goes further. He claims that the use of local anaesthesia by his technique is perfectly safe in the presence of local sepsis.

So much for the method. Stimulated by this, Synovich (1940) has carried out a series of clinical experiments using a Soviet preparation of percaïne (sovkaïn) in increasingly dilute solution for local infiltration anaesthesia. He claims that it is fully effective at a strength of 1/10,000. It is suggested that at this dilution it is safe to use up to 25,000 c.cm. Actually no more than 1,000 c.cm. was used for one operation. Complete skin anaesthesia is attained within one to two minutes and is maintained for four to six hours. Deep infiltration produces immediate anaesthesia. No toxic reactions were reported.

The next stage is represented by the reports of Novikov (1940) from Moscow. He discusses 3,180 emergency operations, 98% of which were performed under local anaesthesia. Ages varied from 3 to 83; 37.5% were traumatic cases. Sixty-five cases of penetrating wounds of the abdominal cavity were treated, with a mortality of 36.8%. This compares favourably with a mortality of 55% for similar cases during the Lake Hassan incident. One hundred and fifty-four major amputations were performed under local anaesthesia, with a mortality of 14.7%, as compared with Akbutin's figure of 18.7% at Lake Hassan and 22.8% given by Belkin as the general mortality for all amputations of the lower limb in the Ukraine. The technique used was that of Vishnevsky. The trial of this technique under war conditions was carried out by Pschenichnikov (1940) and a team of surgeons during the Finnish campaign. A large series of unselected casualties was operated upon under local anaesthesia side by side with other surgeons working with general anaesthesia in two-table theatres. They were able not only to demonstrate the possibility of using local anaesthesia under these conditions but to refute the objection that this would mean an unnecessary lengthening of the operating time. They showed that such delay can be avoided even in cases with multiple injuries. Their cases were fit for evacuation much earlier than the others. The decrease in post-operative shock is stressed and the preliminary anaesthetization is regarded as part of the pre-operative treatment of shock. Thus many of the theoretical objections to the use of local anaesthesia in war surgery have been removed.

Electrical Trauma

The most comprehensive recent survey of this subject is contained in a lecture given by Kaplan (1940) of the Moscow Town Health Department for the Study of Electro-trauma. Modern military technical equipment makes wide use of electric power. Soldiers are exposed to danger of injury from electric current from their own power stations as well as from electrified wire entanglements and other new electrical means of attack and defence. Pathologically and clinically it is essential to realize that the external evidence of trauma is only a small part of the picture. All the tissues of the body, particularly the blood vessels and the nervous system, are exposed to a severe disorganizing influence. An important practical effect of the deep-seated nature of the disturbance is the long duration of treatment and the need for evacuation of any but the most trivial cases. Within two or three weeks the area of apparent damage

may have extended to twice or three times the original size. A surrounding zone which at first seemed likely to survive becomes necrotic. The base of a blister breaks down and becomes a deep ulcer. Adjacent blood vessels are involved in this necrosis, and severe secondary haemorrhages occur between the third and fourth weeks. Bone involvement results in slowly separating sequestration. Systemic reactions are varied and complex. Death may be instantaneous or may follow a short period of respiratory difficulty, haemorrhage, and cerebral disturbance. A condition of so-called "pseudo-death" is described, with cessation of heart-beat, respiration, and all reflex and nervous activity, without cellular death. Rapid active resuscitation may result in recovery. The onset of the condition may follow a latent period of a few hours.

The scope of first-aid treatment obviously depends upon local conditions. Where the shock is received during military operations it is clearly impossible to give prolonged treatment on the spot. The urgent need is for speedy evacuation. For this purpose a tank with a trap-door in the bottom has been devised. This moves over the casualty so that the man lies between the caterpillars, and can be lifted through on to a bed, where treatment is begun. Immediate treatment usually involves artificial respiration. Stimulant drugs may be given intravenously. Resistance to chilling is low. Cyanosis may require venesection. Severe circulatory collapse may respond to transfusion. Should there be no sign of life the patient must not be given up as dead until visible signs of death appear or stiffness sets in. Movement should be avoided if conceivably possible. A possible addition to routine restorative measures is the electrical stimulation of the phrenic nerve by application of an electrode over the lower part of the sterno-mastoid.

Treatment of external injuries is similar to that for thermal burns. Even the smallest marks, however, require full cleansing and application of coagulants, since these may become macerated and septic as a result of the excessive sweating. Primary amputation is generally inadvisable. It is difficult to define the limits of necrosis. Blood vessels are rigid, bleed violently, and tear across when forceps or ligatures are applied. Stumps become septic and the infection spreads rapidly.

Chest Wounds

[An account of recent British work in this field is omitted for lack of space. The reader is referred to the discussions (1940a, 1940b) held at the Royal Society of Medicine and to the *Bulletin of War Medicine*, 1941, No. 5.]

The available Soviet material in general confirms recent British experience but reveals a number of interesting new aspects. Papers by Linberg (1940) and Matseyev (1940) are based on a series of 972 casualties from the Finnish front treated at a special military hospital for chest wounds between November, 1939, and May, 1940. These included 263 with open pneumothorax and 96 with closed haemothorax. In 97 cases these chest wounds were complicated by severe injuries elsewhere. The total fatalities were 29 (3%). Of these, 12 resulted from severe combined thoracic and other injuries, including 5 cases of gas gangrene. The remaining 17 were from the effects of the chest wounds alone. Comparison with other figures is difficult on account of the very different stages at which these patients reach hospital. Ranson, an American surgeon working at Shanghai, gives mortality figures for chest wounds in hospitals for some of the various wars of the past century:

English Army in the Crimean War	79.2%
American Army in the Civil War	62.6%
German Army in the Franco-Prussian War ..	24.5%
English Army in the Boer War	14.0%
English Army in the 1914-18 War	27.5%
Chinese hospital at Shanghai, 1937	14.8%

The low figure for the Boer War is attributed to the climate and to the high proportion of bullet wounds. The last figure is explained by the fact that the cases with severe wounds did not reach hospital at all. Burdenko carried out a differential analysis of the fatalities from chest wounds on all fronts during the 1914-18 war. He gives a general mortality of 60 to 80%, reduced at primary hospitals to 30 to 40% and at base hospitals to 15 to 35%. In the light of such figures the present series merits careful study. Of these cases 2.5% reached hospital on the first day, 53% between the second and fourth days, 24% between the fifth and seventh days, and 20.5% between the eighth and twentieth days. Wounds of the thoracic wall and uncomplicated bullet wounds of the thoracic cavity gave little trouble and require no special comment.

Bullet and shell wounds with open pneumothorax constituted the most serious group. The 17 deaths from chest wounds alone came under this heading, comprising 6% of 263 cases. Of these, 246 (94%) had been sutured and only 17 extensive wounds left open. In the majority the muscle only had been sutured. Where the skin had been closed, spreading infection and surgical emphysema had developed. No previous operation had been carried out on the lung or pleural cavity. The chief problem in these cases of wide-open pneumothorax is that of keeping the wound closed and avoiding mediastinal flutter. Aspiration of all collections of blood prevents wound disruption from pressure. The lung is drawn out into contact with the chest wall and adhesions can occur. Where this happens residual accumulations can be dealt with as indicated. Where adhesions fail to form the wound is sealed by overlapping watertight strapping. In this group a number of operations were necessary for the removal of foreign bodies. Attempted suture of the lung when infection was established was found to be unsatisfactory.

Stimulated by this experience, Verhovich and Ignatovskaya (1940) carried out an extensive series of animal experiments. Their conclusions may be summarized as follows: (1) Either the thoracoscope or the cystoscope may be used with advantage in the exploration of open wounds of the thoracic cavity. (2) Increasing haemorrhage should be dealt with by lung suture and pneumopexy. (3) Where this is impracticable valvular suction drainage should be substituted. (4) Suture of the wound around a drainage tube with a 5-mm. orifice did not prevent the onset of severe symptoms. (5) Substitution of a tube with a 2-mm. orifice brought about improvement and allowed further exploration within twenty-four hours. (6) Mattress sutures produce necrosis of the lung tissue and should be avoided. On the basis of this work and of the general experience of the hospital, instructions were issued to those working in the advanced posts to attempt more radical primary intervention wherever possible in open pneumothorax.

The other important group, discussed particularly by Matseyev (1940), consists of the cases of closed haemothorax. Until recently these had been treated conservatively, but existing evidence suggests that early aspiration is the treatment of choice. Complete evacuation of the blood by repeated aspirations under radiological control is begun on the third or fourth day. This is combined with irrigation with mild antiseptic solutions—chloramine 1/500 or rivanol, 50 to 100 c.cm. This technique is substituted for air replacement on the basis of clinical and experimental evidence. Of the 96 cases only 2 became infected, and there were no deaths. Much of the general success obtained in this series is attributed to the fact that 65% of the cases were transported from the front by air. The condition of these, including many of the most severely wounded, was far and away better than that of those brought back by road. Other factors besides that of efficiency of organiza-

tion suggested as explanations of the excellent results were: (1) the magnificent state of health of the soldiers; (2) the predominance of bullet wounds; (3) correct treatment.

Another contribution to the surgery of chest wounds consists of a report to a conference of evacuation hospitals by Achutin (1940). It covers all chest wounds in the war zone during the Finnish campaign. No adequate justice can be done to this contribution in the space available, and only a few of the more important conclusions will be mentioned. With reference to the recommendations of Prof. Linberg, referred to above, Achutin admits that up to the present the problem of major surgical intervention in the war zone for open wounds of the chest has not been solved. Satisfactory results have been obtained only when cases have been seen within one to two hours and when the lung could be seized through the wound, sutured, and fixed to the parietes. Personal observations have led him tentatively to advocate the trial of vago-sympathetic novocain block as additional treatment for shock. The report reiterates the importance of air transport and of the different attitude which can be adopted towards these cases where such transport is available. This was especially important during the campaign in the far north, where the intense cold produced a high incidence of pneumonia, which developed about the fourth or fifth day. Evacuation after recovery from the initial shock and before the time of onset of these chest complications would appear to have been almost ideal.

Congratulating Prof. Linberg and the special unit on their magnificent work, Achutin points out that the total mortality is still high. As many as 40% of chest-wound cases do not leave the battlefield, while 20% of these patients die before the base hospital is reached. The solution of this problem requires the full application of all the available organizational, experimental, and clinical experience.

Conclusion

The march of history has done much to sweep away the veil of distrust which has separated the people of Britain from the people of the Soviet Union. I hope that this meeting will serve three purposes: first, to begin the removal of that prejudice and ignorance which has interfered with our understanding of the development of Soviet medicine and surgery; secondly, to help to get an understanding of some of the things which the Soviet people are fighting to defend; thirdly, to obtain some ideas for the improvement and reorganization of our work here.

Whatever success we may have to-day can only be a beginning. British medicine has much to contribute to the exigencies of this common struggle. We have a great deal to give, but we have plenty to learn.

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* These and other Soviet publications are available in the library of the Society for Cultural Relations with the Soviet Union, 95, Gower Street, W.C.1.

THE REDUCTION OF HOSPITAL INFECTION OF WOUNDS

A CONTROLLED EXPERIMENT

BY

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The demonstration by Miles *et al.* (1940) of a high incidence of hospital infection of wounds, and the recommendations formulated by them to reduce this incidence, were based in part upon investigations made on patients treated in this unit. It was thereupon decided to attempt the development of a dressing technique which would eliminate hospital infection as completely as possible.

Conditions of Experiment

The value of modifications in dressing technique was judged by the reduction of hospital infection observed in a four-months period from February 1 to May 31, 1941, as compared with a previous four-months period from September 1 to December 31, 1940. The intervening period of January, 1941, was excluded, since during this month the new dressing technique was being evolved and perfected.

In the two periods the underlying conditions were essentially the same. The clinical material banded was similar, consisting (1) of cases of head injury, mainly air-raid casualties whose wounds were infected at the time of admission; and (2) of neurosurgically clean cases, mainly intracranial tumours. The employment of chemotherapy was on the same basis during the two periods, and, finally, the personnel concerned with the dressing of wounds remained relatively unchanged throughout the entire eight months of the experiment.

The Improved Dressing Technique

The dressing technique here described was designed on the assumption that the main cause of hospital infection demonstrated in the first four-months period was the carriage of infected discharge from one patient's wounds to another's by members of the medical or nursing staff, settlement from the air and droplet infection being less important. Our aim was to combat the spread of infection in as simple a manner as possible—contact infection by the dressing technique itself, dust-borne infection by Rules 1, 2, and 6 in the instructions below, and droplet infection by Rules 3, 4, 5, and 9.

It was found impossible to reduce the dressing team to fewer than four persons unless dirty-dressing bins with foot-action lids could be procured. With this addition to the equipment the team could be reduced to a minimum of three. The first member of the team is the dresser, who begins his work when the bandage and outer dressings have been removed from the wound, finishing by applying the new bandage assisted by the "dirty nurse," after which he washes his hands and forearms and dries them on an ordinary towel. The "clean nurse" looks after the trolley and its contents only, touching nothing throughout the entire dressing round, and washing her hands and forearms only at the beginning and end of the series of dressings. The "dirty nurse"—an indispensable member of the team—removes the outer dressings and bandage and then stands by until the end of the dressing, when she assists in the application of the final bandage, afterwards washing her

hands and forearms. The bin porter carries two bins (one for washable soiled dressings and the other for dressings which must be destroyed) from one bed to the next, removing the lids and replacing them as required. He washes his hands and forearms at the beginning and end only of the round of dressings.

The dresser and "dirty nurse" therefore wash between each case, while the "clean nurse" and bin porter wash at the beginning and end of the dressing round, remaining "clean" and "dirty" respectively throughout. None of the team "scrubs up" in the surgical sense. The nurses wear ordinary uniform; the dresser works in shirt-sleeves.

Instructions Issued to Ward Personnel

GENERAL RULES FOR DRESSING

1. All bed-making, sweeping, and other activities likely to raise dust to finish half an hour before the start of dressings.
2. All windows allowing draughts, and the entrance doors to the wards, to be closed at the start of the dressing and kept closed.
3. All persons attending the dressing or having occasion to be near the dressing trolley or sterilizer must wear masks, consisting of two layers of gauze interleaved with impervious material (e.g., paper, cellulose acetate).
4. All persons such as ward maids, porters, and patients' visitors to leave the ward.
5. Any person entering the ward unavoidably must take a mask from the supply ready at the door of the ward and adjust it correctly.
6. No more than one dressing to be uncovered at the same time.
7. For patients with more than one dressing the full procedure must be observed for each separate dressing.
8. The door of the service room containing the washing sinks must be fixed open so that there is never the need to touch the door-handles.
9. No person having an infected lesion of the hand or with a sneezing cold to participate in the dressings.

TECHNIQUE OF DRESSING

1. Four persons only to take part in any one dressing: (a) the dresser; (b) the "clean nurse"; (c) the "dirty nurse"; (d) the bin porter.
2. The "dirty nurse" removes the safety pins and places them in a dish for sterilizing.
3. The "dirty nurse" removes all the outer dressings unaided and places them in covered enamelled bins, one for soiled dressings and the other for apparently clean dressings. The lids of these bins will be removed and replaced by the bin porter.
4. The "dirty nurse" then raises the patient's head.
5. The dresser places a towel beneath the head.
6. The "clean nurse" passes all dressings to the dresser with two pairs of sterile forceps.
7. The dresser carries out the dressing, using another two pairs of sterile forceps.
8. No contact between the two sets of forceps is permitted.
9. The dresser then places the dirty forceps in the sterile kidney bowl offered by the "clean nurse."
10. The dresser applies the final bandage, assisted by the "dirty nurse."
11. The "dirty nurse" takes the dresser's forceps in the kidney bowl, washes them with a wire brush in lysol, and places both instruments and bowl in the sterilizer, the lid of which is held open by the "clean nurse."
12. The "dirty nurse" washes her hands and forearms.
13. The dresser washes his hands and forearms.
14. The instruments are removed from the sterilizer by the "clean nurse," who places them on the trolley for the next case.
15. The bins for the dirty dressings are carried from one bed to the next by the bin porter.
16. At the end of the round of dressings the bin porter washes his hands for the only time.

Note.—None of the team "scrubs up" in the surgical sense of the term; each member starts work with hands and forearms washed with soap and hot water and dried on a clean towel. The "dirty nurse" washes her hands and forearms after each dressing, as does the dresser. The "clean nurse" after the initial wash does not wash throughout the periods of the dressings.

NURSING RULES

1. Washing of Patients.—A personal bath blanket to be kept in each patient's locker. Baths to be disinfected with lysol, and washing-bowls to be steeped for ten minutes in 5% lysol each time they have been used.
2. Bed-making.—All bed-clothes, pillows, and mackintosh sheets to be placed on chair at foot of bed and never transferred from one bed to another.

3. Soiled Linen, etc.—Bed-linen to be laundered in the usual manner. Face-flannels to be boiled. Blankets and pillows to be "stoved." Mackintosh sheets, combs, and brushes to be disinfected with 5% carbolic, and bedsteads and lockers with 5% lysol. Used linen for laundering to be placed immediately in a bin kept for that purpose. Linen soiled by discharges, pus, etc., to be soaked in 5% lysol before laundering.

4. Infected Patients.—Nurses must so far as is possible prevent infected patients from passing articles (books, newspapers, etc.) to other patients.

Sources of Infection

The hospital infection rate was determined with regard to *Streptococcus pyogenes*. The similarity of the sources of infection in the two periods is evident from the following surveys of the likely reservoirs of *Strep. pyogenes* in the unit—namely, air, throats, and wounds. All cultures from swabs and air exposures were made in blood-agar plates, and each colonial form of any haemolytic streptococci that appeared was sampled for grouping by Lancefield's method. Only those falling into Lancefield's Group A were regarded as potentially pathogenic *Strep. pyogenes*.

Air-borne Infection.—No systematic observations of air-borne streptococci were made in the first period; a few plates exposed during dressing-time yielded an occasional *Strep. pyogenes* colony. In the second period the deposition of *Strep. pyogenes* particles was measured, twenty-two times, from 7 a.m. to 10 a.m., by exposing plates in both male and female wards. The bacterial counts were similar to those previously described (Brown and Allison, 1937; Miles *et al.*, 1940), reaching peaks during bed-making and sweeping. During these busy periods in the female ward an average of 7, and in the male ward an average of 9.6, *Strep. pyogenes* particles were deposited per hour on an area of one square foot. A few series of counts made throughout the day showed that during the quiet period (Rule 1) there was a reduction of 90% from an average number of about 8,000 bacterial particles deposited per hour on a square foot in the peak period, and it may be assumed that at dressing-time air-borne *Strep. pyogenes*, though correspondingly reduced, was nevertheless a source of potential infection.

Throats.—Throat swabs of patients, doctors, nurses, ward maids, and all other frequenters of the department were taken at intervals of not more than a fortnight throughout the two periods of investigation. The number of persons carrying *Strep. pyogenes* in the throat in each of the three groups—staff, female patients, and male patients—at any one period varied between 0 and 3, though periods when no throat carriers were found were infrequent. At no time was the community as a whole free from throat carriers. In the two wards the incidence was similar; reckoned on the basis of fortnightly sampling, 12% of all persons in the unit during the first period were carriers at one time or another, and 10.1% in the second period.

Wounds.—Wound swabs were taken from all air-raid casualties at the first dressing after admission, and subsequently as opportunity arose, usually twice weekly. First swabs were cultivated both aerobically and anaerobically; subsequent swabs, if the first swab had yielded no obligate anaerobe, were tested aerobically only. From "clean" cases swabs were taken if sepsis developed.

The reservoir of *Strep. pyogenes* contributed by infected wounds existed throughout almost the entire eight-months period. For two spells of twenty days and fifteen days in the second period there was in the male ward no patient with a wound discharging these organisms; during these spells, nevertheless, *Strep. pyogenes* was present in the air and in the throats of several of the community as a potential source of hospital infection. In the female ward there was a constant reservoir in one or more wounds. The

wounds discharging *Strep. pyogenes* comprised those which became infected in the ward (see table) and those which were already infected with this organism on admission. Of the latter there were in all in the first period 3 (2 in the

Table showing Incidence of Hospital Infection of Head Wounds with *Strep. pyogenes* in Two Four-month Periods, before and after Introduction of Improved Dressing Technique

	1st Period	2nd Period
Air-raid casualty wounds:		
Number uninfected on admission...	32	46
Number of hospital infections	10	1
Percentage incidence of hospital infection	31.3	2.2
"Clean" operation wounds:		
Number operated upon...	46	49
Number of hospital infections	4	0
Percentage incidence of hospital infection	8.7	0.0

male ward and 1 in the female ward), and in the second period 11 (5 in the male ward, 6 in the female ward): therefore, including the patients infected on admission, there were altogether 15 streptococcal wounds in the first period and 15 in the second period.

Results and Discussion

The table records the incidence of hospital infection by *Strep. pyogenes* in the two periods. Hospital infection by haemolytic streptococci other than Lancefield A occurred during the first period, but has not been included in the analysis. It appears that a total infection rate of 15.4% has been reduced to 1.1% by the enforcement of the improved dressing technique and ward organization described above. A number of air-raid casualties admitted in the second period had in addition to their head injuries wounds of the trunk and limbs. Thirteen of these wounds were dressed by the improved technique, and in this group there was no streptococcal hospital infection. Six limb wounds, however, because of their minor character, were dressed without these improved precautions—a relaxation of procedure which proved to be indefensible, since three of them became infected with *Strep. pyogenes*. The result indicates clearly that a large risk of hospital infection was present in the unit during the second period.

The improved technique was devised for neurosurgical work mainly on head wounds. In surgical wards where wounds are larger in area or are exposed for longer periods, and where dressing involves more disturbance of bed-clothes (Thomas and van den Ende, 1941), air-borne bacteria may constitute a greater risk; and in wards where, for example, bathing and irrigation form part of the wound treatment here may be additional channels of infection important enough to warrant revision of the existing therapeutic methods. Nevertheless, it is possible that a greater relative reduction in incidence of hospital infection than that which we have recorded might be achieved in other surgical wards by the adoption of the improved dressing technique only. The technique originally used in the unit was considered to be bacteriologically safer than methods normally employed in general surgical wards, an opinion supported by the fact that the incidence of hospital infection in the preliminary observation period was lower than that obtained under war conditions elsewhere in the same hospital and in other hospitals.

It proved possible to maintain the improved dressing technique under the difficult conditions following the admission of a large number of air-raid casualties in a short period of time. At all times, and especially in times of stress, the intelligent co-operation of the nursing staff is essential if satisfactory results are to be obtained. We cannot praise too highly the work of Miss Mackinder, the sister in charge of the unit, and her nursing staff, without

whose help the improved technique could not have been put into effective use.

We have presented no data upon the ill effects of hospital infection, since they will form the subject of another paper; it may be said here, however, that the hospital infection produced serious complications in a small number of patients and a marked and significant lengthening of the average time of stay in hospital in the group of patients so infected.

Summary

During a preliminary observation period of four months the incidence of hospital infection with *Strep. pyogenes* among head wounds in a neurosurgical unit was 10, or 31.3% of 32 air-raid casualties, and 2, or 4.4% of 46 "clean" operation cases.

An improved dressing technique and a partially revised general ward procedure were designed to lower this rate of hospital infection.

During a test period of four months following the introduction of this technique as the routine method of dressing head wounds, the incidence of hospital infection with *Strep. pyogenes* was 1, or 2.2% of 46 air-raid casualties, and 0 of 49 "clean" operation cases.

Among the patients with head injuries treated in the test period were 19 with limb or trunk wounds. Thirteen were dressed by the improved technique, and there was no instance of hospital infection with *Strep. pyogenes* in this group. The remaining 6 were dressed without the improved precautions, and 3 of these, or 50%, became infected with this organism.

The conditions in the wards were essentially similar in the two four-months periods of investigation, and we attribute the striking reduction of hospital wound infection from 15.4% to 1.1% to the introduction of the improved dressing and nursing technique.

We are indebted to Dr. Herta Schwabacher, Dr. Joan Stokes, and Mr. E. P. Murrell for assistance with the bacteriological investigation; to Dr. Brian Browncombe for collaboration in the clinical work; and to the Medical Research Council for a personal grant to one of us (J. W.).

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Medical Memoranda

Tenosynovitis of the Tendo Achillis

This condition has become extremely prevalent in infantry units. Forty cases have been investigated and the following observations made.

CLINICAL SIGNS AND SYMPTOMS

The patient complains of pain in the heel along the Achilles tendon. This is relieved by wearing light shoes, but reappears on wearing boots, particularly after marching. On examination slight swelling of the lower inch of the tendon sheath is apparent. There is usually one point extremely tender to pressure about an inch from the insertion of the tendon into the os calcis. On movement of the foot, flexion, and dorsiflexion, tendon crepitus is easily palpable in most cases. The crepitus is often felt along the whole course of the tendon from its origin in the muscle belly of soleus and gastrocnemius to its insertion. Clinically the condition is identical with simple tenosynovitis as seen in the extensor sheaths of the forearm.

This condition occurring in the Achilles tendon has been described as a bursitis. Tendo Achillis bursitis is a completely different clinical entity which generally follows some violent exertion—e.g., a cross-country run: the painful spot is usually nearer the point of insertion of the tendon, and there is complete absence of tendon crepitus.

AETIOLOGY AND TREATMENT

Tenosynovitis of the Achilles tendon is undoubtedly due to repeated minor traumata which, in my opinion, are caused by an abnormal focus of pressure in the boot. The forty cases were investigated with special attention to the following points:

1. Height of the man, and whether the pace is abnormally short. The height varied from 6 ft. 1 in. to 5 ft. 4 in.
2. History of Forced Marching.—A history of forced marching was obtained in 50%. In 10% the condition arose following prolonged marching—i.e., marching at normal rate but for a longer period during manœuvres; 10% were in mechanized sections.
3. Abnormalities of Feet (e.g., first-degree flat-foot, hallux valgus, pes cavus, etc.).—With one exception, none of these men suffered from any foot deformity.
4. Boots.—It was thought that a new issue of Army boots which might be unduly stiff at the back (the leg or quarter) might be the cause. The boots had been in use for a period of three to eighteen months.
5. Effect of Gaiters on Shape of Boot.—All the men wore the webbing gaiters. In every case a constricting ring was formed on the boot by the lower strap of the gaiters being pulled tight. In this way a small ridge is formed at the back of the boot which causes slight pressure on the tendo Achillis. Slight jarring, as would occur in ordinary marching, between the tendon and this ridge seems to be the chief cause of the tenosynovitis.

The theory that gaiters are the causative factor is supported by the fact that (a) the wearing of light shoes relieves the condition, but that it recurs on resuming boots and gaiters; (b) gaiters wear out at the points of the friction at the heel and over the lace-holes of the boot. Tenosynovitis of the tibialis anterior is often associated with the condition in the Achilles tendon.

A looser-fitting gaiter is required that will not cause a constricting ring on the boot, so avoiding abnormal pressure on the Achilles tendon. Most men wear a gaiter which is so tight-fitting that there is no overlap, and the gaiters bulge at the side, leaving a wide gap. Leather gaiters appear to be much looser, and ride easier on the foot. Larger gaiters or leather gaiters will prevent this condition arising, except occasionally.

The following lines of treatment have been adopted: (1) Rest and the use of a counter-irritant—e.g., Scott's dressing. Most cases clear in five to seven days, but about 20% are more resistant to treatment. (2) Infiltration of the tendon sheath and surrounding subcutaneous tissue with 2% novocain. Three injections each of 5 c.cm. are given on alternate days. If there is no improvement the foot has to be immobilized in plaster-of-Paris for four to six weeks.

A. A. WILLIAMS,
Captain, R.A.M.C.

Local Arrangements under the Cancer Act

Rather more than a year ago the Minister of Health informed local authorities of his decision to extend to March 31, 1942, the period during which they may submit their arrangements under the Cancer Act, 1939. The Minister recognizes that in general it is not possible for local authorities to make complete arrangements under the Act at the present time, and in Circular 2469, dated August 30, 1941, he extends the period for a further twelve months, while urging those who have not already done so to submit, as soon as possible, interim instalments pending formulation of more complete schemes. Local authorities should exclude from such interim arrangements the erection of new buildings, elaborate extensions to existing buildings, or the provision of costly new equipment. Much could, however, be done even under present wartime conditions by extending the facilities for diagnosis and treatment that now exist. Conditions in some of the specially vulnerable towns may be reducing or impeding the hospital treatment facilities available to sufferers from cancer, who may thus be precluded from obtaining hospital treatment which might be likely to benefit them. To counteract this the Minister is endeavouring to arrange, where practicable, for cancer treatment centres to be set up at certain of the hospitals in the Emergency Hospital Scheme outside the towns which they would serve. These centres would be a temporary and emergency provision to meet the exceptional conditions in these towns.

Reviews

THE AVITAMINOSES

The Avitaminoses: The Chemical, Clinical and Pathological Aspects of the Vitamin Deficiency Diseases. Second edition. By Walter H. Eddy, Ph.D., and Gilbert Dallhoff, M.D. (Pp. 519; illustrated. 25s.) London: Baillière, Tindall and Cox, 1941.

Since the publication of the first edition of *The Avitaminoses* certain vitamins have become available in pure form, and some have even been synthesized. This has led to the treatment of patients with the pure products, and much information has been acquired about deficiency diseases generally. The authors of this book have gallantly tackled the very difficult problem of sorting out the evidence which has accumulated during the last few years, for the information available is mostly the result of observation (no controls), not of experimentation (performed with controls). Their main conclusions, emphasized time after time throughout the book, are that a deficiency of one vitamin does not in general produce one specific lesion but a number of lesions which are not all specific to the vitamin in question, and, moreover, that most patients suffering from a deficiency of one vitamin are also suffering from deficiencies of several others. They also show clearly that the picture produced by a severe deficiency is not merely a more pronounced picture than that produced by a partial deficiency but a more complicated one altogether.

In connexion with the vitamin values of foods it would have been useful to have a short account of the need for and use of international standards of reference until the time when pure preparations should be available for comparisons in determinations of the vitamin contents of foods. It is a pity even to mention the obsolete units which were at best a temporary makeshift until international standards and units could be adopted. Vitamin B₁ (p. 6) is not a filtrate factor but an eluate factor from liver extracts, and pantothenic acid was the first factor (there may be others) identified in liver and yeast filtrates. But apart from various minor inaccuracies this is a valuable book of reference for all who are interested in deficiency diseases, and particularly for those (such as our own general practitioners) who may have to diagnose cases of partial deficiency in their daily rounds. The book contains 41 excellent plates from photographs of patients or morphological sections of deranged tissues.

GASTRIC OPERATIONS

Technique of Gastric Operations. By Rodney Maingot. F.R.C.S. Oxford Medical Publications. (Pp. 240. 15s. net.) London: Oxford University Press, 1941.

Mr. Rodney Maingot has produced a very readable and well-illustrated book of convenient size dedicated to a list of sixty-two students from the London Hospital who because of the war were transferred to the Southend Hospital for part of their clinical training. We hope, however, with all due respect to Mr. Maingot, that medical students will not spend time on memorizing the contents of a work such as this, which admirably deals with technical details important to the gastric surgeon but, we hope, as yet not within the visual range of the undergraduate student, who, faced with the extensive curriculum of to-day, is likely to be in real danger of missing the wood for the trees. The book has not the advantage of a historical introduction, which might have given it some value to the student, who will surely tend to be confused by the many variations in technique to which names of different surgeons are attached.

At a time when paper shortage is acute, when we are exhorted to use old envelopes again and again and save every scrap of waste, when our weekly medical journals are much reduced in size, so that topical and original productions have to be curtailed or at least delayed, it is rather strange that a textbook on technique unconnected with war surgery should appear in large print and handsome binding. More especially is this so when it is realized that most of the matter it contains can be found in the very recently published work on abdominal operations by the same author (reviewed in this *Journal* on May 31, 1941, p. 819) and in the many editions of textbooks we already possess.

It is probably true to say that there is nothing new in the book; it is certainly an expression of experienced opinion, but diluted with descriptions of the procedures of many others so that at times it is a little difficult to seek out the author's own point of view. Of total gastrectomy we are told that records in British literature are scanty but that Joll has performed twelve, Dickson Wright eleven, Walton eight, and Gordon-Taylor six. No references are given, however, and the figures of Grey Turner, Devine, and others with well-known experience of this operation are not mentioned. Coming to the types of gastric resection we find the statement, "It would appear immaterial on physiological grounds whether the cut end of the stomach is anastomosed to the duodenum or jejunum"; but surely there can be no refuting the fact that the proximal end of the duodenum is the normal receptacle for gastric contents and that this constitutes the great merit of the Billroth I type of operation.

This book may be summed up as a clearly written account of operations on the stomach practised at the present time by many surgeons, including the author. It is a far from complete account, as no doubt the author would be the first to admit, but at the same time it is in our opinion too technical for the undergraduate student. Its appeal should be to the young surgeon beginning his hospital work, but we hope with enough judgment not to be misled into becoming too ardent a gastrectomist.

SCIENTIFIC TERMS IN FRENCH

French-English Science Dictionary for Students in Agricultural, Biological, and Physical Sciences. By Louis DE VRIES. (Pp. 546. 24s. 6d.) London: McGraw-Hill Publishing Co., Ltd.

This dictionary, compiled by the professor of modern languages at Iowa State College, gives English equivalents for 43,000 French words. It has been compiled for students in biology and physics, and although under both these headings a large number of medical terms come in, it is not, and does not pretend to be, a medical dictionary. Many scientific terms are the same, or practically the same, in French as in English. Words like "hormone" and "vitamin," for example, are the same. Sixty words with the prefix "micro" and fifty with the prefix "photo" are almost identical in both languages, but it is useful to have them included, otherwise the student would neglect them, whereas now he has only to turn to Webster or Murray for further definitions. A list of about 700 abbreviations is appended to this volume. Abbreviation is a strong point with the French. Thus their small "t" may stand for time, temperature, revolutions, (*jours*), metric tons, and volume, among other things, and their small "p" for weight, power, pulse, or page. It is interesting to notice the quite considerable number of words for which the French language is indebted to the English. One of these is "guinée," which, as it is the standard of professional remuneration, probably deserves inclusion in a science dictionary.

NEUROLOGICAL LOCALIZATION

Compendium of Regional Diagnosis in Lesions of the Brain and Spinal Cord. A Concise Introduction to the Principles of Localization of Diseases and Injuries of the Nervous System. By Robert Bing, Professor of Neurology, University of Basle, Switzerland. Translated and edited by Webb Haymaker. Eleventh edition. (Pp. 292; illustrated. 25s. net.) London: Henry Kimpton. 1940.

This translation of a work which has been justly popular on the Continent for the past thirty years will be welcome to students and practitioners on both sides of the Atlantic. Professor Bing here collects neurological data and arranges them with a view to the anatomical localization of the responsible lesions. Neuro-anatomy and clinical disturbances are thus correlated and set out in a way that greatly aids diagnosis. The present English edition preserves the form of the original text, its numerous excellent illustrations and diagrams being supplemented by radiographs supplied by Dr. H. C. Naffziger. The chapters are topographically arranged, and in each region the normal anatomy is first described, with special emphasis on the paths of conduction, followed by a section dealing with the symptomatology of lesions in the region. All these sections are lucidly written and admirably illustrated. The text has been brought up to date by a series of editorial footnotes. While these might profitably have been introduced in small type into the text they are not numerous enough to be a burden to the reader.

Notes on Books

Colonel C. ARTHUR WEBSTER has written a booklet of sixteen pages, under the title of *Fighting Fit*, which is full of useful hints on hygiene for the soldier. It is clearly and attractively written and can be read in a few minutes. In the hands of the soldier such a booklet should play a useful part in maintaining morale and keeping the men up to proper hygienic pitch. It was printed for private circulation, but a few copies are available, and application should be made to the author, H.Q., 4th A.A. Division, c/o G.P.O., Preston.

It is now thirteen years since we first commended to the notice of our readers a manual of birth control entitled *Parenthood: Design or Accident?* by a medical man writing under the pseudonym MICHAEL FIELDING, with a preface by Mr. H. G. Wells. This booklet was reprinted many times to meet a constant and well-merited demand, and revised editions came out in 1930 and 1934. The author's identity has long been an open secret in well-informed circles both within and outside the profession. He has once again brought the text up to date for a fourth edition, which is published by Williams and Norgate at 2s. 6d. (with cloth cover 3s. 6d.). The contraceptive methods taught by British and American authorities are described, with emphasis on some small but important modifications recently made in established methods and on new devices and expedients which have resulted from the investigations of the past few years.

Dr. ROY R. KRACKE'S *Textbook of Clinical Pathology*, which was published in 1938, now appears in a second edition under the joint authorship of Kracke and Francis P. Parker, with fourteen contributors in all. The defects consequent on multiple authorship which we criticized in the original edition have been remedied by rearrangement and better co-ordination, and, in particular, methods of general bacteriological examination are now more adequately described. The increase in size, amounting to nearly 200 pages, is due also to the introduction of much new material, and the range of diagnostic tests now covered is wide, although there are still some peculiar omissions, such as the test for occult blood in faeces, and the space-allocation in relation to the importance of the subject varies. The book is well illustrated, and for many purposes will be found a valuable guide. It is published at 33s. by the Williams and Wilkins Company.

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TRAUMATIC SHOCK—PAST, PRESENT, AND FUTURE

At the end of the last war fairly general agreement had been reached that traumatic shock consisted of two separate entities: primary shock, developing early from a supposedly neurogenic cause; and secondary shock, developing late as a consequence of absorption from the injured tissues of substances resembling histamine in having a noxious effect on the capillaries generally. Little remained except to round off the evidence in some particulars and to settle the vexed question whether transfusion should or should not be employed in treatment. With the arrival of the more leisurely years of peace, the animal experiments on which the theory of traumatic toxæmia was chiefly based were repeated and the evidence crumbled away. Persistent inquiry failed to reveal any toxic substance in blood returning from injured tissues, and careful experiment showed that circulatory failure developing in animals after crushing the legs could be largely accounted for by the amount of blood and plasma lost into the swollen limbs. At the outbreak of the present war it became urgently necessary to re-examine *ab initio* the question of traumatic shock from the clinical point of view. Several questions demanded an answer. What do we mean by shock? Is it an entity or does it comprise several distinct conditions? What are the initiating and contributory factors and how can they be prevented or combated? Information relevant to these questions was collected in the last war and issued in M.R.C. Reports 25 to 27, and in this war is to be found in communications from the Army Blood Transfusion Service,¹ from the Hammersmith workers,² and in our last two issues from Grant and Reeve,³ who have analysed 100 case records submitted to the M.R.C. Committee on Traumatic Shock.

Shock is usually defined by a description. But descriptions are so varied that no one would satisfy all who use the term. Traumatic shock is in general used to denote any generalized disturbance in the function of the body following in a short space of time a more or less localized injury. It may mean no more than the effects of fright, but is more generally used to denote a grave disturbance often ending in death. It is becoming clear that the term "shock" may cover a multitude of conditions, and it is now known that more than one condition may be included in secondary shock. Thus attention has been drawn elsewhere to fat embolism⁴ and in this *Journal*⁵ to curious disturbances in renal function and plasma electrolytes after crush injuries.

Although these are relatively uncommon conditions they serve to illustrate the fallacy of regarding even so-called secondary shock as a clinical entity.

Because the meaning of the word is uncertain, and because it may convey a false sense of unity, Grant and Reeve do not use the term "shock," remaining on safer ground by describing and classifying reactions to injury. They divide their cases into three groups according to whether, on the first examination, the blood pressure is high, normal, or low, the third group being subdivided into those with slow, normal, or fast pulses. Although, as they point out, the data are too meagre to allow final conclusion, yet it seems that the type of reaction is determined, among other things, by severity of injury, by the amount of blood lost, by the time after injury when the patient is received, and by the patient's age. Groups 2 and 3 apparently represent successive stages in the response to injury and loss of blood, while the subdivisions of Group 3 are partly determined by age. The hypertensive reaction is more obscure, but Fraser and Cowell⁶ found it particularly common in wounds involving the ventricles of the brain.

At the outset of this war there were still some surgeons who had scant regard for the value of transfusion in the severely injured. Though there are some who still maintain this attitude, all serious observers are agreed that transfusion, provided it is instituted early enough and is given in adequate amounts, is a most important, perhaps the most important, measure in resuscitation. The paper by Grant and Reeve fully bears this out. In determining the need for transfusion they regard the severity of the injury and of the loss of blood as the most important guides, since the blood pressure and pulse rate may be maintained precariously and for only a short time. The complete failure of the pulse as a guide to the general condition is to be emphasized, for many injured patients still go through the whole period of their management without record of blood pressure; it is time this lamentable practice ceased. A second therapeutic point which Grant and Reeve emphasize is the need for operation as soon as resuscitation has been adequately carried out. It is unfortunately true that many surgeons still believe that the most important factor in combating shock is the lapse of time, and many lives are wasted because of the failure to advance by adequate transfusion the time when operation becomes safe.

There is still ample scope for improvement in the treatment of the injured. Of the 100 cases recorded at least forty-four patients died. In many of these cases death could be accounted for satisfactorily by the nature of the injuries; in others it was due to inadequate transfusion, anaesthesia, or infection. But in eight the cause of death remained obscure. This is a high proportion, and it may serve to bring the reader sharply back to the question of what are the causes of the conditions lumped together as shock. We do not know. We know that in many, perhaps in most, haemorrhage either external or internal is a chief factor, and we believe that pain and exposure often contribute. Fat embolism and the crush syndrome stand out as clear examples of disturbances we may hope to understand when further

¹ *Lancet*, 1941, 1, 99.² *British Medical Journal*, 1941, 1, 427 et seq.³ *Ibid.*, 1941, 2, 293, 329, 332.⁴ *Lancet*, 1941, 1, 135.⁵ *Ibid.*, 502.⁶ *M.R.C. Report 25, 1941, p. 55.*

work has been done. Infection also plays its part in some instances. But when all the factors are considered and integrated there remain patients who die without our knowing why. This knowledge will come only as a consequence of patient and intelligent observation of injured people; in a separate memorandum in our last issue Grant outlines some observations that are needed. The question is urgent, and it is to be hoped that some of those dealing with accident cases will avail themselves of their opportunities and help to elucidate once and for all the mystery of so-called shock.

DOMESTIC WATER SUPPLIES IN WAR

The fall in the incidence of the enteric fevers in recent years has been variously attributed—possibly in accordance with the predilection of the individual—to improved sanitation, increased purity of water supplies, and, particularly in the Army, to protective inoculation. The Annual Report on the Health of the Army in India for the year 1939 (vol. 2, part 1, paragraphs 12 and 13) throws considerable light on the subject. The incidence of enteric among the troops in India, expressed as a ratio per thousand, averaged 1.2 during the period 1936-9, compared with 3.3 during the period 1919-28, and since 1929 the tendency has been towards a slight but progressive decline with only an occasional minor setback. That the diminished incidence has not been due to improvements in general sanitation is strongly indicated by a comparison with the incidence of the dysenteries, a disease group essentially associated with insanitary conditions. The incidence of this group has shown an almost steady rise since 1932, which is described as "an entirely different and unsatisfactory state of affairs." The facts presented, therefore, appear to justify the following comment, also extracted from the report: "Considering the disease was rife in the surrounding villages we must conclude that inoculation and water treatment are the causes and our safeguard, and that it is not due to improved sanitation (other than water)." Inoculation played no part in the decline in enteric fever in England or the elimination of cholera which took place towards the end of the nineteenth century, following closely upon an energetic campaign and legislation for increasing the purity of water supplies. The continued but more gradual decline in enteric which has taken place during the twentieth century may be attributable in part to an awakening sanitary conscience, but it is reasonable to believe that it has been greatly contributed to by a gradual fall in the number of carriers, since this reservoir of infection is no longer frequently reinforced by water-borne epidemics. Knowledge of these matters is not exact enough to permit of dogmatism, but there can be little doubt that our first line of defence against a serious recrudescence of enteric is the maintenance of the purity of domestic water supplies.

The prevention and the suppression of water-borne disease are comparatively simple matters in times of peace. The case is very different when we are at war. At such times agencies directly or indirectly attributable to enemy action may counteract the most elaborate safe-

guards which water undertakings can provide. This has already been the experience of more than one of our cities. The epidemiologist is well aware that the establishment of epidemic conditions depends upon the connecting up of a number of links, and that our immunity up to the present has been due to the absence of some essential link or links in the chain of infection. In view of the comparatively slight incidence of diseases of the enteric group during the past decade, it is not unreasonable to suppose that one limiting factor has been the paucity of the specific bacteria in sewage. It is true that one cannot demonstrate the presence of these organisms in the effluents from many sewage works. It is equally true that they can be recovered regularly from sewage effluents derived from towns in which there has been no epidemic for many years. At the best estimate the potential danger is therefore constantly present, despite past experience.

The substance of the matter is not whether this potential danger exists, for its existence is already a well-established fact, but how far it may become a real danger to the health and to the morale of the country. To appreciate this it is necessary to visualize the possible results of a first epidemic of typhoid fever. A number of persons would suffer from the disease; an additional number would become infected but would have so mild an attack that they would not seek medical advice, or would not be ill at all. Those in each group would, for varying periods, become infective. The paucity of the specific organisms in sewage, which may have been the decisive factor in our past immunity, would no longer exist in the locality infected, and a travelling reservoir of infection would be created which might disseminate the germs in other localities. Each succeeding epidemic would increase the probability of another and larger one, and this probability might, at any time, be transformed into reality by circumstances beyond the control of those primarily responsible for the purity of our water supplies.

Those of our cities which have been the object of indiscriminate bombing have been exposed to various risks which differ widely in character. The possibility of epidemic disease resulting from overcrowding and poor ventilation in air-raid shelters and the serious effect this might have upon the morale of the people and the war effort of the country are obvious. The public, however, is hardly conscious of the grave consequences of water-borne disease. The Croydon epidemic has been forgotten or is not associated with the potentialities of war. The public is protected against the risks of water-borne disease by the unremitting care of the water undertakings throughout the country. They have proved their worth, but their widespread network of machinery and services has no immunity against indiscriminate bombardment. The enormous demands made upon their services for fire-fighting were not anticipated before the war, and their capacity, already strained, may be limited by war damage. Gaps in their defensive organization have been and will be created, and it is of the utmost importance to consider what reserve stands behind them to fill those gaps. The purification of water by individuals in their homes might provide an effective second line of defence against the

pollution of piped supplies, but such endeavours as have been made to educate the people in this matter have met with limited success. After heavy bombardment it is often difficult or impossible to boil water owing to interruption of the gas and electricity supplies, and simple chemical methods of purification which could provide a high degree of protection are unlikely to be widely used in the absence of any co-ordinated scheme for the education of the public and the provision of materials on the scale of that adopted for defence against poison gas. In the existing state of knowledge only a limited degree of protection could thus be expected from any measure which might depend upon the individual if left to his own devices, and we must therefore consider our last line of defence. Should there be good reason to fear an epidemic of enteric fever the surest means of prevention would undoubtedly be the intelligent use of preventive inoculation. Once decided upon this would have to be carried out without delay, and a high degree of success could be achieved only were it done under compulsion. The argument against this might well be overwhelming, and, if the risk were widespread, the performance of inoculation in the time available might be very difficult. We are thus driven back upon purification of water by the individual, and have to consider how the highest degree of protection can be secured in this way. Plans must be carefully worked out in advance, sufficient materials must be available, and the public must be educated in their use. We cannot afford to rely upon last-minute improvisation.

One point needs emphasis—the effectiveness of any precautions which may lie behind the water undertakings is limited, and theirs must always remain the first line of defence. This fact, however, provides no justification for not bringing each line up to its maximum efficiency, and this can be done only by planning and organizing on a uniform national scale. Lieut.-Colonel E. F. W. Mackenzie, Director of Water Examination to the Metropolitan Water Board, to make doubly sure of the efficiency of an already highly efficient undertaking, has recently asked the Board to set up a consultative committee which shall provide a closer link between himself, the medical profession, and the public health service in the Board's area. The chairman of this committee is Lord Horder, and it has on it representatives of the London School of Hygiene, the Society of Medical Officers of Health, and the Royal Sanitary Institute. Londoners may feel grateful that this additional care is being taken on their behalf.

DEATH FROM PLASMA TRANSFUSION

During the past year or so transfusions of various blood derivatives have been used in this country on a big scale. The number of such transfusions has run into thousands, and in addition larger quantities of fluid have been given to individual cases than have probably ever been used before. No authentic instance has, however, been recorded of a death thought to be immediately due to either plasma or serum. Dr. Frank Mayner has now recently reported¹ a disaster which he attributes to a plasma transfusion. A boy aged 4 came into hospital with unexplained severe

oedema of one week's duration after a "cold in the nose." The oedema was associated with a reduced urinary output. On examination the total plasma protein was 5.6 grammes per 100 c.cm., and in the urine, which was loaded with albumin, were red and white cells and hyaline, waxy, and granular casts. Many forms of treatment were tried, and after fresh-blood transfusion the patient was finally discharged with improvement in his oedema and with his urine free from albumin. After twenty-six days he returned with another respiratory infection and increased oedema. He was on this occasion transfused with 100 c.cm. of unfiltered saline citrate plasma prepared from the same donor. He died suddenly, becoming cyanotic and dyspnoeic during the transfusion. At necropsy microscopical examination showed subacute glomerular nephritis and multiple emboli of fibrin in the terminal pulmonary vessels and capillaries. Dr. Mayner concludes that the immediate cause of death was anaemia due to multiple emboli of fibrin in the capillary system of the lungs, and admits that this was possibly due to failure to use a filter during either preparation or administration of the plasma. In this country the bulk of the plasma used is filtered through a Seitz pad before issue, and is then passed through a coarser filter during administration, so that death from fibrin emboli is most unlikely to occur. Dr. Mayner also suggests that it may have been unwise to employ the same donor twice for the same patient, and quotes other cases of blood transfusion in which disastrous results have followed such an action. The case should not be regarded as in any way invalidating the use of plasma as a transfusion fluid in appropriate conditions, but does serve to emphasize the importance of adequate filtration.

CHEMICAL NATURE OF BACTERIAL ANTIGENS

In producing immunity with killed bacteria a number of substances must obviously be injected which have very little value in protecting the body against specific infections. If the chemical constitution of bacterial antigens could be systematically investigated it might be possible to isolate the essential antigens as chemical substances and thus to employ them for immunization; or, better still, synthesis of the essential antigens might well be attempted. Specific antigens could then be produced in unlimited quantities in the chemical laboratory. The first investigations on these lines were made by Boivin, Mesrobian, and Mesrobian¹ in 1933 on *Bacterium typhi-murium*, and were later continued by Raistrick and Topley² and others. A number of Gram-negative organisms have now been examined and their antigens isolated in a relatively pure condition without apparent change in their specific immunological properties. The two chief methods employed have been trichloroacetic acid extraction and tryptic digestion. Freeman and his colleagues³ have obtained the antigens of *Bact. typhosum* and *Bact. typhi-murium*, and have shown that by growth of the organisms in a synthetic medium various sources of contamination could be eliminated. In continuing this work they have examined the chemical constitution of *Bact. typhosum* Ty2 antigen, and find that on gentle hydrolysis it may be dissociated into a polysaccharide component, an insoluble polypeptide, a soluble nitrogenous component, and a small lipid component. The polysaccharide represents the O-specific hapten of the antigen and appears to be free from ketose, pentose, and uronic acid residue, but yields *D*-galactose, *D*-mannose, and *D*-glucose on hydrolysis. An identical polysaccharide has been prepared directly

¹ C. r. Soc. B.-J., Paris, 1933, 114, 307.

² Brit. J. exp. Path., 1934, 15, 113.

³ Biochem. J., 1940, 24, 307.

from the dried organisms by extraction with dilute acetic acid. The polypeptide component is insoluble in water but soluble in dilute alkalis. It contains 8.2% nitrogen, partly in the form of tyrosine and arginine units, while about 50% of the total nitrogen is liberated as amino-groups on acid hydrolysis. Two other components of the antigenic complex have also been isolated, but have not yet been studied in any great detail: one is a mixture of lipins, probably fatty acids with a phospholipin; the other, a soluble nitrogenous component as yet undetermined. Preliminary work on an O-antigenic strain of *Bact. typhi-murium* has yielded similar results to those on the typhoid bacterium, while in the case of *Bact. dysenteriae* (Shiga) Morgan and Partridge⁴ found that the antigen exists in the cell as a phospholipin-polysaccharide-polypeptide complex: the phospholipin component may be removed without destroying the antigenicity of the polysaccharide-polypeptide complex. These investigations naturally involve the use of relatively enormous masses of pathogenic bacteria and laborious large-scale chemical manipulations; they may, however, well constitute one of the most important advances in the treatment and prevention of bacterial disease.

PERFECT SIGHT WITHOUT GLASSES

A letter in this week's *Journal* from Dr. J. Parness draws attention to a statement recently broadcast by Dr. Julian Huxley on the practice of correcting visual defects without the use of glasses. Before condemning such a practice it would be as well to examine the evidence in support of it. There are a variety of methods based on hypotheses of varying degrees of tenacity. The system expounded by W. H. Bates in his *Cure of Imperfect Sight by Treatment without Glasses* (New York, 1920) has the advantage over competitive systems in that its principles are publicly stated. Bates holds that the refractive state is dynamic and is constantly changing. The changes in refraction are produced by the nerves and tissues of the extra-ocular muscles, the lens itself playing no part in accommodation. Defective vision is a psychic phenomenon, affection of the brain centres first disturbing the macula and then the whole retina. Treatment aims at inducing "cerebral relaxation," for when the mind is at rest vision is normal. In thirty years' work on refraction Bates found few people who could maintain "perfect sight" for more than a few minutes at a time, and he often saw "the refraction change half a dozen times or more in a second, the variation ranging all the way from twenty dioptres of myopia to normal." As no ophthalmologist has the necessary skill and speed to observe half a dozen or more changes in refraction in the space of a second ("blitz retinoscopy," as it might be called), no one is in a position to contradict this basic tenet of Bates. And ophthalmologists still cling to the theory, based upon physiological evidence, that accommodation is brought about by the changing curvature of the lens. Bates illustrates the influence of the mind on refraction by the effect of strain. Since strain implies mental unrest, changes in refraction occur in all conditions inducing such unrest. Thus "a patient 25 years old had no error of refraction when he looked at a blank wall without trying to see [i.e., under complete relaxation and total absence of strain]; but if he said he was 26, or someone else said he was 26, he became myopic [as shown by Bates's rapid retinoscopy]. The same thing happened when he stated or tried to imagine that he was 24. When he stated or remembered the truth his vision was normal, but when he stated or imagined an

error he had an error of refraction." There is also the case of the little girl who told a lie. The retinoscope revealed a change towards myopia the moment she replied "No" to the question, "Did you have an ice-cream?"; while she was giving truthful answers "the retinoscope indicated no error of refraction." This appears to be, so to say, a physical expression of the inward eye of conscience.

A queer assortment of evidence is brought forward to prove that the refractive changes in the eye are produced by the extra-ocular muscles. There is, for example, the "proof" that aphakic patients are able to read small type with distance glasses. That the daily experience of ophthalmologists is to the contrary is perhaps of some significance, though obviously not as significant as the few instances Bates records, for which, incidentally, perfectly good explanations are available, as anyone acquainted with the literature knows.⁵ There is, indeed, an extensive and controversial literature on the actual mechanism whereby the contour of the lens changes during accommodation; the facts themselves are not disputed—except by Bates, who produces experimental evidence that in the fish removal of the lens does not interfere with accommodation. The fish experiment is amply illustrated by photographs, but there is no reference to the fact that accommodation in the fish is different physiologically and anatomically from that of the mammal. Mammalian experiments, mainly on the rabbit and cat, are recorded, and here the rather startling point emerges that a nerve or muscle cut across and tied up again will carry an impulse on being tied, though physiologists would not expect any such result before days or weeks had elapsed. Mammalian anatomy is also illuminated in these experiments. Apparently the standard teaching that the cat is endowed with a superior oblique muscle is not correct. It should be added that this is only an incidental observation; but that pharmacologists err in believing that atropine acts only on unstriated muscle is part of the general argument, for Bates found that this drug will paralyse the extrinsic muscles which produce accommodation. One experiment, illustrated in Fig. 23, appears to show that the dead fish still has a living mind; its brain is pinched to induce relaxation.

The treatment based on these revolutionary observations aims at mental relaxation, and the pinched fish appears to be its prototype. The Bates system of treatment seems to have many devotees, and one incident may be worth noting. In 1931 the Republican Ministry of Public Health of Prussia warned against this method as a form of quackery,⁶ but in Hitlerite Germany a voluminous literature on the subject has spread the cult and there is apparently no lack of practitioners and patients.

INHERITANCE OF CEREBRAL DYSRHYTHMIA AND EPILEPSY

The work of Lennox, Gibbs, and Gibbs on the inheritance of dysrhythmia and epilepsy has already been discussed in these columns,⁷ but in a recent paper⁸ the authors supply further data and comment. Briefly, the electro-encephalograms of the close relatives of epileptics—parents, sibs, and children—were abnormal in 60% of cases, whereas those of relatives of a control group were abnormal in only 10%. The ratios are similar to those which would be found if dysrhythmia depended on a dominant gene, though whether the situation can be as simple as this is doubtful. Unquestionably in an undue proportion of cases of epilepsy both

⁵ *Amer. J. Ophthalm.*, 1921, 4, 256.

⁶ *Klin. Mbl. Augenheilk.*, 1931, 87, 514.

⁷ *British Medical Journal*, 1940, 2, 550.

⁸ *Arch. Neurol. Psychiat.*, Chicago, 1940, 44, 115.

⁴ *Biokem. J.*, 1940, 34, 169.

parents exhibit abnormal waves, so that if a single gene pair is concerned the effect of two abnormal genes must be greater than that of one alone. The authors state that of 13,262 close relatives of 2,130 sufferers from epilepsy 2.4% were epileptic. Thus, of persons with abnormal electroencephalograms only 1 in 20 or 25 is an actual epileptic. Examining twin evidence, the authors find that the combined data of several authors show that if epilepsy is present in one identical twin it is also present in the other in 70% of cases. This clearly indicates the influence of heredity, and also the importance of hereditary factors other than the simple determination of the dysrhythmia; it shows, too, that non-genetic factors help to determine the onset of clinical epilepsy. Lennox and his co-workers made electro-encephalograms of seven pairs of identical twins, and they also describe the results obtained in nine pairs of normal identical twins. The records, whether normal or abnormal, were closely similar for the twin pairs. In two cases there were differences, due to an acquired cortical lesion in one twin, though even here the basic rhythms were still similar. A history of fainting was encountered much more frequently among the relatives of epileptics than among the relatives of the controls. Of fourteen parents with such a history, twelve had abnormal electroencephalograms, so that a history of fainting should be viewed with suspicion, since the attacks might in reality be mild seizures or precursors of seizures. The incidence of migraine was twice as high among the relatives of the epileptics as it was among the relatives of the controls, but the electro-encephalograms of migrainous parents were not more often abnormal than those of non-migrainous parents. Abnormal waves can on occasion be due to acquired causes. The case is quoted of a patient with adenoma of the islets of the pancreas with recurring periods of coma; the dysrhythmia disappeared a year after successful pancreatectomy. The authors conclude that in the absence of epilepsy, abnormal rhythm is to some extent associated with other abnormalities. An undue proportion of problem children have abnormal waves; this is found too among schizophrenics; and there also seems to be an association with slight personality difficulties. Many persons with abnormal waves, however, appear to be normal in every respect. The authors suspect that degrees of abnormality are heritable but have not sufficient data for dogmatism. The incidence of abnormal waves is the same among the relatives of both "symptomatic" and "essential" epileptics. A practical eugenic point is that a person with cerebral dysrhythmia will be much less likely to have an epileptic child if he marries someone with normal brain waves.

INDUSTRIAL EYE INJURIES

A recent issue of the *Journal of the American Medical Association* (March 29, 1941) is devoted to industrial health, and contains four articles on ocular hygiene and industrial injuries. In many ways safety devices are more advanced in the U.S.A. than here, and there is certainly a greater awareness of the problems involved than is to be found in this country among both employers and employees. There are approximately 300,000 injuries to the eye in American industry each year, and their cost to the nation is in the region of \$60,000,000 annually. Intensive investigations have shown that the largest percentage of injuries occur in the machine-tool, foundry, and metal-products industries, and the loss of industrial efficiency in these basic industries at the present moment is of special significance. American records reveal an unexpectedly high incidence of visual defect in the industrial population as a whole.

an incidence that increases in the higher age groups. Admittedly there is no recognized standard of the necessary visual efficiency in the various industries, but such defects as 21% in visual acuity and 22% in muscle balance represent departures from a theoretical ideal and not necessarily from any valid standard of industrial efficiency. Systematic ophthalmic examination is recommended for the fairer assessment in cases of subsequent injury and for the selection of entrants to industry, with a view to reducing the incidence of accidents. These considerations emphasize that the use of goggles is not the beginning and end of preventive measures. None the less their value can hardly be exaggerated, and an educational campaign to popularize their use has apparently gone much further across the Atlantic than here. Certainly some of their safety slogans might well be adopted. They range from a poetical plea ("The light of the whole world died in a shower of sparks") to a concealed intimidation ("We once knew a man who could not see the need for wearing goggles—now he can't see the goggles").

TRIBUTE TO THE NURSING SERVICE

On the second anniversary of the outbreak of war the Overseas League gave a luncheon in honour of the "Nurses of the Empire," at which the principal speaker was Mr. Ernest Brown, M.P., Minister of Health. Mr. Brown said that various problems concerning the nursing profession were exercising him and his advisers, and as an indication of the importance they attached to their responsibility for nurses a separate Division had been created at the Ministry. Some steps had already been taken with regard to nurses' salaries (as recorded in our last issue at p. 344), and other matters were under consideration. So many demands were being made on the services of women that the vital need of the nursing services might possibly be overlooked, but wherever else there was a shortage there must be no shortage here. The Minister rightly insisted that it was not enough to have a sufficient total of nurses; what was required was to have the proper numbers at the right time and in the right place. He paid a glowing tribute to the work of nurses in the war, mentioning that of 32 George Medals awarded to women, nurses had received 17. The Army nurses had shared to the full the rigours of the first winter of war in France, the evacuation, and the stress of subsequent campaigns in Greece and elsewhere. He also referred to the help of nurses from the Dominions, 23 of whom were present at the luncheon, and of Red Cross workers from Allied countries. A further short speech was made by the matron of St. Thomas's Hospital, who had lent for the occasion the hospital's statue of Florence Nightingale, which, with a lamp burning in front of it, graced the head table. The luncheon was presided over by Sir Jocelyn Lucas, M.P., chairman of the Welcome Committee of the Overseas League, and among the guests were 130 matrons of hospitals in and around London, and nine nurses of the Harvard unit and six of the Wilson unit of the American Red Cross, together with four of the American Ambulance, Great Britain. Nurses who had received decorations for war service—or as many of them as could be persuaded to show themselves in public—were introduced to the gathering.

Sir Thomas Barlow celebrated his ninety-sixth birthday on September 4. Our readers will be pleased to know that he is still up and about and warmly appreciative of the good wishes of his admirers.

NORMAL AND PATHOLOGICAL SPECIMENS OF THE EAR, NOSE, AND THROAT IN THE ROYAL COLLEGE OF SURGEONS, LONDON

Although known and valued by E.N.T. workers, it has hardly been appreciated generally that London possessed perhaps the largest and most valuable collection of museum specimens illustrating the surgery of the ear, nose, and throat.

The Museum of the Royal College of Surgeons has been for many years assembling a select number of pathological, anatomical, and physiological specimens concerned with this specialty. One of its earliest gifts of normal anatomy was received when Toynbee presented his 300 specimens of the anatomy of the temporal bone. This addition was, later, greatly enriched when Arthur Cheatele handed over to the Museum his unrivalled series of sectioned temporal bones. The basis of the group of specimens related to rhinology was formed when the large collection of Onodi, from Budapest, was secured and presented by the otolaryngologists of this country. A valuable addition to the laryngological section of the Museum was made when V. E. Negus presented the specimens forming the foundation of his classic study on the comparative anatomy and physiology of the larynx. This last addition escaped damage when the Museum suffered considerably during London's bombardment by the Germans in May last.

Owing to the dispersal, for greater safety, of the specimens then undamaged it has not yet been possible for the College authorities to compile and publish a complete and accurate statement of the loss to medical science suffered by the Museum from enemy action. So far as specimens relating to E.N.T. are concerned the following information has been made known:

The catalogues of the Museum have been preserved, and it will be possible in the future to reproduce many specimens of normal anatomy from fresh material. The Onodi collection of the anatomy of the nose and accessory sinuses was heavily damaged, but about 95 specimens are intact and the others, being of normal human anatomy, can in time be replaced. The Toynbee and Cheatele collections have suffered even more severely. It is to be hoped that after the war young aural surgeons will be forthcoming to re-establish the Toynbee and Cheatele series of temporal bones. As to the pathological specimens, it is not possible to give a full report at present.

It is interesting and comforting to recall that the fourteen specimens of the anatomy of the paranasal sinuses, recently presented by the late Professor Hajek, are intact and complete. Professor Hajek was able to escape from Vienna about two years ago, and, with the generous help of American and British colleagues, he reached London with his devoted wife—a sister of the well-known dramatic writer Schnitzler. Here, by the help of his confreres, he was able to spend the last two years of his life in modest but comfortable conditions and in the enjoyment of the liberty which he so much appreciated. When he made his escape from Vienna, he was only allowed to bring with him, in money, the equivalent of ten shillings. He and his wife had to produce and leave behind their gold watches. The only pieces of gold they were allowed to export were their wedding rings. In spite of these difficulties he managed to bring away with him fourteen specimens of his valuable collection of rare irregularities of the anatomy of the nasal sinuses. The rest of his 150 specimens had to be left in Austria. These fourteen formed part of the specimens which he had shown, during nearly fifty years, in the practical classes which the American editors of his well-

known book¹ deservedly called "famous." They are illustrated in that work, which these translators of the English edition referred to as "a recognized classic."

As a token of his gratitude for his deliverance from the city where he had so long been one of the most esteemed teachers in the Faculty of Medicine, and for the welcome he had received in London, Hajek presented these valuable specimens to the Royal College of Surgeons through Mr. T. B. Layton, cataloguer of the Onodi Collection. It is one of life's ironies, and it is a comfort to remember, that when the German bombs were doing so much damage to the science and teaching of surgery in London they missed some of the most valuable specimens in oto-laryngology, which had come originally from Vienna and Budapest.

Str. T.

¹ *Nasal Accessory Sinuses*. In two volumes. London: Henry Kimpton. 1926.

Local News

NEW ZEALAND

[FROM OUR CORRESPONDENT IN WELLINGTON]

Hospital Control: The Burden of Cost

The possibility of an alteration in representation on hospital boards in the event of the Government's finding a greater share of hospital costs has been mentioned by the Minister of Health in the course of a discussion with board members. Rating expenditure has become a matter of great concern to hospital boards, and various aspects of the position have been put to the Minister in the hope of relief. It has been represented to him that boards are not nearly so well off as had been expected as a result of the payment by the Health Department of six shillings per occupied bed per day under the Government Social Security Scheme. The rise in cost has completely wiped out any advantage (6s. as against 3s. in fees collected previously). A result is that increased levies have to be made on contributing local bodies. The Minister in reply has stated that officers of his Department are now working on a scheme to provide relief for some of the hospital boards. A great deal of thought, he said, must be given to the problem, and if the system is to be changed all the factors must be considered.

A National Problem

The Minister was asked if it was possible with any change in the system of rating that hospital board administration might be taken out of the hands of local bodies. He said in reply that he agreed with some form of local control because that was democracy; further, he added, if the Government was expected to find higher and higher amounts for hospitals there would need to be more State control. In his opinion, a large measure of departmental administration for the boards could be accomplished without any disservice to local bodies. The Minister said he realized that boards were alarmed at the increase in cost. In the matter of expenditure some boards had reached their peak and could not reasonably ask the ratepayers to find more money. When there was desperate need for accommodation with all room taxed heavily the time had come to recognize that it was not a local but a national problem and that it became necessary to rearrange the hospital rating system. The Minister explained that, so far as he knew, it was not intended when the Social Security Scheme was being prepared that the contribution of 6s. per head per day should be fixed and static for all time. The problems facing some boards would be looked at along with other proposals to meet a serious position. Regarding capital costs, where the burden on local ratepayers was such that they could not be asked to find the money locally, in his view the charge should become a national responsibility, but the actual details would require a lot of thought. It was also explained by the Minister, in discussing the matter with one of the hospital boards, that with capital expenditure the Government's contribution was £1 for £1, while for maintenance there was a fluctuating

amount, boards which were very highly rated being given a higher scale of subsidy. The Social Security contribution was an addition and the Social Security Scheme also found money for out-patient treatment and for maternity costs. It seems that the Government's contribution may go as high as 75%. It should be understood that an additional grant of 5s. per bed is made for soldier patients, which is, of course, far below the cost of treatment and maintenance.

The Last Word and the Last Straw

For many years the principle of hospital finance in New Zealand has been considered by optimistic people to be not only static but ideal and a model for other countries. The principle of this system has been in effect that the general Government taxation provided about half of the cost and the rest was paid by ratepayers. There seemed little moral obligation on patients under this system to pay for their maintenance and treatment out of their private purses, and only an amount of approximately 3s. a day per head was collected from patients. This amount seems very low seeing that any person, rich or poor, has the right to receive treatment in these tax- and rate-supported hospitals. The Social Security tax amounts to 1s. in the pound on all wages and incomes and commercial profits, and this proves quite insufficient. To make up the balance nearly four million pounds had to be drawn from general Government revenue last year. No medical practitioner service has been provided owing to opposition from doctors who decline to be "nationalized" under the conditions proposed by the Socialist Government. All medicines except proprietary medicine have lately been made free for both hospital and private patients, and all hospital treatment is free. The result of all this has been that the number of patients in hospitals throughout New Zealand has increased alarmingly, out of all proportion to any increase in population. Thus, State control has not been an unqualified blessing and has created new difficulties of a grave order, especially when the chief task of the country is the prosecution of the war effort. Any further increase in the huge burden of hospital costs will suggest to the minds of many people the time-honoured story of the last straw that broke the camel's back.

Correspondence

Penicillin

SIR,—Your annotation on penicillin (August 30, p. 310) is very welcome to me, who in 1929 discovered and named this very potent substance produced by a certain type of penicillium. It is true that all the work on this substance originated in the accidental contamination of a culture plate with a spore of this penicillium, and in my first paper on the subject a photograph appears of this culture plate. (Incidentally, this culture plate still exists.) I think, however, I can claim some merit in the discovery, as without a doubt the same mould has contaminated hundreds or thousands of culture plates and has merely been regarded as a nuisance.

There are many species of penicillium, and, at first, on the advice of a mycologist then attached to our laboratory at St. Mary's Hospital, it was referred to as *P. rubrum*. It has since, however, been examined by other experts in Europe and America, and the known species to which it has the closest affinity is *P. notatum*, although the type culture of *P. notatum* does not produce penicillin.

I do not think that you quite do me justice when you say that, although penicillin was used at St. Mary's and elsewhere as an ingredient of selective media, it "does not appear to have been considered as possibly useful from any other point of view." In my first paper on the subject in 1929 I made observations on its antiseptic properties against many species of bacteria, on its toxicity to leucocytes *in vitro*, and on its toxicity to animals. I showed that the simple unconcentrated culture could, even when diluted some 800 times, inhibit the growth of pyogenic cocci, while it was no more toxic to leucocytes or animals than the broth in which it was grown. I had previously, in 1924,

shown by the slide-cell technique that all the antiseptics in common use had a much greater inhibitory effect on leucocytes in human blood than they had on bacteria, and until I found penicillin there was not a chemical antiseptic which by this simple *in vitro* test could be considered as an antiseptic of the first class for the restriction of growth of bacteria in human tissues. This led me in my original paper in 1929 to allude to the possibility of the use of penicillin as an antiseptic, and paragraph 8 of the summary of this paper reads: "It is suggested that it may be an efficient antiseptic for application to, or injection into, areas infected with penicillin-sensitive microbes." In a later paper, on "Some Problems in the Use of Antiseptics," published in the *British Dental Journal* in 1931, I discussed the possibility of the use of penicillin as a surgical antiseptic and made the following statement: "Penicillin is valuable to us at present in the isolation of certain microbes, but it is quite likely that it, or a chemical of similar nature, will be used in the treatment of septic wounds."

These extracts from my papers show that wider uses for penicillin than selective culture media have been envisaged from the beginning, and the last quotation indicates that ten years ago I had concluded that the practical application of penicillin in surgery depended on the chemist who could isolate the active principle and manufacture synthetically this or an allied compound.

Prior to the second article cited (1931), a few tentative observations had been made on the effect of the local application of the unconcentrated culture to septic wounds (chiefly carbuncles and sinuses). Although the results were considered favourable there was no miraculous success. In those times septic wounds in the hospital wards were relatively uncommon, and it was not considered that the production of penicillin for the treatment of these was practicable, owing to the lability of the active principle in solution. The lability of the active principle is still a stumbling-block, but the Oxford workers have to some extent overcome it by extracting an impure active agent and keeping it in the dry state. This great advance has enabled a clinical trial to be made which has more than justified the suggestions I made ten or more years ago.

I have shown (*Proc. roy. Soc. Med.*, 1941) that dried penicillin, with which the Oxford workers kindly provided me, is many times more powerful than the most potent of the sulphonamide compounds. Penicillin does not appear to belong to the sulphonamide group, and if the active principle could be isolated in the pure state, and if its constitution could be ascertained, it would lead to the production of another series of chemotherapeutic agents which may well replace sulphanilamide and its derivatives in medical practice.—I am, etc.,

St. Mary's Hospital, W.2. Sept. 1.

ALEXANDER FLEMING.

Planning for Mental Health

SIR,—Some interesting points are raised by the report of the B.M.A. committee on the handling of problems of mental health and illness (August 23, p. 276). On the incidence of mental illness, for instance, one fallacy seems to be current, and from your note even the committee does not seem to have avoided it. It is said that "the incidence of mental illness is difficult to ascertain," and the witnesses apparently gave discrepant assessments and have not much helped the committee.

May I suggest the reasons for this apparent discrepancy. On analogy, compare mentally ill people with physically ill people. The physically ill fall roughly into two classes: those who are chronically or permanently ill and those (constituting the vast majority of normal or at any rate average people) who have intermittent or occasional illnesses. Not one of us has had no physical ailment, serious or trivial, at some time or another; yet we do not consider ourselves as diseased. The nervously or mentally ill (the word "mental" has an unfortunate connotation in that to most people it implies insanity or psychosis—"mal-adjustment" would be a more suitable word) fall similarly into two classes. On the one hand are those who have become chronically neurotic or psychotic or who are constitutionally mental defective, and on the other are the vast majority of us who at some times, and on the other are the vast majority of us who at some times or another have had or will have nervous complaints and time or another have had or will have nervous complaints, spells of temporary maladjustments—that is, minor depressions, spells of acute anxiety, serious sexual, personal, marital, economic, or

other problems, or problems arising from somatic disease or accident.

One cannot legitimately speak of the incidence of mental illness (if by "mental" is not merely meant psychotic). One may, of course, speak of the incidence of certifiable lunacy or deficiency, but surely not of the maladjustments, which we all have at one time or another, just as we all have physical ailments sooner or later. It seems to me rather important to discard the impracticable concept of two classes of people: the mentally ill and the mentally well.

Psychological problems arise at every stage of our lives: the weaning of the infant from the breast and from infantile excretory habits; the weaning from the home when school demands it, the sexual problems of the adolescent, the young unmarried, those about to be married, and those recently married: marital problems and the weaning of the mother from her children when they must leave home; the problems of involution and bachelorhood; the problems of ageing and ill people, which are not sufficiently realized; the problems that arise during and after physical disease or accident. All these are minor problems when they first arise, but the physician who fails to make a distinction between those permanently ill and those mentally perplexed may fail to treat the latter. Problems which might easily be solved or prevented even by one or two interviews may graduate into chronic and permanent mental illness. To raise the question of the incidence of mental illness tends to confuse the problem by over-simplification. A multiplicity of factors are involved. The problem primarily is not one of treating neurotic people, but of treating the neurotic disturbances of the population at large.

The definitions of "psychotherapist" and "psychiatrist" are neither clear nor illuminating. In practice, the former seems to be applied to those who treat the psychoneurotics and the latter to those who diagnose the psychotics. The term "neuropsychiatrist" might be a better one, because one cannot help one type of maladjustment without experience and knowledge of the others. Moreover, the medical psychologist must have some skill in the somatic aspect of disease, especially in neurology. The "pure" neurologist who disdains psychiatry need not, of course, have this wider knowledge: unlike the neuropsychiatrist he diagnoses often, treats much, but cures seldom.

I suggest that psychological medicine should be integrated with the rest of medicine and not be "psychically isolated" from it. The basic medical syllabus should include side by side: medicine, surgery, obstetrics, and psychological medicine. The doctor—whatever his function or specialty—is expected to know something of minor medicine, minor surgery, and even of minor obstetrics—and to know when to refer the major cases to the specialist. As there is a psychological factor in every ailment, he must not be allowed to shirk his responsibilities where the mentality and problems of the patient influence—or can influence—his trouble.

Many doctors even now are apt to deride the medical psychologist: accusing him of theorizing and of poor results, and of disagreeing within his own tribe. If they would only spend one morning in a busy out-patient psychiatric clinic they would realize, first, that competent psychiatrists differ no more in their actual practice than one general practitioner differs from another. All of us have our pet foibles and fads and skills; practitioners of widely different schools treat cases in very much the same way. And the good psychiatrist wisely commits himself to no theoretical school; the warring of psychological sects has now largely ceased, except among the verbally minded. Secondly, he would realize that it is very easy to get good results where the general practitioner sends a case in time; and that even in neurotics of long standing the results can be good. But a common fallacy must be realized: it is no more possible to "cure" a constitutional nervous illness than it is to cure a hereditary physical illness. It can be alleviated so that life is tolerable, unless the case is sent far too late. For some reason the non-psychiatrist demands of the psychiatrist a radical cure where he would not think of demanding it of himself, and sends his lunatics for cure and is righteously indignant when this is not possible.

My points may not all have been immediately relevant to the committee's report, but that they can have some bearing on the medical profession's reaction to that report I sincerely hope.—I am, etc.,

Bride of Earn, Perth, Aug. 23.

HENRY HARRIS.

STR.—The B.M.A. Committee's report on this subject, as epitomized in your issue of August 23 (p. 276), gives one furiously to think. Is it not clear that unless this topic be considered in its widest bearings, mental and moral "inadequacy" will continue to spread not only in this country but all over the world? beg to touch upon one important aspect which has apparently not come under the purview of the committee in question. May not the increasing psychological ill-health with which the present generation is faced be related to the peculiar sociological problem which is also now daily pressing itself on our notice—namely, the war? In short, is not Western civilization now breaking up a process strongly suggestive of suicide; and, if that be so, should we not consider the psychological break-up merely one aspect of the general process—complicated, of course, by the usual phenomena of vicious circles, effects becoming themselves causes and so leading to ever more deeply growing confusion? Under such circumstances how should we expect to find sanity ruling or extending its sway in the affairs of daily life? *Qui custodiet ipsos custodes?* The time will come for our pundits to start teaching "mental and moral hygiene" when they have themselves arrived at general agreement on its first principles (and distinguished from some of its symptoms).

I will end with a single practical suggestion. I personally believe the source of the whole trouble to be the break-up of family and local life. Ever-increasing centralization, with its inevitable accompaniment of bureaucracy—that is, rule by the impersonal machine—is not only playing ducks-and-drakes with our Western civilization; it is actually promoting insanity.—I am, etc.,

Inverness, Aug. 26.

A. J. BROCK.

Bacteria from Wounds Enclosed in Plaster

STR.—In the *Journal* of August 23 (p. 268) Dr. H. L. de Waal describes an ingenious method of taking bacteriological samples from wounds enclosed in plaster, and severely criticizes the method described by us a short time ago (*Journal*, 1941, 1, 877). We should hesitate to criticize Dr. de Waal's method without a thorough trial had he not done this to us. If he had tried our method and our apparatus he would have found that oedema does not occur; nor does granulation tissue grow into the base of the cylinder. But apart from any actual trial, since the base of the apparatus lies flush with the inner surface of the plaster and is completely closed it is difficult to see why oedema should occur and easy to see that penetration by granulation tissue is impossible. It seems that the type of window he describes as suffering from these defects is not ours, but one previously used by himself and discarded. When the window is properly applied samples obtained through it are indistinguishable from those obtained from other parts of the wound. Many of our observations were made on wounds without windows. Their flora, observed at changes of plaster, did not appear to differ from those with windows; nor did the removal of a window from a given wound or its insertion appear to influence the quality of the samples obtained. We conclude from this evidence that the bacterial flora at the base of the cylinder is representative of that in other parts of the wound.

As to his recommended procedure, we see many virtues in it and some possible vices, the reality of which could only be proved or disproved by experience. For example, the thread in being withdrawn has to be dragged, according to the diagram, across an intact skin surface which would presumably be coated with discharge in which irrelevant saprophytes would be proliferating. Incidentally, this dragging might well be considered surgically undesirable as disturbing granulation tissue, especially in the early stages of healing. Again, the thread itself, like a dressing, constitutes a system of minute stationary foci of decomposing discharge, and may well be rich in microbes which are scanty on the actual wound surface. We found in the early stages of our work that if gauze dressings were put under the window our samples from the outside of the dressing were not representative, and we corrected this in the later part of the research.

As to the chances of secondary infection through the two types of window, Dr. de Waal alleges that ours is risky and implies that his is not. In theory there is not much to choose between the two in this respect, though we prefer ours; but in

practice we have published evidence that ours does not give this trouble, whereas his claims are unembarrassed by any documentation.—We are, etc.,

Sept. 2.

JEAN ORR-EWING.
A. D. GARDNER.
J. C. SCOTT.

Puerperal Tetanus

SIR,—I am interested in the paper on puerperal tetanus by Drs. Bruce Maclean and P. Challen (August 30, p. 302). In the case of puerperal tetanus which I described in the *Chinese Medical Journal* (1928) I stated I could not find any record of a similar case in China, but tetanus neonatorum was very common in parts of the province (Fukien, South China), due, I am sure, to the custom of the native midwives using earth to dress the cord. The infant mortality was, of course, extremely high.

I hoped my report might bring records of other cases in different parts of China, but only one reply came in from South China later. In South India I had a case of severe puerperal tetanus brought in on the fifteenth day of the puerperium. The woman had been delivered by a native midwife.—I am, etc.,

Ipswich, Sept. 1.

L. H. H. BYRNE.

SIR,—Drs. Bruce Maclean and P. Challen, in their interesting report of this rare complication, suggest that the infection might have originated from the rectum or possibly from the perineal suture material. As the latter was silkworm gut they might be interested in the Tetanus Committee's report in the *Journal of Obstetrics and Gynaecology of the British Empire* for June, 1941, on the anaerobic infection of vulval pads, on the reinfection of cotton-wools and cellulose tissues after sterilization in manufacture, and on the difficulty of eliminating spore-bearing organisms unless an absolutely rigid technique of sterilization is followed. The committee's report gives some valuable information on the sterilization of all dressings, and paras. 2 to 5 (pp. 396-400) are of much general interest.—I am, etc.,

Minera, near Wrexham, Sept. 4.

R. OWEN-JONES, F.R.C.S. Ed.

Routine Radiography of Students' Chests

SIR,—I was interested to read the letter from the secretary of the British Medical Students' Association (August 23, p. 279), in which recognition is made of our scheme for the regular x-ray examination of our students' chests. This scheme has proved most successful in the detection of early cases of pulmonary tuberculosis, and hence, presumably, in the prevention of frank cases of the disease. It has been eagerly accepted by our students, and it is not surprising to find that there is now a demand for its general introduction at other schools.

There is, however, one point in Miss Tinker's letter which requires correction. The x-ray scheme as run at University College Hospital was conceived and originally established and financed entirely by this medical school out of its own funds. Hence, however, the Prophit investigation of the Royal College of Physicians was commenced, the two schemes have been run in co-operation, and we are very grateful for the assistance which we have received from the Prophit Scheme.

The routine x-ray examination of students' chests may prove to be the beginning of a wider organization of students' health services.—I am, etc.,

University College Hospital, London, W.C.1.

GWYNNE WILLIAMS.
Dean.

Recovery from Crush Syndrome

SIR,—Your annotation on recovery from crush syndrome (August 30, p. 311), in which my article on the same subject (*Journal*, August 9, p. 197) is mentioned, leads me to correct a misprint in the chart of the latter: "30 grammes sodium citrate" should have read "30 grains." I wish also to add the fact, interesting in view of the article by Longland and Murray (*Lancet*, 1941, 2, 158), that in my case the urine remained acid for twenty-three days after admission and for eleven days after the administration of citrate had begun. This observation and others were included in the original draft of my report, but were excluded from the final copy to satisfy the exigencies of space.—I am, etc.,

Carlisle, Lanarkshire, Aug. 31.

RONALD G. HENDERSON.

Rupture of the Drumhead as a Wartime Injury

SIR,—Points in Dr. A. B. Alexander's paper on "Rupture of the Drumhead as a Wartime Injury" (August 9, p. 195) aroused my special interest. He mentions that over 50% of cases due to blast injury seen by him were infected. A short time ago I had the opportunity of inspecting a considerable number of ruptured drumheads in naval personnel. Over 80% of these cases healed without infection. Those that failed to do so had either suffered immersion after reception of the blast injury, or had received drops in the ears previous to admission to hospital. Drops should never be inserted into a dry ear with a traumatic rupture of the membrana tympani. Unfortunately, this is not always realized, and drops are prescribed from a mistaken but praiseworthy desire to do something.—I am, etc.,

Aug. 24.

D. BROWN KELLY,
Surgeon Lieut., R.N.V.R.

Case of Shock from Burns

SIR,—Drs. R. T. Grant and E. B. Reeve (August 30, p. 293) describe examples of traumatic shock in which the blood pressure is raised, but in their nine cases the pulse rate remained comparatively slow, never rising above 92. A case of burn shock in which the blood pressure was high and the pulse rapid recently came to my notice and its features seem to be worth recording.

A pantry-maid aged 18 was admitted to hospital at 1.30 p.m., suffering from extensive second-degree burns of the back, thighs, and forearms. She was seen forty-five minutes after the accident, and appeared clinically to be severely shocked—pale, sweating, mentally alert, with a temperature of 97.2° F. and a pulse rate of 144. The blood pressure was 150/110. She was treated in the first instance by sodium bicarbonate compresses, morphine, and warmth. At 2.30 the blood pressure was still 150/110; at 4.0 it was 130/110 and the pulse 152; by 5.45 the blood pressure had dropped to 95/40: 900 c.cm. of plasma was then administered and the blood pressure rose to 130/90, the pulse rate being 128. At 8.0 the blood pressure had again dropped to 90/50: 450 c.cm. of plasma and 900 c.cm. of plasma-saline were given in thirty minutes and raised the blood pressure to 125/80. It was then considered that she was fit for treatment of the burnt areas, which was carried out under ether anaesthesia eight hours after admission.

The normal blood pressure, determined from the mean of several readings during convalescence, was 115/70.—I am, etc.,

Liverpool, Sept. 6.

WILLIAM M. BEATTIE, F.R.C.S.

Voluntary Hospitals

SIR,—Sir Frederick Menzies (September 6, p. 353) goes to the root of the matter in asking: "What are the particular virtues of the voluntary hospital system which are conspicuous by their absence in the municipal hospital system?" Your correspondent, Dr. E. Montuschi, on "Group Practice or Bureaucratic Medicine" (*Supplement*, September 6, p. 41) gets down to essentials also when he states that: "The last [national organizations] are concerned with broad issues of policy, the regional with the more concrete problems of organization, and the local with the living practice and execution of the demands for which the system came into being. For these demands are, in ultimate, the demands of human beings living diversely, in different places and in differing environments."

It is of importance that there should be some clear understanding of the difficulties confronting those who must soon face the problem of a reorganization of the health and hospital services of the nation. For the greater part of my life I have served in the dual capacity of a medical administrator—dealing with the concrete problems of organization—and as a practising physician (albeit a specialist) in intimate contact with personal demands of living human individuals. For the last two years I have observed with interest the working of what amounts to a voluntary hospital, uprooted and transplanted by the war, within the framework—indeed, the very walls—of the local authority hospital of which I still remain "in charge." After this experience I feel I may usefully attempt to give my answer to Sir Frederick Menzies's question.

One of the better features of the voluntary hospital is the feeling of independence and personal responsibility for their work and the welfare of their patients which the senior staff have and in consequence the loyalty which juniors accord them. Such a

not precluded by the municipal hospital organization and may be found, but its free existence is not securely provided for. On the other hand, I am equally sure that "problems of organization," more particularly between different hospitals or groups of hospitals, are more effectively secured in a municipal service. Those brought up in a voluntary hospital *milieu* are apt to be intolerant of the control which an "efficient organization" should exercise. This no doubt arises from a fear, not without some justification, that effective organization may mean only inefficient interference.

A satisfactory system, I believe, must ensure a clear-cut separation of the functions of the policy-making central powers, of the local organizing authority, and of the practising executive, and secure independence for each within its own field. Let me add that, while the functions of each should be distinct and separate, the working of the scheme will be helped by suitable individuals acting in more than a single sphere.—I am, etc.,

St. Albans, Herts. Sept. 6.

W. J. T. KIMBER.

Remedy for Defective Sight

SIR.—In a recent radio programme of the series entitled "Any Questions" a question was submitted as to the possibility of remedying defective eyesight without the use of spectacles. In dealing with this question Prof. Huxley stated that there was such a treatment but he was unable to give details about it. In the next programme of "Any Questions" Prof. Huxley took occasion to make a special announcement to the effect that he had now ascertained that this form of treatment was practised in this country by . . . who had written a book on the subject entitled . . . and also by . . . who had written a book entitled . . .

One would wish to inquire whether this method of treatment has been approved by the leading ophthalmologists. Also whether it is to the advantage of the public to have this form of treatment propounded to them in this way.—I am, etc.,

Manchester, Aug. 11.

J. PARNES, M.B.

* Dr. Julian Huxley informs us that he had done no more than state that there were practitioners of these methods in this country (not mentioning any names), and that there were two books on the subject—namely, *Normal Sight without Glasses*, by Dr. W. D. Bates, and *Perfect Sight without Glasses*, by H. Benjamin. Dr. Huxley also tells us that he has personal knowledge of one case in which improvement of sight had been obtained in a patient treated for thirty years by other methods without success.—Ed., *B.M.J.*

The Services

NAVAL AWARD

In a *Supplement to the London Gazette* dated August 19 the name of Surgeon Commander Edward Heffernan, R.N., was misspelt. He has been awarded the O.B.E. for bravery and devotion to duty during a burning merchantman during an enemy air attack.

MENTION IN DISPATCHES

Surgeon Lieut. Harry Winston Gothard, R.N.V.R., has been mentioned in dispatches for courage and devotion to duty when H.M.S. *Southampton* was lost.

EFFICIENCY DECORATION, TERRITORIAL ARMY

The Efficiency Decoration of the Territorial Army has been conferred on Colonel A. R. Laurie, Lieut.-Cols. D. W. E. Burridge, T. E. A. Carr, W. A. Ramsay, and A. B. Williamson, and Majors (Temporary Lieut.-Colonels) A. S. Pern and R. O. Townend, R.A.M.C. (T.A.).

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Prisoner of War

Surgeon Lieutenant-Commander William Greaves, R.N.

ROYAL ARMY MEDICAL CORPS

Wounded

War Substantive Captain Henry Charles Ashley Harris.

Obituary

HERBERT SPENCER, M.D., LL.D., F.R.C.P.

Consulting Obstetric Physician, University College Hospital

The death of Dr. Herbert Spencer on August 28 breaks one more link between the *British Medical Journal* of former days and University College Hospital. Like T. W. P. Lawrence—pathologist, linguist, and anatomical draughtsman—he became acquainted there with Sir Dawson Williams, and formed a lifelong friendship with both. Many of his writings, obstetrical and historical, appeared first in these columns, and his wide and varied knowledge was always at the *Journal's* disposal for the benefit of readers. He had been a member of the Association for fifty years.

Herbert Ritchie Spencer was born on January 16, 1860, at Atherstone, in Warwickshire, the second son of Henry Spencer. He had a good classical grounding at Atherstone Grammar School and went on in 1879 to study medicine at University College,

London, qualifying M.R.C.S. and L.S.A. in 1883. A year later he gained honours in the Final M.B., B.S. examinations of London University, and proceeded to the M.D. in 1886. The foundations of his life-work were laid by Sir John Williams, then teaching at University College Hospital and at the height of his fame as an accoucheur. After holding the post of assistant in the midwifery department Spencer was elected assistant obstetric physician to the hospital in 1887. He was given the title of Professor of Obstetric Medicine by University College in 1893, and remained on the active staff until 1925. In the



middle of that long period of service he held high office in his branch of the profession—President of the Section of Obstetrics and Gynaecology of the British Medical Association in 1905, President of the Obstetrical Society of London in 1907, and President of the Obstetrical and Gynaecological Section of the Royal Society of Medicine immediately after the amalgamation. He gave the Lettsomian Lectures before the Medical Society of London in 1920 and presided over that society three years later. In 1924 he was chosen as Lloyd Roberts Lecturer and took as his subject "The Renaissance of Midwifery," which he illustrated with a wealth of information about early books and their authors.

He became a Fellow of the Royal College of Physicians of London in 1899, was examiner in midwifery for four years, served on the Council of the College in 1917-19, and delivered the Harveian Oration in 1921 and the FitzPatrick Lectures in 1927. He had also examined in midwifery and diseases of women for the Universities of Oxford, Cambridge, and London. Academic distinctions of which he felt justly proud were honorary Fellowship of the American Gynaecological Society, of the Obstetrical Society of Edinburgh, and of the Società Medica Chirurgica di Bologna; honorary membership of the Société d'Obstétrique et de Gynécologie de Paris, and of the Société Belge de Gynécologie et d'Obstétrique; and an honorary doctorate of the University of Aberdeen.

Spencer revered the name of William Harvey and never lost an opportunity of paying homage to the man and his work. He took a keen interest in the project for restoring the tower of Hempstead Church in Essex, where Harvey's remains are deposited, and was from the beginning a member of the Harvey Memorial Committee. His Harveian Oration in 1921, the first to be delivered by an obstetrician for fifty years, dealt with "Harvey as Obstetric Physician and Gynaecologist," and came as a timely reminder that Harvey was the author not only of

an immortal book on the circulation of the blood but also of a great book on the reproduction of animals. How great and real was Harvey's knowledge of midwifery the Orator had no difficulty in proving. His FitzPatrick Lectures on *British Midwifery in the Seventeenth and Eighteenth Centuries* were the outcome of many years of research and laid before the profession a fine chapter of British scientific progress and discovery in the obstetric branch of medicine. Printed in book form soon after their delivery they stand as a permanent contribution to the history of medicine, with many curious sidelights on the old English obstetricians. In 1928 Spencer was elected President of the Section of the History of Medicine of the Royal Society of Medicine, and in 1929 he gave an address on medicine in the days of Shakespeare. His writings on the practical side of his specialty included books on *Caesarean Section*, and on *Tumours Complicating Pregnancy, Labour, and the Puerperium*, the latter being an amplification of his Lettsomian Lectures published serially in the *British Medical Journal*. Thirty years ago he shared with T. W. P. Lawrence the task of preparing a descriptive catalogue of the specimens illustrating gynaecology and obstetrics in the museum of University College Hospital. Among the good causes that appealed to his nature was the Royal Medical Benevolent Fund, of which he was a vice-president and member of the Committee of Management.

A man of large physique, with commanding eye and resonant voice, Herbert Spencer liked company and was a familiar figure at medical gatherings in London. His forthright speech proclaimed the firmness of his opinions. He read much and delighted in old books; travelled abroad and made a collection of lacquer ware and other objects of art; greatly enjoyed a day's shooting or fishing or bird study; and was a judge of wine and food. Advancing years and the coming of war cut him off from some of those pleasant pursuits, and the deaths of old friends one by one left him rather a lonely man, for his friendship, not lightly given, was very staunch. Our portrait, reproduced from a photograph by Lafayette, shows H. R. S. as many of us like best to think of him—in jocular mood.

We regret to announce the sudden death, which took place on August 27 in Kenya at the early age of 25, of Dr. DAVID HUGH MANSON-BAHR, second son of Sir Philip and Lady Manson-Bahr and grandson of the late Sir Patrick Manson. Hugh Manson-Bahr was educated at Rugby and Trinity College, Cambridge, and after taking his B.A. went on to the London Hospital. He qualified M.R.C.S., L.R.C.P. in 1940 and undertook the course at the London School of Hygiene and Tropical Medicine, obtaining the D.T.M.&H. early this year; also his Cambridge M.B., B.Ch. He entered the Colonial Service with the idea of serving eventually with the Colonial Forces in East Africa, but he was cut off within a few weeks of arriving in Kenya. He was good at all times and specially prominent at rugby football, playing for hospital and the United Hospitals team. He was fond of outdoor sport of every kind, and was a skilful and ardent falconer, member of the Falconers' Club. His untimely death cuts off a career of much promise.

Medical News

The Right Hon. Sir Earle Page, G.C.M.G., M.B., Ch.M., Australian Minister of Commerce, has been appointed by his Government to come to London to establish personal Cabinet liaison between the United Kingdom Government and that of the Commonwealth.

An account of the Mental Health Report was published in the *Journal* of August 23. Copies of the report are obtainable from the Secretary of the Association, B.M.A. House, Tavistock Square, W.C.1, at the price of 6d.

A special luncheon in celebration of the twenty-first anniversary of the foundation of the Tavistock Clinic will be held on Monday, September 29, at Grosvenor House, Park Lane, at 12.30 for 1 p.m., under the patronage of H.R.H. the Duke of Kent. The wartime address of the clinic is Westfield College, Kidderpore Avenue, Hampstead, N.W.3.

The Council of Epsom College will shortly award St. Anne's Scholarships to girls attending Church of England schools. Candidates must be fully 9 and under 16 years of age, and must be orphan-daughters of medical men who have been in independent practice in England or Wales for not less than five years. The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected. The Conjoint Committee will in November next award a "Challise" annuity of £32 per annum to a duly qualified medical man who, on account of old age, has been compelled to retire and who is in need. Forms of application for the scholarships and pension can be had from the Secretary's Office, Epsom College, Surrey, and must be returned by October 14.

The twentieth annual lecture conference arranged by the Industrial Welfare Society was held during last week-end at Reading University. It was attended by some 250 welfare supervisors, employment managers, personnel managers, and directors of firms, and these delegates were received by the director of the society, Mr. R. R. Hyde, who read a message from the King: "It is gratifying to me as your Patron to observe in the many factories which I visit that the principles for which the society has stood since its inception in 1918 are now being so widely accepted." Among the lectures given on September 6 was one by Mr. D. C. Norris, F.R.C.S., chief medical officer, Metropolitan Water-Board, on "War Production and the Health of the Worker," and another by Colonel J. R. Rees, medical director, Tavistock Clinic, on "War and the Worker: Some Psychological Aspects."

The *Anglo-Soviet Journal* will no doubt have a much larger circulation now than before the Nazi invasion of Russia. It is a well-illustrated quarterly, owned by the Society for Cultural Relations, edited by Dr. Geoffrey Ververs, and published by Lindsay Drummond, Ltd., 6, Buckingham Street, W.C.2, at 2s. a copy. The July issue (being No. 3 of Volume 11) contains articles of topical interest, including one by Mr. Rusene Clarke on "Medical Theory in the Soviet Union." There are also some medical items in the miscellany headed Notes and News.

The Consultative Committee for the Director of Water Examination, Metropolitan Water Board, which is referred to in a leading article in this week's *Journal*, has the following composition under the chairmanship of Lord Ilford: Dr. James Ferguson, Dr. Mervyn Gordon, F.R.S., Dr. Thomas Orr, Lieut.-Colonel G. S. Parkinson, Dr. Maitland Radford.

A Defence Regulation is to be issued immediately, the terms of which are: (1) This Order may be cited as the Paraffin Emulsion (Reduction of Liquid Paraffin) Order, 1941, and shall come into operation on the day of 1941; (2) on and after the date of operation of the Order no paraffin emulsion shall be manufactured containing more than 25% volume in volume of liquid paraffin. The reason for this Order is that while the use of liquid paraffin is essential in certain conditions it is possible to effect economy in its use. While proprietary brands of petroleum emulsions contain percentages of liquid paraffin as high as 65% by volume, the Therapeutic Requirements Committee and the National War Formulary Committee have both decided that an emulsion containing 25% of liquid paraffin is as effective as the pure oil. The National War Formulary, which is now in proof and will soon appear, includes a 25% emulsion. It will, of course, be permissible to dispose of existing stocks of emulsions containing more than 25%, but in due course the Order should effect a substantial saving in the quantity of paraffin used medicinally.

During the first two years of the war over £7,000,000 have been contributed to the Duke of Gloucester's Red Cross and St. John Fund. Lord Iliffe, chairman of the appeal committee, stated last week that the Red Cross and St. John War Organization was faced with ever-increasing commitments in all parts of the world, the outgoings of the Organization being nearly £11,000 a day. New calls were constantly being made upon the Red Cross from every front at home and abroad, and in recent weeks every service in the Middle East and Far East had been expanded and extended. Nevertheless revenue had so far progressively kept pace with expenditure.

Caldecote Hall, Nuneaton, was taken over by the Ministry of Health last year, but was later relinquished and has now resumed its normal functions.

No. 33

INFECTIOUS DISEASES AND VITAL
STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 16.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths and of Deaths amongst Infants under 5 years of age, for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London, (c) Scotland, (d) Eire, (e) Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	135	7	28	—	6	125	8	51	2	2
Deaths	—	—	—	—	—	—	—	—	—	—
Diphtheria	699	33	182	18	32	709	28	340	35	31
Deaths	20	1	2	2	—	21	—	8	—	2
Dysentery	196	9	67	—	—	51	7	45	—	—
Deaths	—	1	—	—	—	—	—	1	—	—
Encephalitis lethargica	—	—	—	—	—	—	—	—	—	—
acute	6	—	3	—	—	3	—	—	—	—
Deaths	—	—	—	—	—	—	—	1	—	—
Enteric fever*	26	2	4	6	2	168	6	22	7	1
Deaths	2	—	—	—	—	—	—	—	—	—
Erysipelas	—	—	44	8	6	—	12	45	1	3
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	—	—	—	—	—	—	—	—	—	—
Deaths	51	3	9	21	2	35	5	6	10	6
Measles	1,914	78	24	83	3	8,057	45	405	5	4
Deaths	1	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum	91	5	17	—	—	95	14	17	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid A and B	166	2	14	—	—	—	—	—	—	—
Deaths	1	—	—	—	—	—	—	—	—	—
Pneumonia, influenza†	378	13	2	—	2	375	12	—	—	4
Deaths (from influenza)	6	16	—	—	6	6	—	—	—	1
Pneumonia, primary	—	—	126	9	—	—	14	121	—	—
Deaths	—	—	—	10	—	—	—	6	4	—
Polio-encephalitis, acute	2	1	—	—	—	5	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	25	1	10	2	1	36	2	4	—	—
Deaths	—	—	—	—	—	—	—	1	—	—
Puerperal fever	1	1	11	1	—	5	5	15	—	5
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	104	7	15	—	—	134	7	9	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	830	24	142	29	27	1,310	37	137	18	59
Deaths	—	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	3,190	193	56	32	16	943	8	43	—	19
Deaths	18	4	2	2	—	3	—	1	1	3
Deaths (0-1 year)	243	18	45	45	10	245	26	41	25	25
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still-births)	3,610	456	530	167	105	3,926	662	509	145	121
Annual death rate per 1,000 persons living	—	—	11.5	11.1	5	—	—	10.3	9.9	10.6
Live births	5,097	406	810	355	180	5,850	926	826	300	195
Annual rate per 1,000 persons living	—	—	16.5	23.6	5	—	—	16.7	20.0	17.1
Stillbirths	173	20	37	—	—	253	27	46	—	—
Rate per 1,000 total births (including stillborn)	—	—	44	—	—	—	—	53	—	—

* Includes paratyphoid A and B for Eire and Northern Ireland.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes one case of pneumonia not otherwise notifiable.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

A further decline in the notifications of measles was recorded during the week, 1914 cases being notified—a decrease of 362. A slight rise occurred in the incidence of scarlet fever, whooping-cough, and diphtheria. The notifications of these diseases exceeded those reported during the preceding week by 26, 52, and 22 respectively. In Scotland the incidence of diphtheria, measles, and whooping-cough declined, whilst scarlet fever showed an increase.

Dysentery

In striking contrast to the experience of the preceding week, when the number of cases was the lowest for several months, the notifications for the week under review showed a very large increase in England and Wales, and with a total of 196 reached a level that has only once been exceeded during the last three years. The largest of the local outbreaks were Essex (Colchester M.B. 17); Hertfordshire 60 (Berkhamsted U.D. 58); Yorkshire, West Riding 22 (Keighley M.B. 12); Pembrokehire (Pembroke R.D. 31). The increase in notifications in Scotland was due to an outbreak in the county of Inverness, 25. This county and the city of Dundee, 20, accounted for two-thirds of the total cases in the country.

Cerebrospinal Fever

One hundred and thirty-five cases of cerebrospinal fever were notified in England and Wales during the week reviewed, an increase of 14 compared with the preceding week. The largest number of cases were from Glamorganshire 10; Yorkshire, West Riding, 19; Lancaster 30 (Liverpool C.B. 9, Manchester C.B. 6). In Scotland the incidence declined, almost half the cases being reported from Glasgow, 12.

Typhoid and Paratyphoid

Twenty-six cases of typhoid and 166 cases of paratyphoid were reported in England and Wales. The largest increase was shown by Kent, and was due to 8 cases of paratyphoid occurring in Tonbridge R.D. The outbreak of paratyphoid in Cheshire and Lancaster persists, the number of cases reported for the past six weeks being: Cheshire 63, 44, 43, 28, 6, 15; Lancaster 146, 179, 133, 96, 76, 71, and of these 79, 78, 73, 70, 40, 40 were reported from Liverpool C.B.

Poliomyelitis

The number of cases reported in England and Wales showed a slight reduction, but isolated cases have appeared in several counties not previously affected. The outbreaks in Berkshire and Buckinghamshire are still the most important of the local epidemics. The returns for these counties are—Berkshire: New Windsor M.B. 2; Cookham R.D. 2; Buckinghamshire: Slough M.B. 4, Eton R.D. 2. A third death has been reported from the outbreak in the Slough area, a brother of a boy who died of the disease a week before. The only other area with more than one case was Southampton (Basingstoke M.B. 2). Multiple cases were reported from Scotland in the counties of Fife 2, Ayr 3, and the burgh of Glasgow 3.

F. I. Seymour and A. Koerner (*J. Amer. med. Ass.*, 1941, 116, 2747) record their observation on nearly 10,000 pregnancies obtained through artificial insemination, two-thirds of which were effected by use of the husband's semen alone. The proportion of boys to girls resulting was roughly 8 to 5 when the husband's semen was used and 7 to 5 when a donor's was used. Of the pregnancies 97% resulted in live and perfectly normal babies. The incidence of miscarriages and abortions was only one-fifth of that occurring normally in the population in areas where artificial insemination is not practised. The incidence of extra-uterine pregnancies was only one-sixth of that occurring normally. In all, 1,357 women had repeated pregnancies by artificial insemination. Successful pregnancies were reported with inseminations varying from 1 to 72.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Outbreak of Warts in a School

J. W. writes: A headmaster writes to me as a school medical inspector asking me if I can give him any help with an outbreak of verruca in a secondary school. He was advised by the M.O.H., but in spite of disinfection of the floors, etc., of the swimming baths there are always a number of cases in the school. Can any reader of the *Journal* give me any further advice on this matter as to the prevention of this trouble and as to any recent literature?

Recurrent Erysipelas

E. C. A. asks if any reader can suggest treatment for preventing erysipelas. Patient is a schoolmistress aged 45. She once suffered from tuberculosis of lungs—now quiescent. She has very crimson cheeks, and the erysipelas superimposes itself on the coloration of the left cheek, which becomes hard, raised, painful, and with a spreading irregular edge. The temperature is 100-101°, but never above. The attacks, which have been three in number, have occurred at eight-weekly intervals. Sulphanilamide in adequate dosage has been started on the first day and the condition speedily arrested on all occasions, but the patient feels very exhausted and weak afterwards. She has been in rather poor health lately with menopausal symptoms.

LETTERS, NOTES, ETC.

Wanted—A Microscope

LORD EBBISHAM, G.B.E., chairman of the Comforts-Collections Committee, writes from the headquarters of the War Organization of the British Red Cross Society and the Order of St. John of Jerusalem: We have an R.A.F. Hospital on the Gold Coast, West Africa, and the medical officer in charge writes to say that there is a most urgent necessity for a second-hand microscope for malaria blood tests. The one they have is not sufficient for the number of cases requiring treatment. The microscope should have a good 1/12-in. objective lens, a 1/12-in. objective movable stage, and a substage condenser. These instruments are impossible to obtain new, so I appeal to any reader who has one which is not in use to send it to me at 54, Victoria Street, S.W.1, to forward to the Gold Coast. It may be the means of saving many valuable lives.

Health Education Material

The Central Council for Health Education (Tavistock House, Tavistock Square, W.C.1) is constantly preparing new material giving well-authenticated advice to the general public on various subjects connected with healthy living. The following are some of the subjects on which booklets or leaflets have been compiled during the last few months: typhoid, tuberculosis, diphtheria, measles, influenza, scabies and impetigo, lice, bugs, food and sanitation in wartime, purifying drinking-water in wartime, health in the shelter, coughing and sneezing, health in the black-out, the health of mother and child, ration dinners, health for A.R.P. workers. Further leaflets are in preparation on flies, whooping-cough, and rheumatism respectively, and three new leaflets have been published. One on diphtheria immunization is a reproduction of a recent broadcast by Sir Wilson Jameson, Chief Medical Officer of the Ministry of Health, in which he puts the whole case for diphtheria immunization in a few simple and telling words. The other two are leaflets on the importance of sleep for children; the first is intended for the use of parents, and the second has been composed to appeal to children direct. It might well serve as the basis for a school lesson, after which the teacher could allow the children to take the leaflets home to re-enforce the advice given. The Central Council is an association not formed for profit, and

all its publications are issued at a price covering production costs only. Material is available on request at economic rates, in either large or small quantities, to local authorities, welfare officers of industrial concerns, voluntary organizations, and the general public.

Deaths on the Table

"G.P." writes: The avoidance of this terrible tragedy is ably summed up in the last paragraph of Dr. L. S. Woolf's letter (August 23, p. 282). There is another point, and I speak from twenty-two years' experience as a general practitioner, not as a professional anaesthetist. It is the personal factor. By this is meant that confidence of the patient in the person anaesthetizing is the major point in safety. It would be interesting to know how many "deaths on the table" have occurred when the general practitioner has given the anaesthetic to his own patient. I had a sad example of this a few years ago. I gave a patient (and friend) of mine, a man aged 46, a general anaesthetic for dissection of tonsils, and there was never a moment's anxiety. Three years later he was having another operation, and the surgeon said he wished his own anaesthetist to give the anaesthetic. Almost the last words the patient said to his wife before the operation were that he wished his own doctor was giving the anaesthetic instead of a stranger. The patient died on the table just as the surgeon was making his initial incision. I must naturally remain anonymous.

Ligature of Varicose Veins

MR. DOUGLAS ROBB (Auckland, New Zealand), commenting on the article by H. S. Russell on subcutaneous ligature of varicose veins (April 26, p. 626) considers that the procedure described is open to the following criticisms. (1) A blind pouch of internal saphenous is left between termination and site of ligature; this may harbour a loose clot, and risk of embolism even under ambulatory conditions is not negligible. (2) This segment contains the leaking valve, and is exposed to pathological venous pressure. (3) The three main tributaries—to say nothing of the trunk itself, which is not severed in continuity—entering the segments are untouched, and especially under the condition mentioned in (2) are potential and actual routes for anastomosis and re-establishment of the downward current. For these reasons he prefers an exposure of the termination of the internal saphenous vein, ligature flush with the deep femoral, and ligature and division of all tributaries entering the terminal one to two inches. This can be done with local anaesthesia, using a small one-inch incision parallel with Poupart's ligament. Mr. Robb usually has patients in hospital for only twenty-four hours, and makes them walk round on the evening of the operation and each day afterwards. Infections are begun at the same time as the operation and continued as convenient. He does not think that this procedure should be done on an out-patient, nor that any fully effective operation can be carried out less inconveniently. Sometimes in older patients or bilateral cases two or three days in hospital are required.

Adrenal Graft for Addison's Disease

MR. DOUGLAS ROBB, commenting on the statement made by Drs. Katz and Mainzer (April 26, p. 618) that the "insignificant surgical procedure of grafting endangers the patient's life," writes: The following brief notes of an experience bearing this out may be of interest. A married woman of 30 presenting the classical picture of Addison's disease was referred to me for adrenal grafting by Dr. J. E. Caughey. The operation was done under light ether anaesthesia, and the grafts embedded into the lower part of the right rectus abdominis and into the subcutaneous fat exposed by the same incision. The grafts were taken from both suprarenal glands of a stillborn full-term male foetus. The embedding was done two hours after the child's birth, but intra-uterine death was believed to have occurred twelve to twenty-four hours previously. On the evening of the same day as the operation a menstrual period appeared for the first time for more than a year. The next morning the patient sat up to take breakfast and died instantly without warning, struggle, or distress. A post-mortem examination was not obtained.

Colds in Air-raid Shelters

DR. A. G. BADENOCH (Garelochhead) writes: So much success has attended the administration of the following remedy in cases of respiratory catarrh, even where the time-honoured expectorants have failed, that I have been advised to make it more widely known through your columns. One calls it "milt. laryngitis," but that title by no means delimits its scope. It is useful at all stages of a "cold," perhaps especially prophylactically and at the onset.

B	Tr. ferri perchlor.	..	..	..	..	ad 3ss
	Tr. opii camph.	..	..	..	..	ad 3ss
	Glycerini	..	..	..	..	ad 3ss
Aq.	..	..	..	..	..	ad 3ss

Sig.: To be gargled and swallowed, without water, after meals and at bedtime.

A useful addition in bronchial cases is syr. iobutani, max to 3ss. In tonsillitis, potassium chlorate is not incompatible.

THE OPERABILITY OF CARCINOMA OF THE RECTUM

BY

J. C. GOLIGHER, M.B., Ch.B., F.R.C.S.

Formerly Resident Surgical Officer, St. Mark's Hospital, London

The Registrar-General's statistical review for England and Wales for the year 1936 reports 5,386 deaths from cancer of the rectum. This clearly indicates the magnitude of the problem presented by malignant disease in this situation—a problem, moreover, whose solution, in the present state of our knowledge, lies entirely with surgery. No assistance can as yet be sought from radiotherapy. It is particularly fortunate, therefore, that there are now available for this condition methods of surgical treatment, based on sound pathological knowledge, that are capable of yielding really excellent results. The writings of Miles (1939), Lockhart-Mummery (1934), and Gabriel (1937) leave no doubt on this point. If, however, the cure of rectal cancer on a large scale by surgery is to become a practical proposition it is essential that these methods should be widely applied: in other words, surgeons in general must endeavour to find operable a large percentage of the total number of cases of rectal carcinoma that they see. It seems to me that it is their failure to attain this objective that constitutes the most unsatisfactory feature of present-day treatment of this disease. Several surgeons have undoubtedly recorded high rates of operability in recent years: these for the most part, however, have represented the achievements of experts. It is strongly to be suspected that the unrecorded rate among surgeons who have no very special experience in this branch of surgery is still extremely low.

In considering the operability of rectal carcinoma it is essential to have a clear conception of the aims of radical surgery in this condition. The primary objective is naturally to secure a complete eradication of the disease, as measured by freedom from recurrence over a period of five years; but even where this is not achieved the operation is not to be looked upon as having been completely valueless. On the contrary, excision has a high palliative value, which must not be disregarded in assessing the benefits of radical surgery. Practically all cases improve enormously in general health after an excision, and, even though recurrence should eventually take place, the patient may meanwhile have enjoyed two, three, or more years of comfortable and useful life. This contrasts very favourably with the fate of inoperable cases treated solely by colostomy. For though colostomy relieves the obstructive element it does little to alleviate the other distressing features of an inoperable growth—the severe sacral or sciatic pain, the profuse rectal discharge, the occasional severe haemorrhages, and the formation of fistulae externally or into other organs—which, singly or combined, may render death from this cause one of the most unpleasant imaginable. So that even for advanced growths, in which the chances of a radical cure are relatively slight, excision, where possible, is always justifiable, provided that the mortality can be kept within reasonable bounds. In the hands of surgeons who possess the skill to do this the standard of

operability can thus safely be raised so as to include a large proportion of these late cases.

It may be said at once that this is the attitude taken by the surgeons at St. Mark's Hospital, where approximately 120 new cases of carcinoma of the rectum are seen annually and where a high operability rate is observed. The present paper is a study of the operability of rectal cancer at that institution. It is based essentially on the recorded findings on all new cases of the condition dealt with over a period of ten years, from 1930 to 1939 inclusive—1,186 in all. Some additional material from the pathological department has also been included.

Definition of Operability

Cases classed as operable were those in which the surgeon considered the conditions favourable for a radical excision of the disease by operation. Not all of these patients did actually have a radical removal carried out. Some who were provisionally considered operable refused to have an excision performed because of their abhorrence of a colostomy; and others who were in the process of having such a removal and who were definitely known to be operable unfortunately succumbed after a preliminary colostomy operation or declined to proceed to the final stage. The prospect of ultimate cure was naturally less in some cases than in others, but no case was considered operable unless there appeared at the time of the operation to be some chance of complete cure. Patients on whom excision was performed but whose growths were known not to have been removed completely (as, for example, when a small secondary nodule was present in the liver) were not included. They were grouped as palliative excisions under the heading of "Inoperable" cases.

Table I shows the distribution of cases in operable and inoperable groups, and indicates the forms of treatment adopted.

TABLE I.—Analysis of Rectal Carcinoma Material at St. Mark's Hospital (1930-9 inclusive) (1,186 Cases)

Operable		Inoperable	
Expectant (refused operation)	23	Expectant	42
Radium	5	Curettage and diathermy	4
Local excision	38	Radium	17
Colostomy or caecostomy	23	Laparotomy alone	10
alone	23	Colostomy	357
Hartmann's operation	14	Palliative excision	11
Perineal excision	291		
Combined excision	321		
Total	715 (60.3%)	Total	471

* Died before the second stage of a radical excision or refused further treatment.

Inoperability was determined either by an unsatisfactory general condition of the patient which rendered him unfit for a radical operation, or by an advanced state of the growth which placed it beyond the reach of surgery.

Inoperability due to Patient's General Condition

A subnormal general condition of the patient was seldom accepted as a reason for refusing operation altogether, though it may have modified the form of treatment given. Actually only 92 (8%) of the cases were thus invalidated. This is important because the majority of patients suffering from carcinoma of the rectum are elderly, and often their general condition has been considerably undermined before they present themselves for treatment. In a number of cases no very special cause was present to account for the unsatisfactory state of the patient's general health, and such cases were merely described in the notes as being "in poor general condition." In others, however, some concomitant ailment (such as cardiac disease, chronic bronchitis, emphysema, pulmonary tuberculosis, unstable mental condition, diabetes mellitus, etc.) was noted, or the patient was very obese or elderly. It is to be emphasized, however, that as a rule these conditions constituted a contraindication to operation only when they were of an advanced nature, and not a few patients manifesting lesser degrees of the same conditions successfully withstood radical excision of their growths. Particularly to be stressed is the fact that no arbitrary age limit to operability was observed, as is clearly shown in Table II, which indicates the influence of age on the operability rate in 1,171 cases in which the data were adequate for that purpose.

TABLE II.—Effect of Age on Operability

Age Group	Cases in Each Group	Accepted as Operable	Operability Rate
20-29	25	15	60.0%
30-39	63	42	66.7%
40-49	145	106	73.1%
50-59	351	224	63.8%
60-69	443	260	58.2%
70-79	139	65	47.0%
80-89	5	3	—
All ages ..	1,171	715	61.1%

The optimal operability rate was in the age group 40-49. In older patients the rate declined, but even in the age-group 70-79 it was still practically 50%. The importance of a high operability rate in the upper age groups is amply demonstrated by the fact that more than half (587) of the patients were over 60 years of age. The lower operability rate in patients under 40 is not connected with the general condition at all; it is explained, as Dukes (1940) has shown, by the fact that in younger patients rectal carcinoma assumes a more malignant form, and by the time the patient comes to the surgeon extensive spread, rendering the growth inoperable, has more often taken place.

Inoperability due to State of Growth

Having excluded the patients whose general condition was completely unsatisfactory for any form of radical treatment, there were 1,094 cases in which the decision as regards operability rested solely on the state of the growth itself. Of these, 379 were found to be inoperable. The cause of inoperability was the presence of recognizable spread of the disease to points beyond the scope of an excision. This manifested itself in the following ways: (a) by local fixation of the growth (spread by direct continuity of tissue); (b) the presence of hepatic metastases (venous spread); or (c) extensive involvement of the lymph glands or peritoneum (lymphatic spread).

It is important to realize that it is only at laparotomy that an accurate assessment of the operability of a rectal carcinoma can be made. For, in the first place, clinical examination alone gives no reliable information as to venous or lymphatic spread, unless it is very extensive; and, secondly, fixity of the primary growth, as determined by rectal examination, is an untrustworthy sign on which

to base a diagnosis of inoperability. Growths which appear clinically to be fixed and inoperable are often found at laparotomy to possess enough mobility to permit of excision being performed. The explanation of this may be that during a rectal examination it is naturally difficult to impart movement with the finger to a growth that is sometimes so large as almost to fill the pelvis. At laparotomy it may be possible to grasp the growth with the whole hand and to test more exhaustively its range of movement in all directions. Whatever the explanation, however, there is no doubt of the fact, and it is one that thoroughly justifies the practice at St. Mark's Hospital of allowing all "borderline" cases to proceed to laparotomy.

Thus in the present series the decision as regards operability in no fewer than 893 cases (of which incidentally 621, or 69.7%, were operable) was deferred till the abdomen had been explored. In only 201 cases was a conclusion reached on clinical grounds alone; 107 of these were hopelessly inoperable cases (with fixed growths in nearly all, fistulae in 15, palpable enlargement of the liver in 19, ascites in 4, and fixed enlarged inguinal glands in 4), while 94 had apparently inoperable growths, in which confirmation of operability at laparotomy was precluded because the patient refused operation or because the treatment applied was of a restricted nature (e.g., local or perineal excision with "blind" colostomy) not involving exploration of the abdomen.

The part played by each of the three contraindications in determining inoperability will now be examined.

Contraindications to Operability: (a) Fixation of Growth

Fixation was noted in 261 of the inoperable cases. In 169 of them a laparotomy had been done and a definite opinion as to the presence of hepatic, peritoneal, or lymph-gland metastases could therefore be formed; in no fewer than 97 of these fixity of the growth was the sole cause of inoperability. An incentive is therefore provided for courageous handling of this complication.

The exact situation of the fixation was clearly defined in 174 cases. In 116 of these it was found anteriorly, in 23 posteriorly, and in 14 on the lateral walls; in 33 cases the rectum was fixed on more than one aspect. The enormous preponderance of anterior fixation is interesting, and is entirely in keeping with preconceived ideas on the subject: for it has long been recognized that the anterior aspect is the *face dangerense* of the rectum. It is of course accounted for by the close application of viscera to the front of the bowel, so that a rectal carcinoma readily becomes adherent to them.

Influence of Site of Growth on Operability.—It follows from the above that the site of the growth in the rectal wall ought to have an important influence on its operability. Thus one originating in the anterior wall is early exposed to the risk of becoming adherent to the organs related to this surface, and its operability ought therefore, on the average, to be reduced. This is a danger which does not apply to posterior growths until such time as they have extended circumferentially round the rectum to form completely annular lesions, and their chance of becoming fixed to the sacrum is apparently slight. The operability of growths beginning in the posterior wall should thus be appropriately enhanced. The risk of a lateral growth becoming fixed to the parietes is probably not any greater than that of posterior growths, but the ease of extension to the vulnerable anterior wall would probably slightly diminish the operability of carcinomata arising in this situation. Confirmation of these conjectures is afforded in Table III, which shows the relation between the site of the growth and operability in 1,063 cases in which these points could be correlated.

TABLE III.—*Influence of Site of Growth on Operability*

Site of Growth		Growth in Each Site	Accepted as Operable	Operability Rate
Completely annular	Male	225	110	48.9%
	Female	112	60	53.6%
	Total	337	170	50.4%
Centred on anterior quadrant	Male	165	66	40.0%
	Female	71	42	59.2%
	Total	236	108	45.8%
Centred on one or other lateral quadrant	Male	165	130	78.8%
	Female	60	47	78.3%
	Total	225	177	78.7%
Centred on posterior quadrant	Male	190	157	82.6%
	Female	75	65	86.6%
	Total	265	222	83.8%

Influence of Sex.—Several surgeons have recorded their impression that the operability rate of carcinoma of the rectum is higher in women than in men, and have offered various explanations to account for this difference. A similar variation was observed in the present series. For of 354 women 228 (64.5%) were operable, but of 832 men only 487 (58.5%). It will be noted in Table III that the

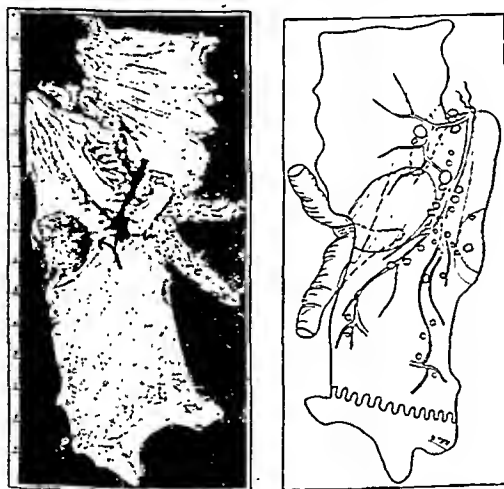


FIG. 1.—Photograph of specimen with lymph-gland dissection from a case of carcinoma recti. A loop of adherent small intestine was removed along with the rectum by perineo-abdominal excision. Histologically the binding adhesion was composed entirely of inflammatory tissue. No lymphatic metastases were seen. The patient unfortunately died with hepatic deposits a year and eight months later.

difference in operability in the two sexes was especially marked in connexion with growths centred on the anterior wall, the higher operability rate for such in women undoubtedly being largely attributable to the greater feasibility, in female patients, of resecting portions of anteriorly related viscera when these are adherent.

The Nature of the Adhesions leading to Fixation of the Growth.—Though fixation is brought about by the direct spread of the primary growth, this does not necessarily mean that malignant extension to the adherent structures has occurred. The binding adhesions in many cases are purely inflammatory in character, presumably being formed as a reaction to the advance of the tumour through the rectal wall. Thus a histological examination of 34 operation specimens in which portions of adherent viscera were excised along with the rectum (vagina 20, uterus 3, prostate and seminal vesicles 8, small intestine 3) showed that actual malignant invasion had occurred in only 12 (vagina 5,

uterus 2, prostate and seminal vesicles 3, small intestine 2). The moral to be drawn from these observations is that the prognosis in cases submitted to these extended operations is often very much better than was imagined by the surgeon at the time of the excision. Where the general condition of the patient is good and the additional operative strain is likely to be well borne, therefore, the surgeon should not hesitate to employ these methods as a means of increasing the operability of growths adherent on the anterior aspect of the rectum. Fig. 1 illustrates a specimen removed by such an operation.

(b) Hepatic Metastases

It is naturally only in patients submitted to laparotomy that any accurate data are available as to the frequency of the occurrence of hepatic metastases. Of the 893 cases coming to laparotomy, liver secondaries were noted to be present in 103 (11.5%). It must be pointed out, however, that the surgeon's estimate as to the frequency is subject to fallacy. He can only determine the presence of secondaries on the surface of the organ (and not even all the surface at that!). Growths situated entirely centrally must of necessity elude detection. How grave a source of error this may be is illustrated by the following facts:

From 1930 to 1939 inclusive necropsy was performed at St. Mark's Hospital on 31 patients who had died a few days after perineo-abdominal or perineal excision of the rectum. In all cases a laparotomy had been carried out and the liver surface had been found to be smooth and free from secondary deposits; yet in no fewer than 5 cases secondary growths were discovered in the depths of the liver (see Fig. 2). These figures give an incidence of concealed liver secondaries of roughly 1 in 6 in cases coming to necropsy. If these findings obtain for the other cases which were considered at lapar-



FIG. 2.—Section of liver showing large central metastasis undetected at laparotomy. (From a patient who died one week after a perineo-abdominal excision for carcinoma of rectum.)

to be free from hepatic metastases (790), then as many as 127 of these may have had such metastases hidden in their liver. The total number of cases with secondary involvement of the liver would therefore be raised from 103 (11.5%) to 230 (25.8%). The significance of these buried metastases is that many patients are inevitably subjected to so-called radical excisions when actually the disease has extended beyond the scope of any such operations and has involved the liver. This fact no doubt accounts in large measure for the frequency with which recurrence in the liver is recorded in the follow-up department in patients dying during the first two or three years after radical operation. In such cases the operation has unconsciously been merely palliative; but, quite apart from the impossibility of avoiding the mistake, the operation has probably justified its performance by the greater relief of symptoms than would have been obtained by colostomy alone.

In 36 of the 103 cases in which liver secondaries were felt at laparotomy the growth was regarded as locally operable. In 11 of these, as an alternative to colostomy alone, a deliberate palliative excision was performed. In all the 11 cases the patient was in good general condition, and the liver secondaries palpated were very small and usually single, so that, though the liver involvement was almost certainly more extensive than appeared on the surface, that organ was not completely "riddled" with secondaries, and there was a reasonable period of survival to justify the additional risks of this most drastic form of palliation.

(c) Formation of Peritoneal Nodules and Extensive Involvement of Lymph Glands

These two occurrences represent spread of the growth by the lymphatic system. They were noted in 99 of the 894 cases undergoing laparotomy; in 88 of these cases, however, some other factor, such as fixation of the growth or hepatic metastases, was already present, rendering the condition inoperable. Lymphatic spread cannot therefore be said to play an important part in determining inoperability.

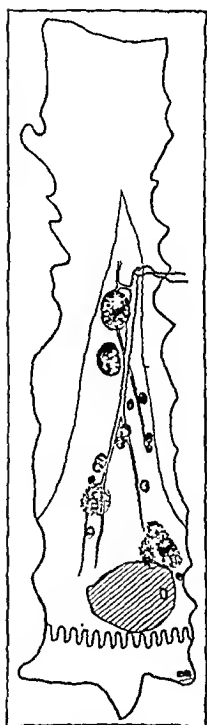


FIG. 3.

Peritoneal nodules or plaques were observed in 62 cases; they were usually confined to the floor or side walls of the pelvis or to the pelvic mesocolon. In 18 cases, however, extensive trans-coelomic spread had apparently taken place, and nodules were scattered throughout the peritoneum, being generally associated with ascites. The presence of any such plaques has in the past been held to contraindicate operation, but recently in a few cases in which the nodules have lain well within the limits of the operation field, and the growth has been otherwise operable, excision has been performed. Sufficient time has not yet elapsed to show whether the attempts at eradication of the disease in these cases have been justified either by success in the primary aim or by the degree of palliation afforded.

The extent of glandular involvement is often a difficult matter to assess even at laparotomy. Gabriel, Dukes, and Bussey (1935) have shown that 60% of the enlarged glands in association with rectal carcinoma are swollen purely as a result of inflammatory changes. The only cases in the present series, therefore, that were accepted as inoperable on account of glandular involvement were those (57 in number) in which hard fixed enlargement of glands, such as the para-aortic and internal iliac, provided unequivocal evidence of extension of the growth beyond the bounds of legitimate surgical enterprise.

In this connexion it is interesting to note the results of gland dissection of the operation specimens, which was made in 451 cases. In 231 cases lymph-gland metastases were present, and in 81 of these they extended right up to the ligature on the inferior mesenteric vessels, as shown in Fig. 3. That the involvement has extended to a still higher level in most of these latter cases is indicated by the frequent, almost universal, development of early recurrence. Fig. 3 illustrates an operation specimen from one of Mr. Gabriel's cases of carcinoma of the rectum. It shows widespread involvement of lymphatic glands (affected glands

shaded black). The patient surprisingly lived for four years after operation; and finally died of cerebral haemorrhage.

Choice of Treatment

It will be seen from Table I that a variety of methods have been adopted in the radical treatment of rectal cancer at St. Mark's Hospital. The principle underlying the application has been to employ the most radical operation that the individual patient may reasonably be expected to stand. The method of first choice, at any rate in recent years, has been the combined perineo-abdominal or abdomino-perineal excision. In a number of cases, however, the general condition has not permitted the performance of so severe an operation. It was to patients in this category, with growths of suitable situation and character that the alternative less drastic procedures were applied. Thus for patients with growths in the lower part of the rectum whose general health has not been good, perineal excision has had a wide sphere of usefulness. Similarly for growths in the upper third of the rectum it has occasionally been possible to carry out Hartmann's operation when the general condition would have made a combined excision especially hazardous. Finally, for many localized growths of apparent low malignancy in patients in poor condition it has sometimes been possible to use local excision or even radium treatment. Provided they are reserved for such early growths these local removals can be classed as radical operations; in fact, a number of five year cures are known to have followed their employment. The value of radium is admittedly less clear.

It may be affirmed, then, that the complementary use of these less radical methods in the manner indicated has played a valuable part in helping to achieve a high operability rate. The particular value of the perineal operation is demonstrated in Table IV, which shows that the operability of rectal cancer was greatest when the growth was situated in the lowest third of the rectum, this being explained by the fact that perineal excision was more readily available for "poor-risk" patients whose carcinomata were located in this segment than for those with growths at higher level.

TABLE IV.—Operability of Growths in Various Segments of the Rectum (1,096 Cases)

	Growths in Each Segment	Accepted as Operable	Type of Treatment Employed			Operability Rate
			Combined Excision	Perineal Excision	Other Methods	
Upper third ..	395	224	161	31	32	56.7%
Middle " ..	314	183	95	74	14	58.3%
Lower " ..	387	273	59	181	33	70.5%
Totals ..	1,096	680	315	286	79	62.0%

Operative Mortality

The operative mortality for the 321 combined excisions was 60 (18.7%). This figure, however, includes the earliest cases done by this method at St. Mark's Hospital, and is therefore unduly high. The present rate for this operation is just under 10%. The mortality for the 291 perineal excisions was 23 (7.9%). The number of cases submitted to other methods is too small to permit of any accurate statement of mortality. Altogether, of 687 operable cases receiving some form of surgical treatment (including cases whose sole treatment was colostomy or caecostomy) 10 were fatal, giving an overall mortality of 15.6%.

Summary

The operability of carcinoma of the rectum has been analysed in a series of 1,186 cases.

The operability rate for males was 58.5%, for females 64.5% and for both sexes 60.3%.

In 8% of the cases inoperability was due to the poor general condition of the patient, and in 32% to the advanced state of the growth.

With regard to age, operability was greatest between 40 and 49, and declined in patients older or younger than this.

Inoperability of the carcinoma itself was determined by the presence of one or more of the following conditions: local fixation of the growth, hepatic metastases, peritoneal carcinomatous plaques, or extensive involvement of the abdominal lymph glands. Laparotomy was usually necessary to decide on the existence of these contraindications.

Local fixation of the growth was noted in 23.9% of the generally operable cases, and in 18.9% of the cases that had laparotomy performed. The fixation was usually in front to the related pelvic or abdominal viscera. Growths involving the anterior wall of the rectum were much less frequently operable than those confined to the other quadrants of the bowel. The operability of anterior growths in women was higher than in men. The adhesions producing fixation were usually, but not invariably, inflammatory in character.

Hepatic metastases were palpable in 11.5% of the cases proceeding to laparotomy. The presence of concealed undetected metastases is postulated in another 14.3% of these cases.

Nodules of growth in the peritoneum or extensive involvement of the abdominal lymph glands were noted in 11.1% of cases submitted to laparotomy. These conditions, however, were seldom the sole cause of inoperability.

In endeavouring to secure a high operability rate the importance of having available several radical procedures of varying severity is stressed.

The operative mortality rate for all operable cases having some form of surgical treatment was 15.6%, for cases submitted to combined excision 18.7%, and for those submitted to perineal excision 7.9%.

I wish to express my thanks to the honorary staff of St. Mark's Hospital for permission to undertake this analysis of their cases, to Mr. H. J. R. Bussey for preparing the photographs of specimens and drawings, and to Mr. W. B. Gabriel and Dr. Cuthbert Dukes for their interest, criticism, and advice.

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THE PARASITOLOGY OF SCABIES

BY

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It seems clear that scabies is increasing among civilians and soldiers. This has resulted in so many people inquiring for details of the life history of the itch mite that I venture to publish this account of what is at present known. I have not dealt with the methods of treating the patient or killing the mite, for it is believed that a summary of that side of the subject is in active preparation by other hands.

The correct name of the mite which causes scabies is *Sarcoptes scabiei* de Geer. There are a number of races which occur on different animals (see below), and that on man is known as var. *hominis*.

Appearance

The dorsal surface of the adult female itch mite is shown in Fig. 1. The figure is drawn from a specimen from the horse, but this variety is not distinguishable in structure from that occurring in human beings.

The general outline of the itch mite is oval: it is convex above and flat below, and of a dirty white colour, except the brownish bases of legs, etc. The body is divided into two regions by a constriction between the two anterior and two posterior pairs of legs. The greater part of the surface, dorsal and ventral, is covered with fine transverse folds, which are characteristic of *Sarcoptes* (and of certain related genera of itch mites which occur on domestic animals but not on man): the upper surface bears a number of specialized spines and conical scales.

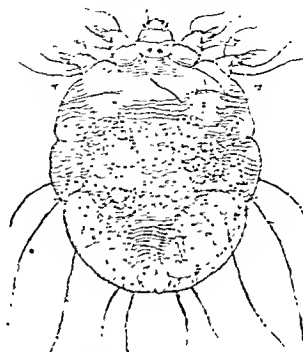


FIG. 1.—Dorsal surface of adult female *S. scabiei* var. *equi*. (From Hirst, 1922.)

The anus is terminal. The legs are short; in the female the first and second legs terminate in suckers (ambulacra) carried on the ends of unjointed stalks; in the male there are similar suckers on the first, second, and fourth legs. The male also differs from the female in the large and elaborate genital organs lying on the ventral surface between the fourth pair of legs. The female is about 0.390 mm. long, the male 0.225 mm.

A full account of the external anatomy of the *Sarcoptes* of the horse (*S. scabiei* var. *equi*) is given by Buxton (1921a). There are grounds for thinking that the mites attacking horse and man are not to be distinguished from one another on anatomical grounds (Buxton, 1921b).

Biology: 1. Life Cycle

The life history of *S. scabiei* is extremely difficult to follow, for the mites are very small and delicate, and much of the cycle is passed beneath the surface of the skin of the host. The best account that we have is by Munro (1919), but there are many points on which knowledge is still most imperfect. According to Munro the adult female, removed from her burrow in the skin, is capable of burying herself completely in man's skin in a very brief period: she holds to the skin by the suckers of the front legs, and elevates her body into a nearly vertical position by using the long terminal bristles of the hind legs. This is generally done on some part of the human body of which the skin is thin. Once the mite is beneath the skin it rests if the man is in a cold place, and continues to excavate its burrow only if his skin is warm, as when he is in a warm room or in bed; it is when the mite is advancing through the epidermis that the itching is felt. It is assumed that the mites feed on the liquid that is available from the epidermal cells which they crush.

A part of the life history of the itch mite may be observed by opening burrows, or by dissecting them from the underlying tissues and mounting them whole (Fig. 2). It can then be seen that the first egg is laid within twenty-four hours of the female's becoming mature. The egg may

hatch in about sixty-five hours; but the period varies (probably with the temperature of the surface of the skin), and the stage may last as long as 100 hours, perhaps even longer. The egg produces an active hexapod larva (Fig. 3), which moults into an oötopod nymph: at the next moult this produces either an adult male or an immature female, which has to moult once again to produce an adult female.

The duration of the successive stages is as follows (Munro, 1919): egg, $2\frac{1}{2}$ days or more; larva, $1\frac{1}{2}$ to 3 days; nymph, $1\frac{1}{2}$ to $2\frac{1}{2}$ days; immature female, 2 to 4 days. At

according to Munro (1919, p. 21) the isolated larva lives not more than thirty hours if kept moist. It is said that the infestation normally spreads to those with whom the patient sleeps, because the early stages of the mite normally wander about at night. But they are so small (the larva is only 0.15 mm. long) and inconspicuous, that they have seldom been seen.

2. Reproduction

The pairing of *S. scabiei* has not been observed. The accepted view (Vitzthum, 1931; Warburton, 1920; and earlier authors) is that the male pairs with the immature female, and that the adult female cannot pair. But it is now thought probable that it is the adult female which pairs, and that the orifice is on a minute papilla on the dorsal surface of the abdomen, not present in the immature female. If this is so the adult female has two genital orifices; for the eggs are laid through a transverse slit, the tocostome, on the ventral side, behind the bases of the legs of the second pairs (Buxton, 1921a).

The life of an individual female has never been followed through, but it seems probable that she lays rather more than two eggs daily, to a total of about forty to fifty.

3. Distribution: Seasonal and Geographical

The itch mite on or in man's skin must be exposed to extremely equable conditions of climate (even more so than *Pediculus*). It is not remarkable, therefore, that it appears to be cosmopolite, and that there is little evidence of seasonal change in abundance; where seasonal changes are observed they may be due rather to the effect of climate on the human beings (who may crowd together in cold weather) than on the *Sarcoptes*. The parasite may occur in people of all ages and races.

No information exists as to the upper temperature that is fatal for various periods of exposure. Disinfestation of blankets, etc., by heat is at present based on faith alone, and probably the temperatures used are needlessly high.

4. Hosts

It has been known for three-quarters of a century that mites very similar to the *S. scabiei* of man occur on many sorts of mammal, causing itching and mange. These mites have been recorded from the domestic horse, dog, pig, sheep, goat, camel, llama; also from a number of wild animals, among others the wolf, polecat, fox, lion, capybara, but generally from individuals kept in captivity. The earlier authors figured and described points of difference between *Sarcoptes* from different species of mammal, and their work was summarized by Warburton (1920): it is now held that the differences recorded are due to imperfect microscopes and technique, and that the anatomical characters are variable or non-existent. Hirst (1922) states that he has examined specimens from a large number of species of mammal, domestic and wild, "without being able to find a constant morphological character by which they could be satisfactorily distinguished from one another." I myself made a full study of the external anatomy of the *Sarcoptes* of the horse, and then examined much material collected from human beings: the conclusion reached was "that the *Sarcoptes* of the horse and the common species found on man cannot invariably be separated. Certain minute differences exist in scales and spines, but they are not constant, and the measurements overlap" (Buxton, 1921b). No species of *Sarcoptes* occurs on birds.

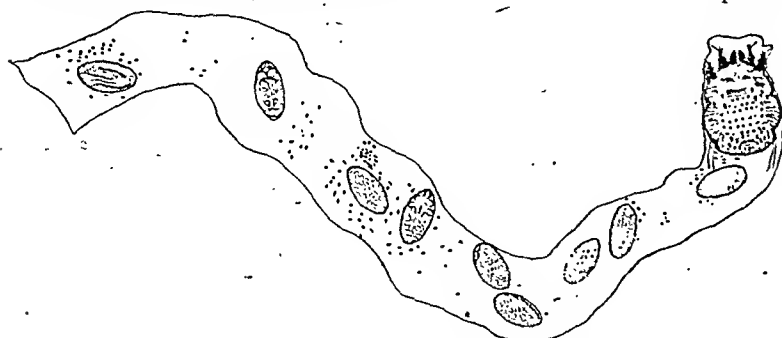


FIG. 2.—Diagram showing adult female itch mite and eggs in burrow in skin. Redrawn by H. S. Lecson, after Munro (1919).

shortest, therefore, the period from deposition of egg to emergence of adult female might be less than eight days.

The larva (Fig. 3) quits the burrow of its parent, in which it hatched from the egg, and makes its own burrow, which may be distinguished by minute vesicles beneath its floor. It seems probable that the nymph makes a separate burrow. Whether the males and immature females wander and make

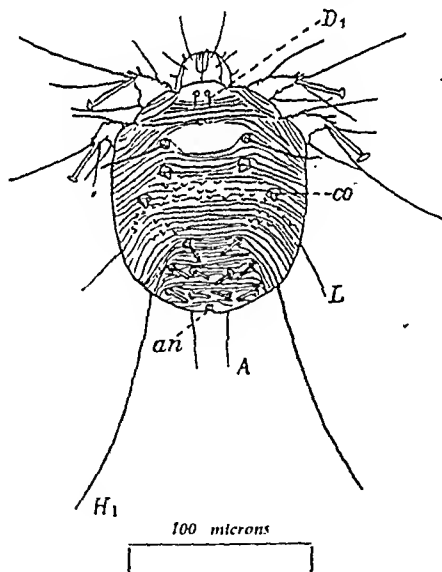


FIG. 3.—Dorsal view of larva of *S. scabiei* (Buxton, 1921a). A, anal seta; an, anus; co, cone; D₁, first dorsal seta; H₁, terminat seta of third leg; L, lateral seta.

their own burrows or whether they continue in that made by the nymph is not known; but it appears to be well established that the adult female does not normally move, though she can start a fresh burrow if she is forcibly removed from the skin.

The larvae, and perhaps all stages, are sensitive to dryness, and one may suppose that there is a high mortality among those which are wandering over the host's skin or clothes. Even if humidity is high, it is thought that no stage of the mite is able to survive unfed for longer than a few days, though further information would be welcome;

As it seems that itch mites from man, the horse, and many other animals are not separable on anatomical points, though they differ physiologically, it is convenient to treat them all as belonging to a single species, *S. scabiei*. But as there is a high degree of specificity (see below) one would say that there are biological races associated with particular hosts. It is customary to speak of these varieties as *S. scabiei* var. *hominis* on man, var. *equi*, *canis*, *suis*, *ovis* on the horse, dog, pig, and sheep, and so on for other varieties.

5. Source of Human Sarcoptes

As we have no anatomical points by which *Sarcoptes* from different animals can be recognized one can only use the epidemiological method in studying the extent to which man may derive his infestation from other mammals. It is quite clear that one human being is normally infested from another: the itch generally spreads through a family, or a group of men living together, in the absence of infested animals. The condition is much more frequent in people who live crowded together and who have no opportunity of washing, changing clothes, etc. Moreover, experimental transmissions are on record: scabies has been transmitted to volunteers who used the underclothing or beds of infested people, or who wore gloves inside which *Sarcoptes* had been liberated (Munro, 1919; Macpherson, Horrocks, and Beveridge, 1923).

But though man generally derives his *Sarcoptes* from other human beings there are many records in which his infection was clearly traced from animals: such cases are often detected by veterinary surgeons. The disease seems to be not rare among those who keep small pet dogs, which can sleep on the bed or the lap, but it is rarer among those whose dogs are larger and less easily handled.

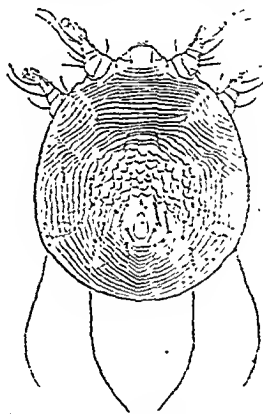


FIG. 4.—Dorsal surface of adult female of *Notoedres cati*. (From Hirst, 1922.)

It also seems probable that more human infections are derived from the horse than from other animals. The case described by Macdonald (1922) is instructive: a group of students spent periods of from two to five hours studying the dead body of an infested horse: all those who had direct contact with the horse suffered from itching and a papular eruption. In a similar way, men whose work brings them into contact with cattle or camels suffering from sarcoptic mange commonly acquire an infection: there are also records of its spreading to keepers in menageries from diseased llamas, kangaroos, chimpanzees, and other animals. The disease is therefore to some extent an occupational one among those whose pleasure or profession it is to breed dogs, nurse cats, milk cows, groom horses,

tame lions, box with kangaroos, or tend llamas. (Recent references: Sequeira, 1925; Whitfield and others, 1931. See also Warburton, 1920, for references to earlier authors.) A useful short account of the mites infesting domestic animals is given by Hirst (1922).

The mite *Notoedres* (*Notoedrus*) *cati*, parasitic on cats and rabbits (and less commonly dogs), occasionally produces infestation in cat-lovers. *Notoedres* is distinguished from *Sarcoptes* in its small size, the dorsal position of the anus, and other characters (Fig. 4).

The severity of scabies acquired by man from animals differs greatly with circumstances: in some instances the irritation is felt very soon after the mites have reached the skin—within an hour or so in some of the students described by Macdonald (1922). Mites derived from the camel appear to be particularly irritating; indeed, it is said that Robert's famous march from Kabul to Kandahar in 1880 almost broke down owing to sarcoptic mange in the camels and in those who looked after them. It is also thought that some of the cases of crusted scabies in man may have been derived from animals (see below). It seems that the biological races of *S. scabiei* which are proper to animals are not able to establish themselves on man, and that in many cases they make no complete burrows: moreover, the original human patient is not, apparently, a source of danger to other people. This specificity of different biological races of the mite is very marked, and it has proved difficult to infect one sort of animal from another by transferring mites and crusts. To what extent human beings suffering from *S. scabiei* var. *hominis* are a source of infection to domestic animals is not known.

Medical Importance: 1. Scabies

Scabies, or "the itch," is a specific disease caused by the presence of *S. scabiei* in man's skin. It seems that a period of eight to ten days commonly passes between the beginning of an infestation and the development of symptoms, and that period may be longer, perhaps much longer, in insensitive patients. The itching, which is the most noticeable symptom, is not caused by the presence of the mite in the skin, but by its activity in extending its burrow: it is therefore most troublesome when the patient is in bed or in a warm room.

The burrow (Fig. 2) is made in the deeper part of the horny layer of the epidermis, rarely reaching so deep as the granular layer. In sections it may be seen that the epidermis round the mouth of the burrow is oedematous. The layers of epidermis below the burrow are also frequently oedematous, with dilated lymphatics. A vesicle may be present beneath the burrow (perhaps only when the burrow is that of a larval mite—see above). In the papillary layer the blood capillaries are dilated and surrounded by inflammatory exudate. The burrow is tortuous and may reach a length of 5 to 15 mm.

Scabies is best diagnosed by finding the burrow or the mite. In a European the burrow may appear grey because its rough upper-surface catches dirt and because of the faeces of the mite within it: one may make it more evident by brushing ink over the skin. It is generally agreed that the burrow is difficult to see in a brown skin. The mites will generally be found in the burrow, more rarely on the surface of the skin. Backhouse (1929), working with dark patients in Melanesia, reports finding the mite in 35% of 424 cases. It is sometimes very important to detect scabies—for instance, in order to prevent its spread through labourers in the Tropics or troops under active service conditions: failure to diagnose the condition is common. There is also a tendency in the damp Tropics to take scrapings from the skin and grow from them various fungi, which

fascinate the dermatologist and may prevent his discovering the common humdrum mite.

The infestation may be on almost any part of the body, and mites confined under watch-glasses will burrow wherever they may be. But the parts most commonly affected are those where the skin is soft or folded, as at joints.

On the clinical side one may distinguish simple scabies, in which the irritation is due to the burrows, and complicated scabies, in which the symptoms are aggravated by septic complications. Common complications are impetigo and the dermatitis which follows the unwise use of sulphur ointment. The proportion of complicated cases depends on conditions of life and the care given to diagnosis and treatment.

2. Crusted Scabies

Clinically this is a well-defined condition, thick crusts and callosities being found on various parts of the body, especially the limbs. The crusts, which are stratified, may project 2 to 3 mm. above the surface of the skin: large areas of skin may be involved and the finger-nails be included. Enormous numbers of *Sarcoptes* of all stages live in the crusts, but they are quite capable of burrowing in the normal way (Backhouse, 1929; and Fig. 5).



FIG. 5.—Section of skin from case of crusted scabies. Note great thickening of stratum corneum, and numerous burrows and spaces in it containing mites and eggs. Malpighian layer shows proliferation and mites lying deep in it in capsules of semi-cornified epithelium. Drawn by H. S. Leeson from a photograph by Backhouse (1929).

Generally the condition requires at least a year for its development. The accumulation of crusts, consisting of dead epithelium and dried exudate full of itch mites, renders it very much like sarcoptic mange, such as one sees in the horse. The disease is generally rare; most authors remark on the fact that the cases are isolated, one only being seen in many years.

The condition was originally described among lepers in Norway, and it is sometimes referred to as "Norwegian crusted scabies." This name is unsuitable, for the disease has been recorded from most European countries, and Turkey; also from several tropical countries, such as Brazil, French Guinea, Melanesia, and Java.

With respect to the epidemiology diverse views are held. Many authors regard the disease as normal scabies which has been neglected, perhaps because it occurs in an insensitive or very careless patient: the fact that it sometimes occurs in lepers, whose skin is so often anaesthetic, supports this view. Moreover, Beatty (1915) described a case seen in Dublin in which the infection was attributed by the

patient to his having slept a year before in the same bed as a person suffering from ordinary scabies. This view is supported by Pozzo (1920) and Mandoul (1925). The view that crusted scabies is nothing more than ordinary scabies much neglected is also held by Backhouse (1929). Some of his cases were mild and localized common itch; others were generalized; others, again, carried masses of crusted exudate full of *Sarcoptes*: the conditions graded into one another. Material collected by Beatty in Dublin has been carefully compared with a large number of mites derived from human cases of common scabies. It was found that the mites were separable only on one character—the length of the spines on the posterior part of the body; but the differences were small, and as the spines are curved they are not easy to measure (Buxton, 1921b). It would be difficult to say whether the small differences might be attributed to the conditions under which the mites live beneath the scales of crusted scabies.

The alternative view, that the mites in crusted scabies are derived from animals and are completely different from those in the ordinary disease, was held by several of the earlier authors, including Mégnin, who attributed certain cases to infection derived from wolves. More recently Brug and Haga (1930) have reported on mites derived from crusted scabies in a Chinese leper seen in Java. It is clear that their mites differed in several important characters from those which cause the ordinary disease, and it is perhaps significant that the same authors examined mites from a tame monkey, finding them identical with those from the human case of crusted scabies. In a case observed at Rio de Janeiro the mites differed from those of ordinary human scabies: it was thought that they must have been derived from an unknown domestic animal (da Costa Lima, 1927).

It seems, then, that crusted scabies may be produced in two ways. Sometimes, perhaps most often, it is ordinary itch occurring in an insensitive or neglected individual. Other cases are due to infection with *Sarcoptes* derived from animals. Both views are supported by the evidence. The third possible view, that the disease is peculiar to man but essentially different from common scabies, is not tenable because of its rarity and its tendency to appear as single cases.

Figs. 1 and 4 are reproduced from Hirst's *Mites Injurious to Domestic Animals*, by permission of the Director of the British Museum (Natural History). Figs. 2 and 5 are redrawn by my colleague Mr. H. S. Leeson from the figures of Munro (1919) and Backhouse (1929). Fig. 3 is reproduced by permission of the editor of *Parasitology* (Cambridge University Press).

Summary

The paper deals with the external anatomy and life history of *S. scabiei* var. *hominis*, the causative organism of human scabies, and its relation to man. Destruction of the mite and treatment of the host are not discussed.

The mite is a specific parasite of man, and can live for only a short time away from him. It can go through its cycle from egg to adult in a minimum of eight days. It seems probable that two types of burrow are made—one by the larva, with a vesicle in the floor, and the other (the larger and more familiar type) by the nymphs: it is in this second type that adults, etc., are found (Fig. 2).

Normally the itch is derived from another human being. But man is occasionally infested by the *Sarcoptes* of horse, camel, etc., which appears to set up a transient form of itch.

Crusted scabies is sometimes due to prolonged neglect of ordinary scabies. There are, however, some cases which are probably due to infestation by *Sarcoptes* from some host other than man.

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TREATMENT OF SCABIES

USE OF SULPHUR LATHER TABLETS

BY

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The increase in the incidence of scabies, started well before the war, has now become a wartime problem. Among the school population, where information of a non-notifiable disease is easiest to find, scabies increased 90% in Heston and Isleworth, 100% in the North Riding of Yorkshire, and 50% in Coventry, in 1938. These figures are pre-war, but it is legitimate to assume that conditions which caused such an increase then will have caused a still greater increase in wartime, for the war has exaggerated many of those conditions. One of the chief reasons before the war was, as stated by Sir Frederick Menzies, the fact that "children who have been treated return to homes where other members of the family are untreated and reinfection is frequent." This fact is surely the basis for the alarming increase. Scabies is a curable disease; the remedies are varied, but the majority are effective sarcoptocides. Given an isolated case of scabies few practitioners will fail to cure it in a week. The cure of the individual case is relatively easy, and yet the disease remains one of the most difficult to control, and is at present assuming the proportions of an epidemic.

Anyone dealing with scabies on a large scale will acknowledge that the more cases we cure the more we find to cure. It seems feasible, therefore, to deduce that the disease is increasing because: (1) supervision of contacts is not given the same importance as the treatment of active cases; (2) 50% of the cases never seek treatment and thus constitute a reservoir from which fresh cases are always arising. The majority of individuals in this reservoir of untreated cases are those who escape medical supervision in schools, factories, and industrial concerns—children below school age who elude the rather infrequent visits of the health visitor, mothers and female relations who do not work outside their homes, and children above school age who do not come under medical supervision at work. Medical supervision would have much reduced the incidence of the disease had it not been for these untreated cases. The importance of control of the contact is increased by the fact that the war has caused a dispersal of the family unit. A family which before the war kept its scabies more or less to its own house now carries it to the Army, the air-raid shelter, and the reception area. The soldier home on leave takes his wife's scabies back to the barracks, the school child returns to the reception area with the baby's scabies, and the "bombed-out" family crowd in with neighbours or in a communal shelter, and the

acarus, if present in clothes or bedding, spreads rapidly. Shelter life and, indeed, all conditions of overcrowding, too often associated with personal uncleanness, fewer baths, fewer washdays, all provide excellent facilities for the increased spread of scabies.

Infection is by contact. This must be close contact with an infected person's lesion or with his infested clothing, and must be long enough to allow the acarus to pass from one person to another and to establish itself by burrowing in the skin. Thus infection will result from sleeping in the same bed as an infected person, using infested blankets—for example, in the Army, the shelter, or the crowded house—or wearing an infested person's clothing; it is possible that in some cases infection passes from clothing to clothing. Infested clothing remains infective for at least eleven days (Gray, 1940).

Importance of Effective Treatment

Scabies, which is frequently venereal (Roxburgh, 1939), is often regarded as a trivial disease, and is put with "nits" into the class of normal affections of some of the poorer people. This is unwise, for the importance of scabies lies in the fact that while it is never a life destroyer it causes much loss of sleep—an important fact nowadays. The cardinal symptom is intense irritation at night-time. The scabietic child, unless inured by months of reinfection, is pale, listless, heavy-eyed, and dull, not, of course, only because of his scabies but because of loss of sleep and his perpetually irritating skin condition. Similarly, we can ill afford to let the war worker spend his days and nights scratching, with a resultant increase in nervous tension, lack of concentration, impairment of efficiency, and eventually loss of working time.

The ideal treatment must be: (1) short and effective to reduce the period of infectivity; (2) palatable to the patient, who often has to be cajoled into continuing with it; and (3) must include all contacts and clothing. The futility of treating the school children and neglecting the contacts is expressed by Macdonald (1941): "The usual means of dealing with scabies by treating the children with clinic baths and instructing the mothers is not only inadequate but in the vast majority of cases is a futile expression of hope." On the other hand, the effectiveness of dealing with case and contacts together has been proved in Canada (Currey, 1939). On the day of diagnosis of a case of scabies the health visitor treated the case and all the contacts of school age in their own homes with benzyl benzoate lotion. All were excluded and followed up in twenty-four hours. Advice was given to the parent and lotion left for the remaining members of the family. In this way the incidence of scabies was, during the first six months of 1939, twelve families out of a school population of 5,569. This is an interesting record, for although only school-age contacts were treated, yet incidence of scabies among the schools fell to a very low figure.

A New Method of Treatment

I have recently used a new method of treatment, on children of all ages in a school treatment centre. In a small series of cases this was agreeably successful, and I think it is justifiable to add yet another to the list of sarcoptocides, for this one has certain advantages over others I have used, especially in children. This treatment was first described in America (Nolan, 1937). The active principle is sulphur—the old favourite. This is incorporated in a bland soap—amount of sulphur being 18%—which is applied to the body in the form of a lather. As the lather dries a thin film of sulphur is deposited all over the body. Nolan had noted that on looking at a bubble of the lather

the finely divided granules of sulphur could be seen, and as the bubble burst these granules were deposited on the skin. It was estimated that 4 grammes of the soap were needed to cover the body with a lather, whereas 85 grammes of sulphur ointment were commonly used. Nolan estimated the equivalent of sulphur as 0.72 gramme against 12.8 grammes. This meant not only a saving of material but less likelihood of sulphur dermatitis, as the amount of sulphur used was so much less. Working on Nolan's principles, I used, instead of a soap, a tablet in which the amount of sulphur suggested as adequate—that is, 0.72 gramme—was incorporated with a lathering agent. This was thought advisable for several reasons. Scabies baths are often given by untrained persons, and with a cake of soap it is as possible as with an ointment to use too much and cause a dermatitis. I used these tablets on twenty-nine unselected cases of scabies at a school clinic. In the majority of these the baths were given by V.A.D.s on my instructions.

FIRST SERIES OF NINE CASES

Procedure.—(1) Each child was given a hot bath; five were scrubbed with a nail-brush or harsh flannel and four were bathed clean without friction. (2) Child removed from bath and lathered all over with the tablet, a foam being produced by rubbing the tablet between the nurse's wet hands. (3) Lather allowed to dry; this took about five minutes in a warm bathroom. (4) Clean vest put on. (5) Procedure repeated on two successive

the child from scratching the tags of dead skin. It is notoriously difficult to make children attend regularly for baths, and in this series the longest time taken to give the three applications was five days.

Result.—Out of twenty cases two defaulted. Eighteen were given three applications; all cured seven days after the last bath. One case of dermatitis. This child was seen to have a patch of urticaria on his abdomen at the follow-up inspection. No sign of dermatitis was seen during treatment, and in my opinion this was not a sulphur dermatitis; it cleared with calamine lotion in three days.

Comment.—The lathering method of applying sulphur has been used fairly extensively in America. I have found it in a very small series of cases to be a nearer approach to the ideal for children than either ung. sulph. or benzyl benzoate lotion. It is effective, as sulphur always has been, and the chance of dermatitis seems to be very small; moreover, by giving the patient three tablets treatment can be carried out at home without the fear of an excessive application by the zealous-minded. It dries quicker than a lotion and has none of the "messy" qualities of an ointment. Scrubbing before the application is probably necessary, or at least advisable; I found scrubbing was not necessary for children, in whom a hot bath and rub down with a flannel is generally sufficient to open the burrows. None of the children complained of pain after the lathering, even those with raw or septic areas.

Table showing Details of the First Series of Nine Cases

Case	Age	Sex	Degree	Complications of Disease	Duration of Treatment	Scrubbing	Previous Attacks (Recorded)	Complications of Treatment	Remarks
1	10	M	Moderate; abdomen, hands, and feet	None	1,2,3.	Yes	Baths at clinic with ung. sulph. since Nov. 1939	None	Attendance of this boy was very irregular before trial with sulphur lather. He was constantly getting reinfections
2	8	F	Severe; abdomen, back, and wrists	Septic burrows on wrists	1,2,3.	Yes	Several recurrences	None	Cured in 3 days with 3 baths
3	13	M	Moderate; abdomen round umbilicus, fingers	None	1.-2,3.	Yes	None	None	Brother of Case 4. Cured in 4 days with 3 baths
4	11	M	Severe; trunk, thighs, and feet	None	1.-2,3,4.	Yes	None	None	Brother of Case 3. Cured in 5 days with 4 baths
5	10	M	Slight; hands only	None	1,2.	Yes	None	None	Cured with 2 applications
6	8	M	Very severe; numerous burrows all over back, abdomen, thighs, and forearms	Septic burrows	1.-2,3.-4.	No	One recorded attack in Jan., 1939	None	Brother of Case 7. Cured in 7 days with 4 applications
7	5	M	Same as Case 6	Same as Case 6	1.-2,3.-4.	No	None	None	Brother of Case 6. Although this child was not scrubbed he opened most of the burrows by scratching
8	11	F	Severe; abdomen, buttocks, and forearms	Some areas of sulphur dermatitis on abdomen	1,2,3.	No	None	None	Scabies for 4 weeks before seen at clinic. Treated at home with paste of sulphur and lard after hot bath (no scrubbing). Thus, no doubt, account for sulphur dermatitis when first seen
9	12	M	Mild; abdomen and between fingers	None	1,2.	No	April, 1940	None	Cured after 2 applications. Reviewed 7 days later—still clear

Cases grouped into mild, moderate, and severe.

Duration of Treatment.—Each application of sulphur foam is numbered 1,2,3., indicating three applications on three successive days. If a day is missed it is denoted thus: 1.-2,3., indicating that the child did not attend on the second day so had its second application on the third day.

days. (6) Verbal instruction given to the parent about boiling the clothes and sheets.

Result.—Cases seen seven days after last bath: all cured. Average number of applications, three; average duration of treatment, four days. No cases of dermatitis.

SECOND SERIES OF TWENTY CASES

All children were given the treatment as outlined for the first series, but no one received more than three applications, as I thought this should be sufficient. Ten were scrubbed and ten were washed in hot water before lathering, four receiving their treatment at home. The majority were given ung. zinc. B.P. or calamine lotion to apply for the week following the last bath. This I found advantageous, as the skin often showed excoriations and scratch marks, although the scabies was cured. The ointment rubbed well into the skin promoted healing and prevented

Comparison with Other Treatments

Sulphur Ointment; Ung. Sulph. B.P.—This is the traditional treatment for scabies, and I have used it on children for some time. Its effectiveness is indisputable, but it is not my treatment of choice, for three reasons: (1) The use of any ointment spread thickly over the body means that underclothing and bedding become soiled by the grease. This, combined with its rather pungent smell, makes the treatment objectionable to many people; their satisfactory co-operation is difficult to obtain. (2) There is the likelihood of sulphur dermatitis if the ointment is used too thickly or too frequently. Sulphur dermatitis associated with scabies is not only very difficult to cure but also often difficult to diagnose. (3) All the burrows

scratching had ceased and that the areas of skin most involved looked dull and brown in contrast to the bright pinkish points normally distributed freely in the scratched areas. Each child was re-examined after four days and again a week later. Subsequently the number of examinations was curtailed by omitting the second. The crusted or pustular areas of secondary infection were treated with a 1% ammoniated mercury ointment, after completion of the proscabin treatment. Under the procedure now in operation a child can be pronounced free from infection on the fifth day after diagnosis—that is, three days elapse between the signing of the exclusion form (school) and the issue of a return-to-school certificate, on two of which days proscabin is being applied. If a second course is deemed necessary the child can be passed fit for school on the ninth day. These results compare favourably with Canadian experience (Ministry of Health Memorandum, 1940). All cases are, of course, being observed one week later as a precautionary measure (Table I).

TABLE I.—Benzyl Benzoate Cases

Group	Number of Benzyl Benzoate Courses	Distribution of the Infection			Totals	Having Secondary Infection	Later Sulphur Inunction	Previous Infection with Scabies	Number of Defaulters
		Trunk and Limbs	Limbs Only	Slight Cases					
I	1	40 (57.1%)	10 (83.3%)	17 (94.4%)	67 (%)	4 (%)	13 (%)	9 (%)	2 (%)
II	2	26 (37.2%)	2 (16.7%)	1 (5.6%)	29 (%)	6 (%)	4 (%)	13 (%)	0 (%)
III	3	4 (5.7%)	0	0	4 (%)	0	0	0	1 (%)
Totals		70(%)	12(%)	18(%)	100	10(%)	17(%)	22(%)	3(%)

It will be noted that the group requiring one course comprised 67% of the total cases treated; 29% required two courses before being pronounced free from infection; while four cases (4%) were given three courses. The proportion of cases given two courses is higher than it might have been because a misunderstanding on the part of the nurse attendant led to the omission of the preliminary bathing in about twelve cases. Most of these were early and mild, and it was the failure of cure to take place immediately—an expectation based on earlier experience—which led to the omission being discovered.

Twenty-five of the Group II cases were classed as not cured after one course of proscabin, and four were regarded as possible reinfections, recurrence taking place after an interval of one week or more. In this connexion I would like to emphasize the importance of having the everyday outer garments disinfested as well as underwear. Recurring infection of the thighs and groin from trousers (usually worn without underpants in most of our cases) and of the wrists from dirty and contaminated sleeves is of particular importance among poor children who have one suit of clothes only.

It will be noted further that seventeen cases of the one hundred treated were given sulphur inunction subsequent to benzyl benzoate. The ointment was applied solely to the cases in which itch continued, and only to the parts which are known to be particularly resistant to treatment and to be likely to harbour residual infection—namely, the thickened papule-ridden folds at the wrists, elbows, ankles, and groin. Thirteen of Group I cases (19.4%) and four of Group II cases (13.8%) were given such additional treatment. It is probable that a second course of benzyl benzoate might have cleared a number of those in Group I without the assistance of sulphur ointment, and we are proceeding along these lines now. The incubation period of the ova being three to three and a half days (Gray, 1933), it is not unlikely that, if any ova remained viable within the

thickened skin, larvae might appear after the completion of the single course of benzyl benzoate. Sulphur ointment was therefore prescribed as a prophylactic and precautionary measure.

I have already mentioned that quite a number of the cases which came under observation were from previous scabies-free households; these amounted to 88% of the total. The remaining 12% had had anti-scabies treatment within the preceding two years, and some were the victims of repeated attacks. In the group receiving only one course of benzyl benzoate there were nine cases (13.43%), while in the smaller Group II there were thirteen cases, or 44.82% of the group. These habitual sufferers formed almost half of the group which required two courses; they are the most difficult to cure and the most prone to reinfection. Default was practically negligible, only three cases being recorded. Two of these were due to intercurrent infection (numps); the third patient was unwilling to attend after initial treatment.

Sulphur Inunction Cases

For comparison with the above and with particular reference to the length of time required to effect cure I include a brief summary of the last 100 cases treated by the sulphur inunction (ung. sulph. 5%) method. These cases are arranged according to the length of time between exclusion from school on account of scabies and the issue of a return-to-school certificate (Table II).

TABLE II.—Showing Length of Time to Effect Cure with Sulphur Inunction

Distribution of Infection	Cured within One Week	Cured within One to Two Weeks	Cured within Two to Three Weeks	Cured within Three to Four Weeks	Requiring Four or More Weeks	Prolonged Absence (illness, etc.)	Recurrences with Distribution of Infection			Totals
							1st Infection	2nd Infection	3rd Infection	
Trunk and Limbs	7	16	17	12	15	6	11	10	1	84 (%)
Limbs only	6	5	4	0	0	0	1	2	1	16 (%)
Totals	13(%)	21(%)	21(%)	12(%)	15(%)	6(%)	12(%)			100

It will be seen that only 13% of this series were reported fit to attend school after one week's treatment, as compared with 67% of the benzyl benzoate group, and as many as 15% were still uncured four weeks after diagnosis. These results cannot be used as a valid criticism of the efficacy of sulphur inunction, but they illustrate the difficulties of this method for out-patients who are receiving voluntary treatment and of whom many are apathetic and non-co-operative. As an indication of the position ten children in the "two to three weeks" group received no treatment on eight days or more of that period, so that in addition to week-ends without treatment each of these was absent on several days at least, usually irregularly and quite often at the most active stage of the treatment. Default during treatment reached even higher proportions in the "three to four weeks" and in the "four weeks and over" group. Irregular attendance at the clinic, principally due to the dislike many of the children have for this rather greasy and odoriferous treatment, and the prolongation of the course which default entails, are responsible for the deplorable figures that we have to record. That our experience is not unique is suggested by the recent Rotherham view that "the usual method of dealing with scabies . . . is not only inadequate but is, in the majority of cases, a false expression of hope" (MacDonald, 1941); while Peter, referring to his cases in Yorkshire, complains also of the difficulty of obtaining thorough treatment in the early stage of infection (Medical Officer, 1940). With regard to the

twelve recurrences recorded, all took place after an interval of one month or more from cessation of treatment for the previous attack: one case had had two previous attacks.

Conclusion

In my opinion the introduction of the benzyl benzoate treatment is an important advance in the treatment of scabies, and it is particularly valuable where large numbers are infected. The ease and speed with which the applications can be carried out, the absence of unpleasant effects apart from a temporary prickly sensation during the painting process, the rapidity of cure, and the almost immediate relief from itching combine to make it a satisfactory remedy from both the clinical and the public health aspects.

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THE TRANSMISSION OF SCABIES

BY

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There has been a good deal of controversy concerning the way in which scabies is transmitted. Much importance has been attached to blankets, and an extreme view is expressed by Lydon (1941), who says that, at least in the Army, "it cannot be stressed too strongly that blankets are the chief means of spread of scabies infection, and unless strict control is instituted cases will continue to appear in their present numbers." The view that blankets are a common method of transmission is widely held in the Army, and the first reply made to the medical officer by the scabies patient when questioned concerning infection usually suggests that blankets were concerned—even from men—recently on leave to homes ridden with the disease. On the other hand, certain workers, particularly those in France, have considered that scabies is primarily spread by personal contact, and have suggested that it may be considered as a venereal disease. Working under controlled conditions, Munro (1919) has shown that scabies may be transmitted by fomites, but his results do not indicate how often such transmission is likely. The experiments described here are part of an investigation to find out exactly how the disease is normally transmitted.

These experiments were made using volunteers who lived under controlled institutional conditions and who were subjected to different types of contact with scabies infection. The volunteers were all pacifists who had offered to co-operate in this work and who, during the experiments, received board and lodging and a weekly payment similar to that which they would have received had they been called up for military service. They agreed to submit themselves to infection and to allow the course of the disease to be followed on their persons. Throughout the experiments the volunteers co-operated loyally, and I have had no reason to suspect that all instructions were not always conscientiously carried out. The expenses of the investigation were paid by the Ministry of Health.

Experimental Work

Fomites.—The volunteers were put in contact with blankets and underclothing previously used by scabies patients. Care was taken to use fomites only from patients about whom there was no doubt of the diagnosis of scabies. Where bedding was used it had normally been in contact with the patient for several weeks, and for the last twenty-four hours before transfer the two inside blankets in contact with the patient were the same as those subsequently in contact with the volunteer. In most of the experiments using blankets alone the volunteer was naked so as to ensure contact. The volunteer never bathed for a period of at least a fortnight after the beginning of an experiment; and later, when it was felt that it might be a disadvantage for him to start with too clean a skin, bathing was prevented for a further week before the experiment started. Bedding and underclothing were used by the volunteers for a period of seven days, the bedding being slept in at night only, whereas the underclothing was worn continuously, day and night. In the earlier experiments the blankets and underclothing were kept for periods of several days under conditions of known temperature and humidity. I hoped thereby to discover how climatic conditions influenced the infectivity of the materials. When a dozen or more experiments had been made without infecting the volunteers it was thought best to work under conditions which would appear to offer the maximum chance of infection. The results obtained in all these experiments may be summarized as follows:

- (a) Volunteer used blankets one to seven days after they had been used by scabies patient: 6 experiments, all negative (i.e., no volunteers infected).
- (b) Volunteer used underclothing two to seven days after it had been used by scabies patient: 6 experiments, all negative.
- (c) Volunteer used bed immediately it was vacated by scabies patient: 19 experiments, all negative.
- (d) Volunteer used underclothing immediately after it was removed from scabies patient: 32 experiments—30 negative, 2 positive (i.e., 2 volunteers became infected).

The men were stripped and inspected daily for a period of about a month (sometimes longer) after each experiment. The inspection took several minutes, and any suspicious lesions or areas in which irritation was felt were scrutinized with a high-power lens or a binocular microscope. Although work at present in progress shows that in some cases at least seven weeks may pass before clinical signs of scabies develop in an infected volunteer, some signs of infection are always visible to careful inspection at an earlier date, and, considering the care with which the daily inspections were carried out, I do not think it would be possible for any inspections to have been missed. Furthermore, the same men were used throughout the whole series of experiments, so that a slowly developing case would have eventually been detected.

Personal Contact.—When two infected volunteers were at last obtained it became possible to test the effects of personal contact. On four occasions uninfected volunteers slept together in the same beds as these men suffering from scabies. The scabies patients both had a general infection of the body (this was two to three months after their contact with infected underclothing), and the disease would probably have been detected at a routine inspection such as is commonly held in the Services, but the degree of infection was very much less than that usually seen in patients coming for treatment. The men wore pyjamas during these experiments. In three instances the volunteer and the infected man slept together for seven nights, and mites were found on all three volunteers after periods of

eight, nine, and twelve days from the start of the experiment. In a fourth case the volunteer slept for two nights under the conditions described above and did not develop the disease.

Conclusions

In 63 experiments using underclothing and blankets scabies was transmitted twice only, although everything was done to favour transmission. In none of the experiments (25 in all) using blankets alone was infection transmitted, and I think we are justified in assuming that under normal conditions blankets can seldom be responsible for the transmission of the disease. On the other hand, a small number of the experiments have shown that transmission by comparatively slight personal contact may be readily accomplished.

I believe that scabies is normally transmitted by personal contact either of a slight or of a venereal nature. There is no doubt that small children are often the first members of a family to be infected; the way in which children play with their arms around each other's necks suggests an easy means of transmission. Children then probably infect their mothers, who pass on the scabies to the father. An investigation of scabies in the Army shows that while a large number of cases may be traced to infection on leave, some other cases are due to illicit intercourse. It is difficult for an Army medical officer to obtain this information from a soldier, but it is possible to find out a good deal from resident patients by means of suitably chosen orderlies, to whom the patients will discourse more fully concerning their experiences. There is very little evidence to suggest that in this country scabies is being commonly spread from man to man in the Army.

One reason for the importance that is attached to fomites in scabies transmission is that lice are well known to be spread by this means, and as both scabies and pediculosis are parasitic diseases it might be expected that transmission would occur in a similar manner. As, however, the itch mite lives beneath the skin of the host during the major part of its life, and the body louse lives on his clothes, only going on to the body to feed, it is not surprising that considerable difference should exist.

The evidence given here is not sufficient to enable us to say that disinfection of clothing and blankets is unnecessary in cases of scabies, though this conclusion seems quite probable. I hope that it may be possible for other workers, particularly public health authorities, to obtain more extensive evidence. I may add that in many cases where reinfection has been attributed to fomites one of three possibilities has not always been excluded:

1. Contact with another case of scabies (a person who is once infected is likely to continue to have the same contacts, with continual risk of infection).
2. Incomplete cure, which may take several weeks to manifest itself.
3. Certain lesions remain visible and irritant for weeks after cure, and unless living parasites are found it is dangerous to consider that a reinfection or relapse has actually occurred.

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G. D. Kettelkamp and W. W. Stanbro (*Amer. Rev. Tuberc.*, 1941, 44, 104) state that two identical male twins were admitted to hospital with a history of common initial symptoms of pain in the left chest, cough, and expectoration. Both were treated by artificial pneumothorax. The clinical course was similar, both patients developing laryngeal tuberculosis. Both died, and the necropsy showed in each tuberculosis of the lungs, larynx, intestines, liver, and spleen.

Medical Memoranda

Carotene Preparations as Substitutes for Vitamin A Preparations

Dr. H. Steenbock of Wisconsin, U.S.A., in 1919 and Prof. Hans von Euler of Stockholm in 1928 associated the carotenoid pigments of plants with vitamin A activity. The matter was settled by Dr. T. Moore of the Nutritional Laboratory, Cambridge, when he showed that yellow carotene fed to animals is converted into the colourless vitamin A found in liver oils. There are several carotenes and allied pigments, and of these β -carotene is the most effective for the formation of vitamin A, because one molecule of β -carotene plus a molecule of water can give rise to two molecules of vitamin A. A molecule of the other carotenes can be converted into only one molecule of vitamin A. Therefore it has been assumed that the carotenes can be used as substitutes for vitamin A.

In wartime, when there is a shortage of protective foodstuffs of animal origin rich in vitamin A, dietitians urge an increased use of foodstuffs rich in carotenes, such as carrots, green leaves, red palm oil, etc.

Recently attempts have been made in India and Ceylon to find substitutes for cod-liver oil, and it has been proposed to use products of red palm oil (*Elaeis guineensis*).

A new preparation has been made in Madras: it is a thick cloudy oil of a deep orange colour, and contains 516 γ per gramme of carotene, reckoned as β -carotene. It has been submitted to the following limited test in Ceylon.

Fifteen children in an orphanage who showed marked or very marked signs of phrynodermia were divided into three groups of 5 each. The first group were given approximately 30 grammes of the preparation; the second group received 30 grammes of unstandardized cod-liver oil daily; and the third group were used as controls. The children were examined weekly, and the result at the end of six weeks was as follows: 3 of the first group showed some improvement and 2 showed none; 4 of the second group were markedly improved, with considerable clearing up of the phrynodermia, and 1 was slightly improved. None of the control group showed any improvement. All the children received portions of the same diet.

Many children with phrynodermia have been treated with capsules of a fish-liver oil concentrate, each of which the makers guarantee to contain "not less than 9,400 I.U. of vitamin A activity." It has been our experience that, with a few exceptions, phrynodermia clears up in children in about three weeks when they are given three capsules daily. The international unit of vitamin A activity is 0.6 of β -carotene, and the amount in the new preparation given daily to each child was approximately 26,000 units reckoned as β -carotene. Even assuming that much of the carotene was in the form of α - and γ -carotenes the children were receiving a very considerable amount. Incidentally, although the cod-liver oil was far more effective than the preparation, it does not seem to have been of a very high standard.

DISCUSSION

Little is known concerning the absorption of carotenes from the alimentary tract or of their conversion into vitamin A in the healthy body, and still less is known of their fate in the body under conditions of disease. There may be little doubt that a healthy adult on a vegetarian diet can obtain a sufficiency of vitamin A from the carotenes of the diet; but it does not necessarily follow that this applies to the infant or the growing child. There is a high incidence of signs of vitamin A deficiency among the poorer-class children of Ceylon, and this is especially so among the younger children and those being weaned to a more or less vegetarian diet. It seems as though the metabolic utilization of vitamin A as it occurs in the mother's milk to the utilization of carotenes by converting them into vitamin A.

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Fatal Cases of Poisoning with Sodium Nitroprusside

The following cases are worthy of record in view of the chemical compound which was the cause of death.

CASE I

The patient, a second-year probationer nurse aged 23, had had vague abdominal pain suggestive of chronic appendicitis in July, 1940. This settled down, but recurred in February, 1941, and she was to have been examined by a surgeon on February 13.

During the night of February 9 she had an attack of vomiting, but on the following day was apparently perfectly well. On the 12th she attended a lecture from 11 a.m. to noon, and at 1.15 p.m. she was heard to call out and was found leaning against the wall in one of the lavatories in the nurses' home. She was put to bed: her colour was poor, the temperature was 95° F., the pulse rate 132, and the respirations 26. She was asked to answer questions, but was drowsy and had difficulty in concentrating. The pupils were slightly dilated; the conjunctival reflexes were present. She was transferred to hospital, where a diagnosis of a fit or poisoning was made. The stomach was washed out by 2.20 p.m. At 2.25 p.m. she was unconscious, and respiration gradually became slower and more laboured. At 2.45 p.m. the pulse rate had fallen to 45, the pupils were fully dilated, and trismus was present. After the stomach lavage there was some frothing at the mouth and nose. The patient remained unconscious, and she was placed in a Drinker respirator. She died at 3.45 p.m.

At the post-mortem examination the dependent parts of the body showed the characteristic bright pink coloration seen in cases of poisoning by hydrocyanic acid. There was a little frothy mucoid material in the trachea, and the upper lobes of the lungs were oedematous. The stomach contained a small quantity of partially digested food which had a definite smell, but this was not distinct enough to be identified with certainty as the smell of bitter almonds. The mucosa of the stomach, duodenum, and upper few inches of the jejunum was slightly congested, the congestion fading from the stomach to the jejunum. The vessels of the liver and kidneys were congested. As poisoning by prussic acid was not suspected no attempt was made to detect any smell when the skull was opened, and later no particular odour was noticed. Nothing else abnormal was seen except congestion of all the organs.

Analysis showed traces of hydrocyanic acid in the stomach contents, but the amount was very small, less than 1/3 grain. Sodium nitroprusside was found principally in the stomach contents but also in a specimen of vomit and in the stomach washings, the total amounting to about 6 grains. It is proposed to make a separate communication to the Analyst giving details of the method of analysis used.

CASE II

This case occurred at Rochester in 1936, but no details have hitherto been recorded.

A young surgeon was found dead in a hospital dispensary on a Monday morning, poison having been taken and death having occurred apparently on the Sunday afternoon. The case was complicated by the fact that a large dose of arsenic had been taken before the nitroprusside. Actually arsenic equivalent to over 45 grains of sodium arsenate and sodium nitroprusside amounting to over 400 grains were found in the stomach contents and viscera. Between 3 and 4 grains of hydrocyanic acid were present in the stomach. At the post-mortem examination the organs were all found to be congested. It was suggested that death must have taken place very quickly and that the arsenic played no part.

We are indebted to the matron of the hospital and to the member of the honorary staff who was called in for the clinical details of the first case.

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Reviews

AETIOLOGY OF CHOLELITHIASIS

Studies on the Etiology of Gallstones. A Subtilis-like Bacilli Group as an Etiologic Factor. By Karl Mårtensson. From the Department of General Pathology at Karolinska Institutet, Stockholm. *Acta Chirurgica Scandinavica*, vol. lxxiv. Supplementum lxii. (Pp. 227; 74 illustrations.) Nordisk: Koiogravtry.

Dr. Karl Mårtensson of Stockholm has done a bold thing in publishing his *Studies on the Etiology of Gallstones*, for the discoveries which he has made are of the kind which has sometimes ultimately to be written off as a mare's nest. He began by tracing statistically a connexion between certain general disturbances and gall-stone formation, but concluded that these rather control the composition of the stone than determine its original formation, and therefore began a search for a local cause. Since the nucleus of a gall-stone often contains epithelial cells, inflammation accompanied by desquamation might well be the first stage of the process. The cause of this inflammation is identified as a spore-forming Gram-positive bacillus which can be demonstrated by special methods involving solution and sectioning of gall-stones as forming part of their stroma; it has also been demonstrated in the mucosa of the gall-bladder. It was cultivated from 33 out of 78 specimens obtained at operation or necropsy, more often from the stone itself than from the bile, never from the bile without also being present in the stones, and in no case from bile in the absence of stones. It was also found in the faeces of 5 out of 25 cases of cholelithiasis. The majority of strains of these bacilli were aerobes, and are therefore to be placed in the genus *Bacillus*, though their characters, which appear to be fairly constant apart from the small group of anaerobic organisms also recovered, are not exactly those of any named species in this genus. The inoculation of sterile bile with this organism was followed by acidification and cholesterol precipitation. Various other bacteria were also found in some of these specimens, but the newly described bacillus differs from them all in the fact that animals inoculated with it develop gall-stones. Not only did this occur in numerous animals of several species besides the obliging rabbit when the bacilli were introduced into the gall-bladder itself, but in some animals gall-stones were also formed after intravenous or subcutaneous inoculation, the addition of the bacilli to drinking-water, and even their insertion into the vagina before parturition. Further, rabbits immunized against the organism were thereby protected against cholelithiasis following inoculation into the gall-bladder. These animal lesions and the findings in human cases are profusely illustrated. No adequate criticism of such work as this is feasible in a small compass: we only feel that the facts should be stated in order that others interested in the subject may apply the author's methods, and either confirm, modify, or refute his conclusions.

PHYSIOLOGICAL REVIEWS

Annual Review of Physiology. Volume 3. Edited by James Murray Luck and Victor E. Hall. (Pp. 784. 55.00.) Published by the American Physiological Society and Annual Reviews, Inc. 1941.

The third year of publication finds this annual volume considerably augmented in size and in value. It is beyond question that our American friends have a genius for this sort of thing—collections of reviews on those branches of any subject that are of special present-day interest. This series of reviews on physiological topics made itself a place in the world's literature on physiology when the first volume

appeared, and the steady increase in the proportion of the world's physiological literature that is being published in the English language is sufficient proof of the dominance of our tongue in international scientific circles. The place formerly held by publications in German is steadily being taken by journals in English, and a majority of these come from the United States of America. The present volume is a good illustration of the type of review for which in the past Germany was held in proper esteem. Its contributors are of high repute, and the volume is an invaluable key to the current thought and investigation in the subject. Its outlook, in so far as present circumstances permit, is international, though the abundance and proximity of American work naturally make their influence felt.

It is impossible adequately to review that which is itself a very compressed review. It may be stated, however, that the bibliographical references alone form a complete and valuable survey of what is going on; the text is a sort of running commentary on this, and the index of names and subjects is exhaustive—another good feature of American publications. The following is a bare list of the contents, which shows how wide the net is spread: The Relation of Bioelectric Potentials to Cell Functioning (G. H. Bishop); The Physiological Effects of Radiant Energy (H. Laurens); Physiological Aspects of Genetics (A. H. Sturtevant); Developmental Physiology (E. Witschi); Growth (C. E. Palmer and A. Ciocco); Temperature Regulation (J. C. Scott and H. C. Bazett); Energy Metabolism (T. M. Carpenter); Respiration (C. F. Schmidt and J. H. Comroe, jun.); Physical Properties of Protoplasm (E. F. Adolph); Muscle (W. O. Fenn); The Digestive System (J. E. Thomas); Liver and Bile (W. B. Hawkins); Formed Elements of the Blood (G. M. Higgins); Heart (C. J. Wiggers and H. D. Green); Peripheral Circulation (V. E. Hall); Electrical Activity of the Brain (H. H. Jasper); The Autonomic Nervous System (D. Sheehan); The Special Senses—I. Hearing (E. Bárány), II. Visual Receptors (R. Granit), III. Vibratory Sensations and Pain (Y. Zotterman); Physiological Psychology (H. S. Liddell); Kidney (L. Leiter); Metabolic Functions of the Endocrine Glands (S. Soskin); Endocrine Aspects of the Physiology of Reproduction (O. Riddle); Reproduction in Mammals (M. H. Friedman); Bacterial Chemotherapy (E. K. Marshall, jun.); Histamine and Anaphylaxis (W. Feldberg); Exercise (A. H. Steinhaus). There can be not only very few physiologists, but also very few of those engaged on any branch of medical research, to whom some of these articles would not be valuable. The paper is matt and restful, and the type and get-up of the best.

DISEASES OF THE SKIN

Modern Dermatology and Syphilology. By S. William Becker, M.D., and Maximilian E. Obermayer, M.D. (Pp. 872; 461 illustrations in text, 32 full colour plates. 65s. net.) Philadelphia, London, Montreal: J. B. Lippincott Company. 1941.

Every professor of dermatology in America appears to think it his duty to write a textbook of skin diseases, and here is one from the University of Chicago. The authors have very rightly attempted to depart from the familiar pattern of the dermatological textbook and state that they have sacrificed comprehensiveness to a fuller discussion of those diseases which are commonly seen in the English-speaking world. They have also tried to adopt a style such as that used by a lecturer speaking to students rather than that of a compiler of an encyclopaedia.

A special feature of this textbook is a chapter on the neurodermatoses, among which are included the numerous varieties of pruritus, idiopathic chronic urticaria, alopecia areata, lichen planus, rosacea, and (rather curiously) vitiligo. But it appears that this disease is included among the neurodermatoses not because it is caused by neuro-

vascular instability but because in hypersensitive individuals it gives rise to unhappiness and neurosis. The authors also think that there is some possibility of preventing the extension of the affected area by ultra-violet rays and eau-de-Cologne. Most dermatologists will think that this is an unduly sanguine view to take. Our authors attempt to treat their patients suffering from these neurodermatoses on neurological or rather, perhaps, psychological lines. They emphasize the importance of regular and sufficient holidays, the daily nap and sunshine, natural if possible, but if not, artificial. They claim that they are more successful than the majority of physicians in dealing with this class of patient. Our authors also make a brave attempt to differentiate between the various types of eruption which are all commonly herded together under the old appellation of "eczema." In one important series of cases they follow the teaching of Kreibich, who brought forward evidence of disturbance of the cutaneous nerves, and they designate these cases as neurodermatitis, which may be either dry or exudative, and they state that such patients very rarely exhibit hypersensitiveness (or "allergy") on the application of patch tests. Their views are worthy of careful study.

Altogether this is a good textbook of dermatology; it is written in an attractive style, and, like all modern American books, is well printed and produced. A useful feature is the presentation of various subjects in tabular form, which enables the reader to get a clearer idea of the problem than he might otherwise. Among matters so treated are the causes of drug eruptions, of the chief occupational diseases of the skin, the methodical treatment of syphilis, etc. The main drawback to this book is its price, which is high, especially for students, but apart from that one may say that it is worthy of the university whence it emanates.

Notes on Books

The speedy demand for a new edition of Sir ARTHUR HURST'S *Medical Diseases of War* is the best evidence of its excellence. It has been thoroughly revised, and in view of the spread of the war to the Middle East the chapter on amoebic dysentery has been reintroduced from the 1918 version of this work, together with a new chapter on malaria from the pen of Colonel H. B. F. Dixon. Colonel Stott has contributed a new chapter on meningococcal fever, and shortly before his lamented death Dr. T. A. Ross wrote a postscript to his article on anxiety neuroses, of which he was such an admirable and successful therapist. Emphasis is also laid on digestive disorders, which have unexpectedly proved to be one of the most important medical problems of this war. Altogether a most useful book. It is published by Edward Arnold and Co. at 18s.

The Fire Protection and A.R.P. Year-Book 1941-42 is a kind of Whitaker of the fire brigade. It includes an alphabetical list of all the fire brigades and salvage corps of the kingdom, with full statistical details of equipment and operations. A directory of A.R.P. officers for every authority is another useful feature, and so is an epitome of the legislation affecting the fire service. The statutory rules and orders relating to fires are given, together with particulars of the standard specifications for A.R.P. equipment. The surprising amount of technical information embodied in this volume goes to show that fire-fighting is no longer a haphazard business but a science and discipline. One of the ironical events is that all the records for this year-book with the material set in type were lost during the fire raid on London at the end of last December. But the data have been reassembled, and the result is a compilation which is useful to all engaged in fire defence, but particularly to those called upon to deal with the menace of the incendiary bomb. It is published by Leonard Erskine and Co. Ltd., of Aldwych House, W.C.2, at 7s. 6d. free.

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TREATMENT WITH BACTERIOPHAGE

The American Medical Association, among other valuable services rendered through its journal, sometimes commissions a report by recognized authorities on the status of some form of treatment. Such a report on bacteriophage treatment, by M. D. Eaton and S. Bayne-Jones,¹ appeared in 1934, and at that time we referred editorially² to the cautious and, indeed, somewhat sceptical conclusions to which these authors were led. It is now considered that a further review of the position is necessary, and this has been prepared by A. P. Krueger and E. Jane Scribner,³ whose full and thoroughly documented account of more recent work on bacteriophage is a valuable source of information apart from the conclusions they draw from it. Seven years of further work enable this review to begin with a statement of the nature of bacteriophage, and an analysis of the mechanism of its action and the factors controlling this.

Bacteriophage is not a micro-organism but a protein of high molecular weight formed from a precursor within the bacterial cell. For lysis to take place a concentration of about 100 phage units per cell is necessary. Well-founded calculations enable the concentrations attainable in a lesion by therapeutic use to be assessed, and it immediately becomes clear that even after direct application the lytic threshold is unlikely to be reached. Systemic administration assumes—in so far as therapy is based on any such reasoned assumption at all—"a chemotactic affinity of fantastic proportions between phage and pathogen," an affinity of which in fact there is no evidence. It has been found in animal experiments that phage given intravenously is rapidly removed from the circulation by the reticulo-endothelial system. But apart from loss of activity by dilution and sequestration, phage applied in any way to a bodily lesion has to operate in a medium immeasurably less favourable than a tube of culture medium. Its activity is known to be greatly impaired by the presence of dead bacteria, which adsorb it irreversibly, by leucocytes and leucocytic extracts, and by serum. These are exactly the materials of which an inflammatory exudate is composed. Thus local circumstances in the diseased tissue are "practically without exception inimical to the process of bacteriophagy." Hence it is concluded that however phage preparations may act in the body—and it is not denied that sometimes they may act—lysis of bacteria as seen *in vitro* is not the mechanism. The accepted theoretical basis of phage treatment is thus fallacious. It is also deliberately concluded that the spontaneous development of phage plays no part in natural recovery—a most important decision, setting aside an attractive

hypothesis which has captivated popular medical imagination in connexion with several diseases.

What, then, are the other effects which phage treatment may produce? There is another possibility involving a direct action on micro-organisms—namely, that in the presence of phage bacterial dissociation may occur, leading to the production of less virulent variants. That this may happen *in vitro* is known; to what extent it occurs in the body is doubtful, and an opposite effect—the production of variants of greater virulence—is a possibility of which at least one example is said to have been observed *in vitro*. There is also evidence of several kinds that phage may act as a stimulus to phagocytosis. The other effects which phage preparations undoubtedly may have all depend on impurities. The preparation is a lysed bacterial culture, and therefore contains, as well as phage itself, constituents of the bacterial cell in solution, any products of bacterial growth, and the remaining constituents of the culture medium. The intravenous injection of such a hotch-potch of materials has an entirely non-specific action in inducing a leucocytosis, and perhaps in stimulating the mechanism of resistance in other unspecified ways. But the preparation also contains the antigens of lysed bacteria, and these are calculated to excite the formation of specific antibodies. It is quite possible that bacterial antigens in this form have a more rapid and perhaps even a greater immunizing power than a suspension of the intact bacteria from which they are derived—that phage is in fact merely a means for producing a more efficient bacterial vaccine. Each of these arguments applies not only to systemic administration but to local application. Whatever view may be taken about local immunity in Besredka's sense, there is no doubt that applications of this sort to the tissues cause a reaction which is protective against infection, if only by causing leucocytic infiltration. In these authors' opinion "phage lysates in general should be agents *par excellence* for developing local immunity, since they contain several of the individual materials known to be active in this direction: it is our opinion that much of their therapeutic efficiency can be ascribed to this mechanism."

The second part of their paper is devoted to an assessment of clinical results in various conditions: here the plain facts of experimental study are exchanged for a maze of varied observations strongly coloured with therapeutic enthusiasm, forming altogether a prodigious haystack in which to seek the needle of truth. Its main subdivisions are intestinal diseases, infections of the urinary tract, superficial or local septic infections, and septicaemia. It would be neither feasible nor profitable to review in any detail the conclusions reached on this aspect of the subject. They are in any case mainly indefinite; nothing more can be said, taking reported results as a whole, than that they are suggestive of good effect. The disease for which the evidence of this is clearest is thought to be cholera. Here it should of course be remembered that conditions in the bowel are relatively free from those obstacles to phage action which are combined in concentrated form in pus. It is granted that there is clinical evidence of the immunizing and other actions by phage preparations which have already been set down as theoretically to be expected, but ques-

¹ *J. Amer. med. Ass.*, 1934, 103, 1769.² *British Medical Journal*, 1934, 2, 1110.³ *J. Amer. med. Ass.*, 1941, 116, 2160, 2269.

tioned whether these preparations excel or even necessarily equal products more specifically designed for the purpose, such as staphylococcus vaccine or toxoid and typhoid vaccine. Though it is often argued that phage preparations are at all events harmless, this is not entirely true: severe reactions have been seen which can be attributed to the presence in them of bacterial toxins or of the Duran-Reynolds spreading factor. The whole of this admirable survey should have a healthy effect in a sphere of therapeutics which cries out for clearer thinking and more judicial study.

SELECTION FOR THE ARMY

Those who can recall the procedure of medical boards charged with examination of Army recruits during the last war will agree that methods have now greatly improved. The 1914-18 recruit was seen by two, or sometimes three, medical men, and the total time spent on examination, including eyesight test, in a case which presented no obvious difficulty was perhaps ten minutes. This sufficed to grade a man from A1 to C3 or to reject him entirely. The medical boards now consist of five medical practitioners, who altogether examine as a rule from 25 to 30 men during a session of two and a half hours. Each doctor sees each man for approximately five minutes, so that the full examination of one recruit occupies not much less than half an hour. The chairman of the board decides on the final grading and also whether the man should be sent to a specialist. The Select Committee on National Expenditure in its twenty-second report (H.M. Stationery Office, price 2d.) states that the examination as now conducted is fairly thorough, although there is still evidence that some physically unfit men are passed as fit. Even the extended time given to examination does not allow of any careful diagnosis to determine whether certain men who are strictly above the minimum standard are nevertheless likely to be of real use to the Army. The acceptance of unfit recruits is, of course, not only a personal misfortune to the men concerned, but may involve the State in large liabilities for pension and compensation. The committee believes that the present system leads to waste of public money and man-power and should be revised in accordance with modern medical and psychological experience, though it does not indicate the nature of the revision beyond suggesting that the boards would be much assisted in their work if they had past histories before them, especially the recruit's health records from the approved societies. Lack of uniformity between medical boards, shown by the type of man passed in one case and rejected in another, is mentioned.

The present report, however, is chiefly critical of the allocation of man-power once it has passed into the Service—not the occasional acceptance by the Army of medically unfit men, but the assignment of men to military occupations for which they are mentally ill adapted. This, with characteristic ignorance, is made the basis of an attack upon the medical profession in one of the more popular daily newspapers. Actually it is not a medical responsibility at all. After the medical

examination the recruits who reach the required standard of physical fitness are interviewed as to their preferences, and those not accepted for the other Services appear before the Army interviewing officer, who makes recommendations, generally on meagre data, as to the unit to which each man should be sent, and once sent it is very difficult to get him transferred to a unit more appropriate to his capacity. The committee suggests that when a man is called to attend the medical board his mental level should also be ascertained, so that men falling below a certain standard in this respect might be identified before being allocated to any branch of the Service. After receiving an intelligence grading they might be passed on to a depot for a probationary period where they would be further tested for vocational or other aptitudes. Some comments are made by the committee on the relation between age and proficiency in the Army. While the older men of military age have the advantage of greater experience, this is to a certain extent offset by relatively poor hand-and-eye co-ordination. Young men have proved of special value owing to their quickness of thought and action and also their greater physical fitness. It was stated in evidence before the committee that men of 18 and 19 are the most physically fit and mentally alert members of the community. The German authorities have been alive to this fact in the Hitler Youth Movement, in which youths of 17 are being given six months' intensive mechanized training. With regard to selection of officers the committee holds that while officers should, as a rule, be chosen from those whose intelligence as measured by tests reaches a certain level, the qualities essential to an officer cannot be ascertained solely by testing; therefore the system of reports by commanding officers on the suitability of men to be entered as cadets should be continued along with intelligence tests.

The system of selection by testing is new to the British Army, and could only be yielding its fullest value at the present time if it had been introduced ten or twenty years ago. In the unnatural selection of wartime there must be innumerable square pegs in round holes, but with the enrolment of men of higher ages and with more experience in every kind of civilian occupation, which is now taking place, it becomes imperative in the national interests, as well as in the interests of the men themselves, to ensure that their allocation to Army jobs is in some way related to their mental and physical capacity. The danger of enlistment at random of the mentally defective has lately been discussed in these columns. A paper by Dr. F. J. Esher opened the subject on August 9, and in some editorial comment upon it we raised the question whether a group intelligence test should not be used as a routine in all recruits. Intelligent personnel with some appropriate training could administer them, the assessment being left to the psychiatrists and trained psychologists. By such means the militarily useless and the unstable types of defective could be excluded and the stable types of higher grades allocated from the beginning to the kind of work for which they are fitted. It is not only important to avoid the insertion of square pegs into round holes, but everything possible should be done to reject rotten pegs of whatever shape.

HEALTH EDUCATION IN THE SHELTERS

Nearly a year ago Lord Horder pointed out that the air-raid shelter situation affords an opportunity for a new health education policy with a promise of success such as was never possible under pre-war conditions. Heavy bombing has deeply stirred the pool of social life; it has changed the nightly habitat of multitudes of people many of whom have had little or no experience of a well-ordered and hygienic community. The need and opportunity for education in health, in the care of children, in family diet, and in decent living standards and behaviour is written large across the shelters. How badly this education is needed is shown by the hundreds of noisy children who frequent them, the condition of the bedding, the state of cleanliness of parents and children alike, the misuse of lavatories, and the wilful damage and pilfering of which local authorities complain.

In the large shelters indirect education has been proceeding for a year now through the presence and example of doctors, nurses, and voluntary workers attached to social welfare organizations. The local authorities have also done much by providing sanitary facilities (in some instances washing facilities also), planned canteens, and medical aid posts. A governing factor in the situation is the popularity of the large public shelters as against the domestic or communal ones. People naturally insist on going where there are light, warmth, movement, social life, canteen, entertainment, and medical help. The small shelters, communal and Anderson, are used only by people who leave their homes if there is an "alert" or perhaps if heavy raiding is in progress. Shelters were designed, of course, to afford safety, but their successful use depends on certain other factors as well. There are instances where the authorities have been compelled to "build a shelter round the people" who insisted on a particular place because, perhaps, they had used it in the last war, or their neighbours used it, or they "thought it was safe." There is evidence of the continued use of condemned and forcibly closed shelters. One such was seen in the East End. The authorities had actually bricked up a certain railway arch on two occasions, but each time the bricks were pushed down by a crowbar and the people took possession, although there were very good shelters only a stone's throw away. People like the shelters where they "feel" safest, where there are a large number of their fellows, and where amenities are available, and these facts have to be recognized. The people who spend their time in the shelters would normally go to the cinema or a club or a pub: now to a large extent denied these social opportunities they will be more ready to learn of the possibilities of a new kind of social existence after the war. This is primarily a doctor's business, because only against a background of health knowledge can any real progress be achieved.

The educable material is there, but it will have to be carefully and judiciously handled. People should be encouraged (not discouraged, as they too often are) to take their children, and their own slight injuries and ailments, to the doctor and nurse in attendance. Those who are instructed to go to their own doctor or to clinic or hospital for treatment should be followed up to see that they do so. Again, to mention three specific instances, the methods followed by the Rev. W. E. Sangster of the Westminster Central Hall, to whom the Westminster City Council has given oversight of a number of shelters, the Rev. Father Grosier of Stepney, and pacifist and similar organizations in various parts of London, are worthy of study. The practice of these workers is actually to live in the shelters, share the life of the shelterers, run the medical aid post and canteens, and introduce recreative and educational

influences. Shelter life, with all its hygienic hazards, affords an unrivalled opportunity for health education. This is the time to instil the principles of mothercraft, proper feeding, and a sufficiency of rest, and to deliver from the spoon-fed stage the people who have hitherto been satisfied to let the school medical service or the public health authorities do everything for them. The shelters where there is such leadership are unmistakable. If full advantage is taken of the opportunity a new pattern of community living may well take shape in these subterranean refuges that will be of incalculable value when the people once more come to live fearlessly in the light of day. No praise can be too high for the voluntary workers in the shelters. Indeed, they have received the highest of compliments, because wherever they have started something which is practical and necessary in any department of shelter life the authorities have had to recognize it.

The many thousands of pounds which have been spent in London and the big industrial cities on large air-raid shelters should surely be viewed as an investment for the post-war era, not merely as an amelioration of wartime conditions. Many of these places could be used as clinics, clubs, and gymnasiums when their present function is ended, though no one imagines that these great dormitories can be closed immediately on the signing of an armistice. They will be needed as temporary refuges while the homes of many are being built or reconditioned. But more important than any fabric will be the continuation into post-war life of the higher standards of health and hygiene and the spirit of community living now being fostered in the best shelters.

ANGLO-RUSSIAN MEDICAL CO-OPERATION

The heroic resistance of Russia in defence of her soil has stimulated various groups of workers in this country to express their sympathy and admiration in numerous ways. The most fruitful possibilities of co-operation lie in those fields where politics obtrude but little, and in medicine and in science movements are already on foot to start the collaboration that we hope will grow in intimacy after this war is over. About a fortnight ago it was announced that an Anglo-Soviet Public Relations Committee had been set up in London, with Lord Horder as president and Prof. A. V. Hill, M.P., as chairman of the executive committee, and the officers of this committee sent a telegram to the Soviet Ambassador on behalf of "members of the Conservative, Liberal, and Labour parties, scientists, scholars, religious leaders, publicists, editors, and writers." The British Association has organized a conference between representatives of Britain and the Empire, the United States, Soviet Russia, and China, to "demonstrate the common purpose of men of science in ensuring a post-war order in which the maximum benefits of science will be secured for all people." Last week a number of medical men met at the house of the Medical Society of London to discuss the formation of an Anglo-Soviet Medical Committee. At the meeting it was announced that prominent members of the medical profession had promised their warm support to a project having as its aim increased Anglo-Soviet medical co-operation. M. Maisky, the Soviet Ambassador, was present, and in a few words told the audience that he came of a medical family, and therefore had a strong interest in the medical profession. His father had been an army doctor, and his brother was at present in charge of a hospital on the Eastern front. He himself as a child had made a humble contribution to medical science by looking after the guinea-pigs in his father's laboratory. Sir Alfred Webb-Johnson, P.R.C.S., who took the chair, was elected president of the new committee, and various distinguished

medical men were elected vice-presidents. Support was promised from the medical branches of the Navy, Army, and Air Force. One practical proposal was made that translations should be made into Russian of medical literature bearing upon the war, and in this connexion Sir Philip Manson-Bahr drew attention to the valuable material that was available in the *Bulletins of War Medicine* edited by Sir Harold Scott. Whatever shape the various forms of collaboration eventually take, our Russian medical colleagues can be assured of our quick interest and deep sympathy in the terrible professional problems with which they must be faced at the moment.

RASPBERRY-LEAF EXTRACT

It is interesting to note that raspberry leaves are seeking an entrance into *materia medica*. Recently Burri and Withell¹ described pharmacological effects of extracts of raspberry leaves which included the relaxation of the uterine muscle of the cat. In our last week's issue Sir Beckwith Whitehouse has presented new evidence that raspberry-leaf extract has the power of relaxing the uterus of the human subject. These clinical observations rest for the moment on two cases only, and more work is being done. The pharmacological investigation indicated that there may be more than one active substance present. Thus certain extracts when injected intravenously cause a large rise in blood pressure, though this followed a transitory fall of blood pressure due to an action on the heart. The depressor constituent, however, did not appear to be related to the substance acting on the uterus, since uterine relaxation was readily obtained when no fall of blood pressure occurred. The action on the uterus was not specific for the plain muscle of that organ, since a similar relaxation was produced on the muscle of the intestine. As Prof. J. H. Burn points out in our correspondence columns, the choice of the word "fragarine" is not altogether happy, and it would be well to wait upon the final verdict of the chemist before deciding what the active substance in raspberry-leaf extract should be called. Side by side with these scientific observations it may be noted with interest that raspberry leaves are being recommended in the daily press as a substitute for tobacco. They were commonly smoked in Germany during the last war. Those who have tried them, however, while finding them pleasant, complain that they lack tobacco's stimulating effect.

ANTI-TUBERCULOSIS WORK IN INDIA

The Tuberculosis Association of India was formed last year under the presidency of the Vicereine, the Marchioness of Linlithgow, who, as the daughter of the late Sir Frederick Milner, has a hereditary interest in anti-tuberculosis work. The association has already made good in a number of directions. It has undertaken broadcast talks, summoned a conference of tuberculosis workers, and arranged post-graduate courses for doctors—one of these courses was held in Bombay and another in Calcutta during the early part of this year, and a third will be organized in the autumn, probably at Delhi. Since the association came into existence new sanatoria have been opened at Amritsar and Quetta, eight are building, and eleven others are under consideration. Three new clinics have been opened, and thirty others, together with five tuberculosis hospitals, are planned. One of the most important events

of the year has been the opening of the Delhi tuberculosis clinic, which it is hoped will serve as a central model institution for imparting training to doctors, health visitors, and other tuberculosis workers. During the first four months of its existence 1,293 patients were treated, and the number now being seen daily is about 35. The clinic is working in collaboration with a tuberculosis hospital, with selected private practitioners of the district, and with care and after-care committees. Another important new beginning is the opening early this summer of the Kasauli Sanatorium, which is intended to teach modern methods of diagnosis and treatment to doctors and others who intend to specialize in tuberculosis. At the recent annual meeting of the association it was announced that the Government of Madras is introducing a nine-months course, leading to a diploma, in tuberculosis, and that the Bengal Government has decided to establish a sanatorium at Peshok, in the Darjeeling district. A generous donor in Calcutta has given a sum to build and equip the sanatorium. At the same meeting the medical commissioner of the association, Dr. C. Fridmødt-Møller of Copenhagen, reported on his visit during the year to five Provinces and six States, when he inspected forty-five institutions and the proposed sites for a number of new ones. The association extended Dr. Fridmødt-Møller's appointment for a further two years.

EXPERIMENTAL NEPHRITIS

The well-known experiments of Masugi¹ are the only ones which have so far been successful in producing a glomerulo-nephritis in animals similar to that found in the human subject. Masugi's method was to inject into a duck an antigen consisting of ground and washed rabbit's kidney. After twenty-five to one hundred days the duck's serum is injected intravenously into a rabbit, and after an interval of from six to eight days nephritis develops in the latter animal. The commonly accepted explanation of this phenomenon is that it is allergic, and that the duck has developed antibodies which act upon the kidney of the rabbit. The experiment has been confirmed by numerous other workers, but there are difficulties in accepting the explanation that it is a simple reaction between antigen and antibody. One of these difficulties is the time factor, because reactions between antigen and antibody occur immediately. Sarre and Wirtz² repeated the Masugi experiment, but injected the serum directly into one renal artery while the circulation of the other kidney was interrupted for about fifteen minutes. Only the kidney into which the serum had been injected developed nephritis. Thus the initial reaction takes place at once, and another factor is evidently needed to produce nephritis several days later. Kay³ suggests that this second factor depends on the development in the rabbit of antibodies against the serum proteins of the duck. Why this should be necessary is not yet clear.

Schoeber⁴ does not accept the allergic hypothesis completely, and has tried to support by experimental work the theory that glomerulo-nephritis in man is toxic in origin. He has injected into rats either plasma or serum or an ultra-filtrate of plasma (from which the proteins have been removed) obtained from human patients suffering from active nephritis, and he shows that in the majority of cases the rats develop histological changes of nephritis within four days. The experiment was not successful if the plasma was obtained from patients whose disease was no longer in

¹ *Beitr. path. Anat.*, 1935-6, 96, 391.

² *Klin. Wschr.*, 1939, 18, 1548.

³ *J. exp. Med.*, 1940, 72, 559.

⁴ *Edinb. med. J.*, 1941, 48, 322.

an active and progressive state. The renal changes in the affected rats were practically confined to the glomeruli, and consisted of proliferation of the glomerular cells with hyperaemia, increase of nuclei, and adhesion of the glomerulus to the capsule. This experiment appears to be the first to demonstrate in the blood of human nephritis a toxic substance capable of producing glomerulo-nephritis in animals.

VITAL STATISTICS IN SCOTLAND, 1939

The vital statistics for Scotland during 1939, a limited edition of which has now been published, are in several respects outstanding. For the first time in the history of the country the estimated population exceeded five millions. The lowest rates ever-recorded in Scotland were given by the birth rate, 17.36 per 1,000; the proportion of illegitimate births to total births, 5.97%; the death rate of 12.87 per 1,000 (with one exception); the infant mortality, 68.5 per 1,000 live births; diseases of pregnancy and childbirth, 4.49 per 1,000 live births. The marriage rate of 9.24 per 1,000 was with one exception the highest ever recorded in Scotland. Deaths from the principal epidemic diseases numbered 2,056, yielding a death rate for the second year in succession of 41 per 100,000, the smallest ever recorded in Scotland. The most frequent cause of death in this group was influenza with a death rate of 18; the next largest causes of death were whooping-cough and diphtheria with rates of 8. The death rate for measles was only 0.3, the smallest ever recorded. A new and important feature of the report was the comprehensive analysis of the 3,832 stillbirths registered during the first year of the Registration of Stillbirths (Scotland) Act. These have been tabulated by age of mother, cause, geographical divisions, month of registration, and number of previous children. Parity of birth and age of mother were correlated with stillbirths. The multiparae had a lower proportion of stillbirths than the primiparae, except under the age of 20, and the proportion of stillbirths increased with increasing age of mother. There was no evidence of a seasonal trend in the stillbirth rate. Of the 3,832 stillbirths there were 901 cases in which the cause was ill defined and 362 cases in which the cause was unknown. These high proportions may be due to novelty and may improve as the specifications become more apparent, but if no large part of the unknown group can be attributed to detectable causes, then an investigation into the factors causing stillbirths will be necessary before any improvement in the stillbirth rate can be expected.

FIFTY YEARS OF ANTITOXINS

On December 4, 1890, Behring and Kitasato published their epoch-making discovery of the nature of immunity in diphtheria and tetanus. They had shown that the serum of an immunized animal contained a substance which neutralized the toxin produced by the micro-organism, and that by it another non-immune animal could be protected not only against a lethal dose of that toxin but against the infection itself. Not only was this discovery the foundation of all future treatment with antitoxin, but its authors clearly foresaw and predicted its therapeutic consequences. The *Deutsche Medizinische Wochenschrift*, in which this announcement appeared, celebrated the fiftieth anniversary of the occasion in its issue of December 6, 1940, by reprinting the paper, apparently in its original type, inserting a full-page portrait of Emil von Behring, and publishing a series of contributions on related subjects as well as appreciations of von Behring's life and work. Aschoff's recollections of the man differ from the rest of these in

being no mere exercise in adulation: he is, indeed, a little critical, and recalls having been given antitoxin himself after contracting diphtheria from a necropsy. The immediate result was successful, but he appears to have suffered later from diphtheritic paralysis, whereas his wife and child, who also had diphtheria and received no antitoxin, made an uninterrupted recovery. Gundel writes on active immunization against diphtheria, confining himself to experiences with this in Germany; Magnus writes on the prophylaxis of tetanus; and an article by Schmidt on serum sickness is reprinted from a recent book by this author. Very strong national feeling is expressed in some of these contributions, and it is evidently a source of satisfaction under present conditions that von Behring's co-discoverer was a Japanese. This propagandist element is intensified by the introduction of a paper by Kikuth on what is really a quite unrelated subject—except that it represents another great German achievement—the action of germanin (Bayer 205) in sleeping sickness, with a pointed reference to African colonies now under foreign control. Less biased and more useful reviews of some of these subjects would have called for the more frequent citation of work done in other countries, particularly on various aspects of diphtheria immunization in Great Britain and the United States. It is contrary to the finest principles in science to allow racial prejudices to affect judgment on any man's work, and war, so far as we know, has led to no attempts in this country to detract from German achievements in medicine, or to overrate our own because they are British. It is unfortunate that this somewhat discordant element should mar a jubilee celebration which would otherwise be of the happiest kind. The profession in Germany may be assured that their colleagues in other lands accord full honour to von Behring and other great German pioneers whose work towards the end of the last century laid the foundations of modern medical microbiology.

MEETINGS AT HEADQUARTERS

B.M.A. House during the latter part of last week was a scene of unwonted activity in wartime. By this we mean visible and audible activity, for it is very far from being an idle place nowadays, as those who frequent Tavistock Square are well aware. On Wednesday, September 10, the Journal Board held one of its periodical business meetings. On Thursday, at 10 a.m., the Executive Committee met, and this was immediately followed by a meeting of the Council. At noon the Great Hall filled up for the opening of a special Conference of Representatives of Home Divisions under the chairmanship of Dr. Guy Dain, Chairman of the Representative Body. At 12.30 p.m. the President, Dr. Thomas Fraser, presided over the statutory Annual General Meeting of the Association for the year 1941, and at the end of brief formal business conferred, amid great applause, the Gold Medal of the Association upon Sir Kaye Le Fleming, whose memorable services are recorded in the book handed to him. During the resumed Conference of Representatives Sir Kaye once more showed his gift of statesmanship when the meeting found itself in a dilemma, largely brought about by the inexperience of new Representatives. At 5 o'clock the Council held another short session, when it reviewed the events of the early afternoon. The Conference went on with its programme throughout Friday, and after that was over the Executive Committee met again to consider a problem in procedure put up to Council by one of the Divisions. A full account of the first day's proceedings of the Conference of Representatives appears in our *Supplement*. The second day will be reported next week.

LONDON AIR-RAID SHELTERS REVISITED

Nine months ago an investigation was undertaken on behalf of the *British Medical Journal* into the health conditions of London public shelters.¹ It aroused a considerable amount of interest and, we believe, helped to awaken a conscience on this subject. With a view to discovering what improvements have been effected since last winter a further survey has lately been carried out during which various types of shelter in the City of London and Westminster and in about ten London boroughs have been thoroughly inspected. The investigation has also extended to seven of the principal cities of the country, and the results will form the subject of a second article. Some comments on the general lessons to be gathered from this investigation appear on another page.

Tube and Tunnel Shelters

Tube stations now used as shelters are bunked for 22,800, but ten times that number of people could shelter there, and many prefer sleeping on mattresses on the floor instead of in bunks. Although the stations used as shelters are under the control of the local authorities in whose area they are situated, they afford a good example of what can be done when the supply and installation is delegated to one authority, in this case the London Passenger Transport Board. Medical aid posts, canteen points, drinking-water facilities, and lavatories are standard at every station. In the City of London, Westminster, and St. Pancras there is now a laundry service, and at Leicester Square tube station a baggage room for shelterers has been opened, while others are being put in at stations under the Westminster Council's control. This room, where each shelterer has his "pigeon-hole," is disinfected twice a day, and the authorities believe that the bedding is kept much cleaner when dealt with in this way. At each medical aid post there are trained nurses and assistants, as well as orderlies, on duty all night, and a doctor visits during the evening. The posts have been roofed in to ensure quiet—incidentally making them rather warm—and there are bunks for treating cases of illness. Instead of the early canvas contrivances for sanitation, concrete structures have been built and mechanical ejectors installed, making a great improvement.

A criticism of the tube station shelterer, who may come from a considerable distance, was heard at Euston, where a warden complained that these people did nothing for themselves. Partly it is explained by the narrowness of the platforms and passages, which makes free movement out of the question and interferes with any community life. A further disadvantage of the tube shelter is the difficulty of ventilation during the night after the last trains have passed through. Fans are installed, but the people on the spot show a surprising unwillingness to make use of them. The non-dimming of the lights also interferes with the sleep of the shelterers, especially of the children, of whom there are far too many, and who are often seen running about at midnight. At St. Paul's tube station the medical aid post reported that something under 200 cases had been treated since January. These included a good deal of minor illness, a few cases of vertigo, and several of conjunctivitis.

Two large tunnel shelters deserve mention, one in the City and the other in Southwark. Much has been done in both to improve ventilation and sanitation, and both are bunked to take some thousands of people. The Southwark tunnel has three medical aid posts, three canteens, a play centre for children, and a space for recreation. Water-closets are being installed at intervals, but are much too close to the bunks. The lighting is fairly good, and considering the numbers who take refuge here there has been little to complain about on the score of health. The "under-fives" suffer most, tending to get bronchitis, especially those of them who return to shelter life after an infectious illness. All children under 5 in the Southwark tunnel are supposed to go to one of the medical aid posts every night for throat-spraying, and since this practice was started "throats" have greatly decreased. But the children, as their morning fretfulness indicates, are not getting enough rest. A

good deal of scabies has been noticed. Tunnel shelters are difficult to manage owing to their length and narrowness, but as time goes on better methods doubtless will emerge. There are not enough women wardens here.

Large Basement Shelters

A large City basement shelter was revisited. This was always one of the better shelters, but many further improvements have been carried out. Wooden bunks are being replaced by steel. Walls of the bays have been whitewashed. A laundry service, of which full advantage is taken, has been introduced. The canteen, run by the Shaftesbury Society, pays attention to the nutrition value of the food. Great improvements were also found in a large basement shelter in the East End, which was unrecognizable as the place seen eight months before. It had been bayed, whitewashed, and properly lighted, and water-closets had been substituted for the old latrines. There was a first-class medical aid post with a doctor and staff of nurses on duty all night, and there were two or three canteens.

The largest shelter in Marylebone is also excellent. It is air-conditioned, the walls have been colour-washed, and all pipes and fittings painted red. At a very good medical aid post nurses do their best to inculcate good habits among the shelterers. They have been very successful in arranging anti-diphtheria inoculations. The bunks in the bays are not too close together, and the water-closets and washing facilities are right away from the sleeping part. The people are allowed to keep bedding in the shelter, which is disinfected once a week. A section here is kept entirely for women.

Small Basements and Crypts

Two London boroughs, central and south-west, have concentrated on small basement shelters, sometimes reinforced basements in buildings, occasionally specially constructed semi-underground concrete structures. The central one was a two-story shelter with brick walls and concrete floors. Water-closets were installed and taps put in, but there were no arrangements for washing or heating, and no ventilation other than by the doors. The lighting also was not good. From a safety point of view, however, it was probably much better than some adjacent reinforced basements of houses. A few basement shelters seen in West London can only be described as slums. They were full of filthy bedding, the air was foul, and the walls in an appalling condition. The closets (chemical) were just inside the "front door." No one seemed to be responsible for these particular shelters.

A series of basement shelters under a row of shops in South-West London were being reconstructed and fitted with water-closets, sinks, and taps. It was stated that electric heaters had been tried in these shelters, but the people had abused the provision of points by bringing in too many fires and so causing fusing. The council is now installing tubular electric heating thermostatically controlled. These smaller shelters seemed to be very crowded because they were usually bunked to capacity. The medical aid and canteen arrangements (except in one borough) were satisfactory. Either they were visited by a doctor or nurse from an adjoining post or they contained a small first-aid point. Shelters of this type seemed to be fairly well occupied in the suburban areas by people who were evidently neighbours.

Finsbury, the only London borough which has had a definite air-raid shelter policy for some years, deserves special mention. One-half the Finsbury shelters are of concrete construction and the other half are reinforced basements, but the borough is trying to get many of the basements closed. The policy of this borough is to have concrete shelters with a high safety factor rather than dispersal in small inconvenient shelters. The policy does not end with the assurance of relative safety. For example, in the canteens iced milk, which is sold out every night, was provided during the hot weather, also national wholemeal bread sandwiches with salad fillings. Trouble had been previously experienced in getting what was considered to be proper food served in the shelters. Air-conditioning and alternative lighting are to be installed in most shelters. Water-closets are constructed well away from sleeping places. The shelters appear open to criticism only on the ground that they are too crowded with bunks, with not enough space for moving about or for

¹ *British Medical Journal*, December 7, 1940, pp. 790 and 796; December 14, p. 841; and December 21, p. 873.

recreational purposes. Here, as in other boroughs, a rise in the incidence of scabies has been noted.

Church crypts are favourite shelters and a cause of anxiety to most local authorities. Several of these were visited, but except for their more interesting architecture and the fact that there is usually a brick floor, they are much the same as the smaller basements.

Trenches and Railway Arches

The types of shelter which have caused most controversy are the specially constructed trenches and the railway arches, the latter being often taken over by the people against the wishes of the authorities. The condition of the trenches last winter is too well known to need description. Thousands of pounds have been spent in drying them out and in reconstruction, heating arrangements, and proper lighting. The best trench shelters seen were at Poplar, where they have been asphalted over the top, the walls cream-washed, electric fans, concealed lighting, and steel bunks have been put in, and altogether the appearance has been made most attractive. All the trench shelters seen in London were good, though not all had the Poplar "finish." Trenches which have proved impossible to recondition have been closed.

In the railway arch shelters also large improvements have been made. Arches have been re-roofed, in some cases re-walled and color-washed, lavatories have been installed, and medical aid posts and canteens made available. This type of shelter is extremely popular and has had to be "built round the people." The local authorities deserve much commendation on the enormous amount of work and planning which must have been put into making this type of shelter habitable.

What was described in our article of December 14 last year as the "worst shelter of all," in the East End, was revisited. This, too, has been re-roofed and drained. Cusa stoves have been installed in each arch, but unfortunately they are not in this instance successful. The arches are fairly well lighted. The lavatories are outside each arch, well away from the sleeping quarters, and the end arch is used for the purposes of a small medical aid post and a canteen. The local vicar, Father Grosier, is responsible for the introduction of amenities which include a recreation room. He it was who pointed out that the people who occupy these arches have mostly only "bits of homes"—a living room, but no sleeping quarters—and therefore sleep in the shelter at night. Very many of them in their separate bunks are sleeping alone for the first time in their lives, and that, in Father Grosier's opinion, may have accounted for the extraordinary lack of illness last winter.

Surface and Domestic Communal Shelters

Only two street surface shelters which were in dormitory use were seen, one in a north-west borough and the other in the east. Many street and domestic communal shelters are bunked but not in use. Some are bunked but have no lights; others, though well constructed, are just empty shells. Hundreds of these shelters have no gates or doors, with the result that they are fouled by human and animal excreta and are depositories for all the rubbish in the neighbourhood. The sanitary arrangements in them are extremely primitive. The two which were seen in dormitory use, however, were good, and, strange to say, popular, probably owing to the personnel in charge. In both cases they were a range of compartments and both had a medical aid post and canteen. Sanitation was water-borne. The sleeping bays were divided into smallish groups for families. They were bunked, but not too closely, and lights could be dimmed. Both of them had suffered from damp, but had been dried out and when visited were in good condition.

Generally speaking, domestic communal shelters are used either not at all or only on an "alert." Arrangements for keeping them clean are not satisfactory; they are left to the users, and the work does not get done. These shelters should be sprayed and cleaned out, or at least inspected, by the local authorities once a week. Many of them at present are breeding-places of disease.

Of all the types of shelters seen in London the basements of business houses, factories, or warehouses—the property of private firms—taken over by or lent to the local authority, were the most satisfactory. They proved to be better constructed and better lighted, and were usually warmed by central heating. A

member of the firm's staff is usually in attendance as warden. These shelters seem to be better cared for than any others. Much—almost everything—that has to do with the condition of a shelter depends upon the shelter warden. He is the keystone of an otherwise unsteady arch. Much also in the large shelters depends upon a shelter committee to give a lead to the users. From the point of view of sleeping, of recreation, and of such social life as is possible in these circumstances the tube stations are far behind even the small basement and trench shelters, but because depth gives a feeling of security they will continue to be largely requisitioned. New tube extensions are at present under construction, and these will afford fresh accommodation of this kind. The Ministry of Health informs us that, broadly the bunking and medical aid posts will be on the same lines as those at present in operation in the large public shelters. Work is now proceeding on reinforced street surface shelters, and it is believed that a solution has been found in the shape of a shelter much resembling in external appearance the original brick constructions, but with the walls reinforced throughout by means of steel surface rods. A shelter of this type has been subjected to a test, and its behaviour when the bomb exploded was satisfactory. There was no collapse of the structure, although it moved upwards and sideways to a maximum distance of over six feet. There was some cracking of the walls, but the steel rods in them were not broken, and no such breakdown of the structure occurred as could have caused casualties among its occupants. Another direction in which central work is proceeding is in experiments on the dust in different types of shelters and the part it may play in disseminating the organisms of disease. Experts working under the Ministry of Health are hopeful of reducing the possibility of infection which may be spread by dust before there is any winter crowding. The various methods of aerial disinfection are being explored. But the shelters are more than a winter problem. In July last, during a period of lull, there were over 100,000 people in the public shelters of London.

The warmest thanks are accorded to the officials of the various local authorities and to the workers in social welfare organizations for the facilities and help afforded.

AWARDS FOR GALLANTRY IN CIVIL DEFENCE

A Supplement to the *London Gazette* dated September 5 announces the award of the George Medal to Dr. Leonard Findlay, medical superintendent, Mill Road Infirmary, Liverpool, to Dr. Robert Wilsoo Wyse, resident surgical officer, Salford Royal Hospital, to Mr. D. M. Barlow, staff officer, A.R.P. Casualty Service, and to Mr. G. Aspin, leader, A.R.P. Rescue Party, Salford. The announcements read as follows:

DR. FINDLAY: "Dr. Findlay displayed outstanding courage and devotion to duty when the Mill Road Infirmary was badly damaged during an air raid. Although badly shaken and severely burned he immediately organized rescue work and personally led parties of volunteers to release persons trapped under the wreckage. He worked without ceasing throughout the night and following day, and refused to have his own wounds treated until he had accounted for all his patients and staff. Under his cool and courageous direction many lives were saved and all the patients evacuated to other hospitals."

DR. R. W. WYSE, MR. BARLOW, and MR. ASPIN: "A high-explosive bomb demolished the nurses' quarters of the Salford Royal Hospital, and several nurses were trapped under tons of masonry. Dr. Wyse led the rescue operations and, at great personal risk, reached the basement, which was in complete darkness and ankle-deep in water. Despite the danger from damaged electric cables and escaping gas he removed rubble and bricks, and was successful in extricating three nurses who, but for his gallant efforts, would have lost their lives. Another nurse was located by Staff Officer Barlow, who, in an attempt to release her, crawled under tons of debris. For hours he lay under the wreckage encouraging the nurse and moving masonry stone by stone. He was joined by Leader Aspin and, although there was danger of the collapse of about thirty tons of debris, the two men worked on without the slightest concern for their own safety. When it became clear that the nurse's arm was so badly trapped that further attempts to release it would prove fatal to the victim and rescuers, Dr. Wyse amputated the limb and the nurse was got out."

SCOTLAND'S HEALTH IN WARTIME

The health services of Scotland in the period from January 1, 1939, to June 30, 1941, are surveyed in a summary report issued by the Department of Health for Scotland. This report (H.M. Stationery Office, 4d.) is mainly concerned with the health of the people under wartime conditions and with the war emergency services of the Department. In some parts of the country the health organization and the emergency services have been severely tested by active war conditions such as heavy raids and the prolonged handicaps of black-out. The general conclusion is that in spite of wartime calls on personnel the health and social services of peacetime are being satisfactorily maintained; and the evidence to date indicates that the health of the people remains good.

Emergency Relief Organization

The heavy air raids on Clydeside in the spring of this year provided the first practical test for the Emergency Relief Organization. Following upon the lessons of these attacks the Department has maintained close touch with local authorities through personal visits, and many rehearsals have been staged to discover how services might be improved. Since the end of the period covered by the report instructional courses for workers in the Emergency Relief Organization have been organized.

Scotland possesses about 2,700 rest centres. Arrangements for the comfort of the occupants and for the provision of meals have improved steadily. Reserve stocks of equipment have been stored at various points throughout the country to meet any sudden emergency. To afford advice and assistance to persons—whether homeless or not—who find themselves in difficulty after enemy raids, information centres have been established in the large burghs, and smaller centres are being set up in small burghs and other populous areas in counties. Steps have been taken to strengthen the billeting organizations of local authorities.

Evacuation and Shelters

The first plans for the Evacuation Scheme were put into operation on September 1, 1939. A total of 174,605 people were transferred. By January, 1940, the number of evacuated persons remaining in receiving areas had fallen to 41,000. Reviews of the plans in 1940 brought new measures. The raids in the West of Scotland last spring led to a considerable increase in the numbers of persons evacuated. Since March, 1941, 12,000 school children have been transferred from Glasgow in official parties, and 90,000 persons in the priority classes have also been transferred from Glasgow to accommodation secured by private arrangement. Since May, 1941, the burghs of Greenock, Port Glasgow, and Dumbarton have been classified as sending areas and school children evacuated from them.

The health and comfort of people in air-raid shelters provided by public funds have been the responsibility of the Department since January, 1941. Improvements now being effected cover drying and ventilation, sanitation, seating, lighting, and bunking. The bunks are being supplied first of all in the smaller domestic shelters, and in addition bunks are being stored for installation in public and larger shelters should the demand arise. To ensure the maximum degree of dispersal of the population during raids the Anderson and other small shelters are being made as comfortable as possible.

The Scottish Hospitals

The hospital building programme is almost complete and the peacetime accommodation in fully equipped hospitals will soon have been increased by about 24,000 beds. These include the seven new country hospitals constructed and run by the Department of Health, as well as other institutions which have been upgraded and new hatted annexes to existing hospitals. Private houses lent to the Government have been converted for convalescent cases.

Many beds have been made available for non-urgent civilian cases so that the waiting lists of voluntary hospitals might be materially reduced. Urgent cases of ordinary sickness have never been refused admission to the Department's hospitals, but for less urgent cases an arrangement was made with the British Hospitals Association (Scottish Section) early in 1941, whereby patients on the waiting lists of voluntary hospitals might

be admitted to vacant beds in hospitals or annexes provided under the Emergency Hospital Scheme. The response to this arrangement has been slow. Up to the date of the report only about 750 waiting-list patients had taken advantage of it. This result has been described as "disappointing" by the Secretary of State, who emphasized in a recent speech the advantages to be gained by persons undergoing treatment in these magnificently equipped modern hospitals in country areas, under the care of trained nurses and under the direct control of highly qualified medical personnel. Though planned primarily for wartime use, these hospitals are substantially constructed permanent buildings.

Recent experience of heavy raiding in the West of Scotland showed that the Emergency Hospital Scheme is able to deal with considerable numbers of casualties without its resources being strained. A high degree of mobility has been achieved in casualty services by the establishment of twenty-eight mobile surgical units and five fully equipped and staffed casualty evacuation trains. To supply skilled staff for the Emergency Hospital Scheme an Emergency Medical Service was established. This provides a nucleus of whole-time resident staffs in hospitals, and the scheme is organized so that the staff of any hospital can be quickly strengthened by surgical teams from outside. The Civil Nursing Reserve was also recruited to supply additional nursing staff for emergency hospitals and first-aid posts, and for district nursing services.

In Scotland there are 271 fixed first-aid posts (for early treatment of casualties and to relieve pressure at emergency hospitals), eighty-two mobile first-aid posts, 145 public cleansing centres (to deal with gas attacks), and 652 first-aid points (serving small towns and villages). The ambulance service comprises large numbers of vehicles, of which 972 are whole-time ambulances.

Other Health Services

Six maternity homes for evacuated expectant mothers were functioning by June, 1941, and four more were held in reserve. Progress has been made in the provision of nurseries, where women engaged in war work may have their children cared for. More recently, the Child Care Reserve has been formed to recruit women who are fond of children and desire to work as nursery helpers.

On the outbreak of war the evacuation scheme interrupted the school health services, and in 1940 there had to be undertaken an additional 25,000 medical inspections for the Children's Overseas Reception Board. Nevertheless, the health of the children is believed not to have suffered. Those sent out under the organized evacuation scheme have shown a noteworthy improvement, and the Department's medical staff report favourably on the healthy appearance and good nutrition of evacuated children, particularly of those whose parents have allowed them to remain long enough to benefit by country life.

In the Highlands and Islands the State-aided medical and nursing service and the air ambulance service are still operating successfully.

The incidence of only one infectious disease has been really affected by war conditions: cerebrospinal fever has risen considerably. There was a tendency to an increase in the numbers of diphtheria cases, but in recent months medical staffs have paid a great deal of attention to the immunization of children of school age, of whom over 40% have been immunized. More beds have been released for the treatment of tuberculosis, the incidence of which has been somewhat higher recently.

The Department of Health for Scotland has issued a circular drawing the attention of local authorities to the Milk (Special Designations) Amendment Order (Scotland), 1941, which has just been made by the Secretary of State for Scotland. Under the Orders of 1936 and 1938 provision was made for the process of milk pasteurization known as the "Holder" process. Difficulties due to several causes are being experienced in maintaining or replacing apparatus licensed under these Orders, but none the less it is most desirable for the safety of the milk supply that pasteurization should as much as possible be encouraged. The new Order allows local authorities to grant a pasteurizer's licence in respect of an alternative to the "Holder" process, known as the "high-temperature short time" method. The amending Order is published by H.M. Stationery Office, 120, George Street, Edinburgh, at 1d.

Nova et Vetera

THE FOLK-LORE OF PULMONARY TUBERCULOSIS

In a recent paper on this subject (*Tubercle*, 1941, 22, 55) Dr. J. D. Rolleston states that while engaged in the preparation of previous articles on the medical aspects of folk-lore (see *British Medical Journal*, 1939, 1, 995) he had been struck by the numerous popular as distinct from scientific views concerning pulmonary tuberculosis. He had therefore collected the folk-lore of this disease, most of which was concerned with its prophylaxis and comparatively little with its aetiology and symptoms. It is noteworthy that long before it was held by the medical profession to be an infectious disease, it was regarded as such in some country districts in England, as well as among the Karaya Indians and in Brazil. Among the causes of the disease in popular estimation were catching cold, inspiration of a very cold north wind, the sudden cure of skin diseases, especially scabies, and sexual excess. The last factor accounted for the administration of the testes of a fox or chicken in folk medicine long before the introduction of endocrinology by Brown-Séquard. Dr. Rolleston classified the various folk-lore beliefs and methods in the prophylaxis and treatment of pulmonary tuberculosis as follows: (1) Transfer of the disease to other persons, animals, and inanimate objects. (2) Animal, plant, and mineral remedies apart from any idea of transfer. (3) Religious factors, such as invocations, to the Trinity, Virgin Mary, and various saints, especially Pantaleon. (4) Charms of different kinds, some of which dated from Anglo-Saxon times. (5) Water in the form of drinking water and bathing in the sea, streams, wells, and fountains. (6) Miscellaneous remedies, such as the doctrine of signatures, the influence of the moon, odd numbers, and mechanical methods.

JOAN OF ARC

A gulf separates us from the Middle Ages, and at times we have to delve into psychopathology in order to understand the motives of some important movements of those days. Future generations may have to deal similarly with many of our own activities, but this does not alter the fact that our motivation is very different from that of the Middle Ages. The history of Joan of Arc is an illustration.

Her methods were those of her day; her inspiration was largely an anachronism; but in so far as she had a sense of national cohesion and destiny in a France that was still almost exclusively feudal in structure and outlook she heralded the future. She sensed the need for development of a centralized national State, and this made her a figure that neither her contemporaries nor future historians could ignore. This frail girl had a clearer vision than the learned ecclesiastics and the unlettered feudal warriors who were misruling the French provinces. The wonder is that she could impose her will on that motley crew of social pillars, plunderers, and adventurers. She did so by a method characteristic of her day. She urged national unity by presenting it as a divine command of which she was only the agent. In the Middle Ages this was sagacious statecraft. The anachronism in her actions was that she believed not only in her mission but in the origin of its inspiration. And she believed it so firmly that she could make others share her belief.

Was Joan Sane?

Historians have debated whether Joan was sane, but if Joan's sanity is in doubt the sanity of the whole of her generation must also be questioned. The sane do not follow the mentally deranged who hold a totally untenable position. An interesting approach to the problem of Joan's sanity is made by H. P. Bayon.¹ He tries to solve the issue by an analysis of Joan's behaviour in the ordinary circumstances of life, in childhood, at the hey-day of her achievement, and on her road to martyrdom. He stresses that all her actions indicate a courageous, simple

mind, and none of her recorded utterings show evidence of mental unbalance. He explains the "voices" that gave Joan her divine mission as autosuggestion occurring in an age and an environment where this was not unusual. There was no deception here, though history is still left wondering whether deceit was not practised by those who made use of Joan. She may have been a tool in unscrupulous hands, but her own approach, which merely bears the stamp of her age, reveals neither insanity nor hysteria.

A. S.

Reports of Societies

OPHTHALMOLOGICAL CONGRESS

OCULAR INJURIES IN WAR

The Ophthalmological Society of the United Kingdom held its annual congress at Cambridge on September 4 and 5, with an attendance of about eighty members, under the presidency of Dr. R. AFFLECK GREEVES. Hospitality was extended by Trinity and King's, and a very successful meeting resulted.

A discussion, contributed to by more than twenty members, was held on "Ocular Injuries resulting from the War." Mr. O. M. DUTHIE, who opened, said that ruptures had proved the most frequent of all war injuries of a serious type. Even when the injury was not severe the end-results were deplorable. Many cases of rupture, especially those due to flying glass, were virtually untreatable. Subconjunctival ruptures, with or without dislocation of the lens, were not infrequent. Dr. S. ZUCKERMAN, who restricted himself to civilian air-raid casualties, dealt with the problem of injuries supposed to be due to blast. He had studied the records of the last war, and had found nothing to suggest that there were changes in the eyeball due to blast. At relatively high pressures, only to be experienced when the casualties were very close to the bomb, changes, of which the commonest was retrobulbar haemorrhage, would be experienced, but such cases would probably be fatalities in any event. He gave an interesting account of a great deal of research work on the question of blast.

Mr. E. B. ALABASTER analysed 100 cases of eye injury admitted to a casualty hospital after air raids. Of these, 60 were cases of traumatic conjunctivitis, 21 were penetrating wounds caused by metal or glass, 6 were corneal abrasions, 5 were subconjunctival haemorrhage, 5 were injuries to the lids only, and there was one case each of central retinal block, detached retina, and orbital cellulitis. Of the 21 cases of penetrating wounds, 12 required enucleation of one eye. Mr. HERBERT CAIGER said that nothing had brought home to him the horror of this war so much as the case of a man aged 65 who was injured in a shelter last November. One eye was absent, and the man declared that it had been blown right out of the socket by blast, while the other eye showed detachment of the retina.

Several speakers mentioned cases in which there was no apparent injury to the eye except as the result of blast. On the other hand, it was suggested that the term "blast" was used wrongly. One speaker, for example, had referred to a blast injury in a patient who had been thrown 40 feet, another speaker remarking that it would be as logical to ascribe to blast the injuries received on a fall from a high roof. Mr. A. B. NUTT mentioned the desirability of the ophthalmic surgeon seeing eye cases as soon as possible after admission to hospital, before they were "lost" in the surgical wards on account of other injuries. Sometimes when there were extensive injuries to the face it was found that gross stitching with thick silk-worm gut had been done without regard to alignment or normal anatomy of the part. Mr. R. C. DAVENPORT and other speakers referred to the frequency with which intra-ocular foreign bodies were found to be non-magnetic, in keeping with the low ferrous content of shell and bomb cases used in this war. Mr. VICTOR PURVIS mentioned that on the night of the great incendiary attack on London, December 29, 1940, 128 firemen were treated at Moorfields, all but four of whom had corneal or conjunctival foreign bodies

¹ *Proc. roy. Soc. Med.*, 1941, 34, 161.

and a staining of the cornea probably due to smoke-irritation. None of the 128 required in-patient treatment; and all but 24 did not need to come to hospital a second time.

Eye Protection

Sir JOHN PARSONS opened a brief discussion on eye protection in warfare, dealing with the subject only from the military point of view and giving the substance of the report on the Cruise vizor by the subcommittee of the Military Personnel Committee dealing with body armour. Sir RICHARD CRUISE said that at least 50% of eye casualties such as ophthalmic surgeons saw in the last war could be prevented by some form of practical eye protection. It had been urged against his vizor that visibility was seriously impeded, but even if that were so the vizor need not be lowered on any occasion when it was likely to handicap the wearer. Dr. HARRISON BUTLER pleaded for the use of an official vizor not only for soldiers but for fire watchers and others engaged in civilian protection, and it was remitted to the Council of the Society to consider taking up with the Ministry of Home Security the question of the issue of some form of eye protection along with the steel helmet for civilians.

Refraction under Service Conditions

Squadron-Leader J. H. DOGGART gave an interesting paper on refraction under wartime Service conditions, suggesting a number of ways of facilitating refraction tests when large numbers of men awaited examination. Some discussion followed on deception by the examinee. It was the general testimony that, although malingering was frequent in the last war, it was very unusual in this, but, on the other hand, there were cases of men who tried to conceal defects of vision in order to obtain a particular job. One speaker said that it was common for the vision of recruits to improve after entry into service, so that the man who when he joined up had a vision of 6/9 was found to be 6/6 some time afterwards; but against this it was pointed out that the examiners on the two occasions were not likely to be the same person, nor the conditions of examination quite the same.

Unusual Symptoms of Migraine

A long discussion followed a paper by Dr. T. HARRISON BUTLER on unusual symptoms of migraine. Dr. Butler was of opinion that a comparatively small number of migrainous cases had an ocular origin. Headache newly arising must be due to some recent cause, and an ocular defect which had been present for some years, if not from birth, was unlikely, suddenly and independently, to give rise to it. Even large errors of refraction and muscle balance did not generally cause headache, and, moreover, if headache was present it was often not relieved by glasses. The PRESIDENT was of opinion that many headaches were wrongly put down to errors of refraction. Migraine was excited by different causes, an important one being fatigue. Another speaker, Mr. A. B. NUTT, suggested dietary deficiency as a possible cause. Lack of nicotinic acid was said to give rise to a complex series of symptoms, including headache and deafness. Mr. FRANK HECKFORD, who had kept certain records of persons said to be suffering from headaches, said that the large majority seemed to have no errors of refraction or disturbance of muscle balance. Persons specially subject to headache were young people between the ages of 15 and 25 who suffered from vasomotor disturbances, and nearly always complained of cold hands and feet and a feeling of weight on the top of the head, especially pronounced in girls during the period.

Oedema of the Macula

The PRESIDENT contributed a paper on oedema of the macula, a condition which, he thought, was always accompanied by distortion of central vision, varying in degree according to the severity of the oedema. A sense of diminution in the size of objects was also a common phenomenon. The clinical signs included loss of retinal transparency, common to all cases, but in the slighter degrees of oedema calling for very minute ophthalmoscopic examination and careful comparison with the appearance of the macula in the other eye for its detection. With regard to the ultimate clinical effects of oedema, central vision might be restored, improve up to a point, remain permanently reduced, or be destroyed as in most cases of central venous

thrombosis. Complete restoration of the normal appearance did not always mean full recovery of vision.

Other Communications

Other papers can only be mentioned. Mr. H. NEAME brought forward 17 cases of dendritic ulcer, in 8 of which there was association with herpes simplex. Mr. WILLIAMSON-NOBLE described three cases of unsealed retinal holes. His conclusion was that it was open to doubt whether the presence of a hole with a small peripheral loss of field and no interference with central vision called for operation, particularly at a time like this, when air raids might interfere with proper operative cure. Mr. FRANK LAW read a paper on squamous-celled carcinoma of the conjunctival surface of the lid—a rare condition and one in which it was difficult to determine the site of origin of the neoplasm. He described the appearance of the lesion in one case—an ulcerated area some 6 mm. across in a position just nasal to the midline. Removal was undertaken under general anaesthesia, with a good result. Mr. G. T. W. CASSELL described a case of orbital angioma. Wing-Commander KEITH LYLE some cases of diplopia due to head injury, and Mr. LINDSAY REA a specially interesting case of keratitis and its treatment by the osmotic action of warm magnesium sulphate.

Correspondence

Puerperal Tetanus

SIR,—In describing their very interesting case of puerperal tetanus Drs. Bruce Maclean and P. Challen (August 30, p. 302) state that cases of this condition are mainly described in America, France, China, and Germany, and they proceed to quote only foreign references. I am writing to draw attention to a long report upon this subject by a committee set up by the Royal College of Obstetricians and Gynaecologists which was published in the *Journal of Obstetrics and Gynaecology of the British Empire* as recently as June, 1941. This committee arose out of an inquiry addressed to the College by Sir Frederick Menzies (at that time Medical Officer of Health to the London County Council) as to the possible part played by infected dressings as a source of puerperal tetanus. The committee included among its members Prof. McIntosh of the Middlesex Hospital and Dr. Goodhart of the London County Council pathology service.

The report shows that cotton-wool, and still more wood-wool (cellulose tissue), as supplied to the public, contains many spore-bearing organisms. The lesson to be learnt from this is that cotton-wool and wood-wool must undergo thorough sterilization before being used in surgical and obstetrical dressings, but the report should be studied in detail by those interested in this work. In the past catgut has been blamed for the few cases of tetanus following "clean" surgical operations, but it seems likely that dressings rather than catgut may have been responsible for some, if not most, of these cases.—I am, etc.,

W. FLETCHER SHAW,

President, Royal College of Obstetricians and Gynaecologists
London, W.1, Sept. 9.

Raspberry-leaf Extract

SIR,—I have read with some interest the paper by Sir Beckwith Whitehouse on the action of raspberry-leaf extract on the human uterus. Having been engaged with Mr. Withell in pharmacological investigations, the positive results of which led Sir Beckwith Whitehouse to make his clinical trials, I was hoping that clearer evidence of value to patients would be obtained. The evidence, however, rests on two cases, and the record of the observations in the second case appears to me to show nothing. Even the record in the first case is not conclusive, since inhibition of uterine contractions may occur as a result of nervousness.

In the second place, some comment is surely needed on the choice of the word "fragarine" as a name for the substance which inhibits the uterine movements. *Fragaria* is the Latin name for the strawberry, and "fragarine" clearly conveys the idea that the substance is something present in the strawberry. The Latin name for the raspberry is *Rubus*. In any event, it is a good scientific rule to await the chemical isolation of the active

constituent before giving it a name, as was done by Dudley and Chassar Moir in the case of ergometrine. I trust that the name "fragarine" will be dropped.

Finally, I must make some comment on the references to me made by Sir Beckwith Whitehouse in his paper. He says that Mr. Withell "undertook to prepare extracts" as a result of his approach and that "when enough material was obtained the extracts were submitted to" me. This is not so. Mr. Withell had mentioned to me that Sir Beckwith Whitehouse had asked whether anything was known of the action of raspberry-leaf extract. Stimulated by this inquiry, I suggested to Mr. Withell that he and I should carry out an investigation, and in the initiation of this investigation Sir Beckwith Whitehouse had no share. As a matter of interest I sent him a preliminary account of our findings as they stood in March. This he has published in his paper without my concurrence and despite the fact that these observations were rendered obsolete by our later work, as described in our paper in the *Lancet*.—I am, etc.,

Department of Pharmacology,
Oxford, Sept. 13.

J. H. BURN.

Care in the Use of the Group O Card

SIR.—We wish to draw attention to the risks that may be run when the recorded blood group of a volunteer blood donor is accepted without confirmation. There are now so many members of emergency donor services available that when a volunteer is required for an urgent transfusion the chances of one with a donor group card coming forward are high. If there is extreme urgency and the donor presents a Group O card there may be a temptation to use his blood without further test. Danger is, of course, entirely obviated if a direct compatibility test is employed; but in an emergency the doctor, who often finds the collection of a sample of a patient's serum for the test a tedious affair, may be tempted to dispense with it and rely entirely on the evidence of the card that the volunteer is a universal donor. He may regard it as an additional safeguard that this donor has been used before, not realizing that the destination of the previous donation might have been a plasma or serum pool, where a knowledge of the group is immaterial and rechecking is often dispensed with.

Errors in mass-grouping have been estimated to be as high as 10% in some places, and these may be due to either technical or clerical mistakes. In our experience the commonest mistakes have arisen from the presence of cold agglutinins—Group O being reported as A, and A as AB—but we have recently had an instance of a Group AB donor being issued with a Group O card in error by the clerk. There are also many other possibilities of clerical error even with the most careful checking. Since one of the main purposes of mass-grouping in wartime is to segregate into an emergency list selected individuals of Group O who live or work near the bleeding-centres and who can be called upon at short notice, the question arises whether the issue of the Group O card should be permitted to the emergency donor without an independent confirmation of the group.

The possession of a group card gives the volunteer donor a real sense of responsibility, and it is to him a source of satisfaction to know that he is registered in a National Transfusion Service. Moreover, the card is of value when he wishes to transfer to another district, and for these reasons it would be undesirable to limit the issue of these cards in any way. We feel, therefore, that the cards of guaranteed universal donors should be clearly marked "Group O Confirmed" by means of a rubber stamp or preferably with a punch, and that this mark should have a definite significance throughout the country. The fact that the group had been checked by an accepted standard would reduce the risk to the extremely remote possibility of a repeated clerical error, and the donor could be used with confidence in an emergency. This system of double checking could, of course, be extended to all blood groups.

In conclusion, however, we wish to stress that a direct compatibility test should be made in all cases.—We are, etc.,

W. H. CANT,
Regional Transfusion Officer, Birmingham.

W. H. MCNEMEMEN,
Pathologist, Worcester Royal Infirmary.

A. G. SANDERS,
Regional Transfusion Officer, Oxford.

Hypertonic Sodium Sulphate

SIR.—I would add my voice to that of Dr. Tresilla L. Pires (September 6, p. 355) when, in writing of hypertonic sodium sulphate treatment of wounds, she pleaded for "a wider use of so simple and effective a substance."

I first learnt of this when Dr. Lyth introduced it to the profession in his presidential address to the Yorkshire Branch of the B.M.A. in 1935. I was so struck by it that I there and then decided to try it in my ophthalmic work.

My first case was one of orbital cellulitis resultant on a wound to the upper eyelid which came late into my ward. It cleared as if by magic, though too late to obviate damage to the nerve. I then tried it on corneal ulcers, including those with hypopyon, with almost invariable prompt success. At first I used it in an eyebath as frequently and continuously as the patient could be induced to apply it, but later on a pad of cotton-wool soaked in the solution with a fine wick of the wool introduced between the lids at the inner canthus. The pad is covered with some impervious substance, such as oiled silk, and is kept moist with a pipette by the nurse without moving it from the eye.

Since retiring from my hospital I have seen but little of corneal ulcer, but on my experience up to then I should invariably make sodium sulphate application my first line of attack. The cornea and conjunctiva stand the application of a saturated solution without trouble.

As to insect bites, etc., I was stung on the foot by a wasp. I put on a pad soaked in saturated solution, covered it with gutta-percha tissue, wrapped my foot in a towel to protect the bed-clothes, and went to sleep. In the morning there was no trace of swelling or other inconvenience. This had not previously been my experience with wasp stings.—I am, etc.,

York, Sept. 9.

PETER MACDONALD.

Voluntary Hospitals

SIR.—In your issue of September 6 (p. 353) Sir Frederick Menzies asks, "What are the particular virtues of the voluntary hospital system which are conspicuous by their absence in the municipal hospital system?" I should like to put forward three examples; others may add to them.

(1) *Initiative*.—Each member of the honorary staff of a voluntary hospital is free to treat his patients in the way he thinks best. It is fortunate that this has been so, or many of the greatest advances in medicine would have been stamped out as heresies before they had a chance to prove themselves. In the municipal system the amount of initiative allowed is under the absolute control of the resident medical superintendent. Many who occupy this position are men who welcome it, but there are too many others whose sole thought is that nothing shall be done in their hospital which might lay them open to criticism from outside. I cannot withhold sympathy from the latter group; if they had informed criticism alone to face there would be no excuse, but I have some knowledge of the way in which men in their position may be harassed by ignorant and ill-informed critics.

(2) *Independent Criticism by Colleagues*.—The work done by the honorary staff of a voluntary hospital is subject to open comment and criticism by colleagues who are in a perfectly independent position. In the municipal system the personal interests of the junior staff are too dependent on the good will of the R.M.S., and his position in turn is too vulnerable to lay criticism. The inevitable result is a soft pedal on all criticism and a tendency to keep any that does arise strictly within the four walls of the hospital.

(3) *Emphasis on Skill in Treating the Sick as the Highest Quality in a Medical Man*.—Under the voluntary hospital system the highest positions, the honours, and the rewards are enjoyed by those who are foremost in advancing the knowledge and practice of their profession. Under the municipal system promotion usually means curtailment of clinical work and concentration on administrative duties; moreover, the highest honours and rewards go to those who have excelled as administrators rather than to the clinicians or research workers. Were this universal it is hard to see how we could avoid a stultifying influence on the advance of knowledge; for with a few exceptions the most able and brilliant men will naturally follow the path which leads to the highest honours and rewards.—I am, etc.,

Redhill, Surrey, Sept. 13.

KENNETH WATSON, M.B.

SIR.—Sir Frederick Menzies asks: "What are the particular virtues of the voluntary hospital system which are conspicuous by their absence in the municipal hospital system?" This simple question has a simple answer: "There are none." Sir Frederick asks his friends another question: "What they mean by the best features of the voluntary hospital system." Others abler than myself will tell him what he already knows, but I would like to make my little contribution.

The best of our island institutions were founded in the past, and with the passage of time they are modified and adapted to the present age and to present purpose. In their long life they acquire a tradition and prestige which is a human spirit carried on from generation to generation by those who serve within the walls of the institution. It is independent of bricks and mortar. The Houses of Parliament may be destroyed by fire, the Bank of England may be rebuilt, but the spirit which animates these institutions survives, perhaps strengthened. The voluntary hospital system has tradition. This is the first thing.

Some of the voluntary hospitals were founded by religious orders and others by charitably disposed persons. The religious spirit survives and in some sense animates their activities, in some more and in some less, but at least in the sense that it animates the Mother of Parliaments. It is certainly evident in the vocational spirit which finds expression in the nursing staff of the voluntary hospitals, and I would say in parenthesis that the women who work in the voluntary hospitals contribute enormously to the atmosphere that pervades them. The war has brought this home to many of us. The voluntary hospital system depends to an extent on charity. It is customary nowadays to decry charity. It is, however, quite certainly blessed to give, and the impulse is love. To love one's neighbour as oneself and charity are Christian virtues, and these virtues are strong in the tradition and in the present working of voluntary hospitals. Together I account them the second thing in the voluntary hospital system, and their importance cannot be overestimated. The stark realism of Lenin and Hitler has emphasized the interdependence of religion and politics. If the peoples of the world could but accept the Christian philosophy wars would be no more. This, however, belongs to the future, because, as Mr. Wells has said, the teaching of "this Galilean is too much for our small hearts."

The third thing about the voluntary hospital system is personal service. The head of the hospital, generally called the chairman or treasurer, devotes the greater part of his life to this voluntary work. The governors, nursing and medical staff, and the employees all give personal service in varying degree without calculation as to immediate reward. This makes for a personal relationship with the patients, and gives them an affection for the institution and those who work in it. The reputation of a voluntary hospital depends very largely on the quality of the personal service which its members give.

The fourth important feature of the voluntary hospital system is the independence of its units. This makes for *esprit de corps* and encourages initiative. It creates self-reliance and self-dependence both in the institution itself and in every person connected with it. It extends to the patients, who therefore contribute to the funds of the institution. Freedom is said to be the essential feature of democracy. I believe that self-reliance and self-dependence in the great majority of the members of the State are the real foundation of democracy. Such absolutely English institutions as the voluntary hospitals are an integral part of democratic structure. Their survival contributes to the maintenance of British character and to the permanence of our Constitution.

Lastly, there is the medical work done in the voluntary hospitals. The members of the medical staffs include a selection from among the best men in the medical profession, because of the honour and advantage of being attached to a voluntary hospital and because of the effect of the institution on the character of those who work in it. Further, some of the voluntary hospitals provide members of the honorary medical staff with opportunity for teaching and research, and some members of these staffs are among the leaders of the profession, and some contribute to the advance of medicine and so add to the good name of their hospital in this or in other ways. The great majority of the members of the medical staffs are in private practice, general or specialized. This keeps them in contact with

the world at large, while it keeps their hospitals in touch with the lives of the people.

I realize shortcomings in the voluntary hospital system, but I see it improving year by year. The improvement can be quickened, and I have no doubt that if it performs its service adequately there is no danger as to its financial support. Indeed, I believe its service will be financially self-supporting if it is made good enough for those who require its help.—I am, etc.,

London, W.1, Sept. 6.

GEOFFREY EVANS.

SIR.—Sir Frederick Menzies (September 6, p. 353) asks for a list of virtues found in the voluntary hospital system but which do not occur in the municipal system. I am not among those who believe that the voluntary hospital system is indispensable, and, indeed, I hope to see very drastic reforms in the near future. There is, however, a fundamental principle which I think must not be overlooked in planning a better hospital service. At present the members of the honorary staff of a voluntary hospital are subjected to competition in order to make a living. I fully realize that this is detrimental to the efficiency of the younger members of the staff, who should be obtaining experience without being obliged to worry about making money. But such competition does help senior men to keep up to date.

Nobody outside a lunatic asylum would go into the medical profession with the idea of making a fortune, but most of us need a carrot of some kind in front of our nose, such as promotion or a livelihood, to keep us trotting in the latter years of life. There are, of course, many men for whom the thirst for knowledge is sufficient stimulus for efficiency, but the medical profession cannot rely on being composed entirely of such men.

I believe that if every municipal hospital had a paying block, and if private practice within the hospital was allowed to senior members of the staff, there would be a considerable improvement in the hospital service of the country.—I am, etc.,

London, W.1, Sept. 8.

MALCOLM DONALDSON.

SIR.—Surely Sir Frederick Menzies has been unfortunate either in the way he puts his questions or in his circle of friends. I assume he means exactly what he says in the first seven lines of the second paragraph of his letter.

"To be stared at with withering contempt" or to be "overwhelmed with a Niagara-like cataract of words which are entirely meaningless" must be a very odd experience when you seek an opinion. I must confess that so far I have never been treated like this when seeking a variety of information of all sorts. Perhaps, however, he does not mean these remarks to be taken literally. However, let me recommend that he reads the *Report on the British Health Services*, published by PEP in 1937, or the *Lancet* monograph on hospital reorganization, or, lastly, "The Case for a National Hospitals Board," by G. Stewart Smith, *Lancet*, July 26, 1941. I am sure he will find information and possibly opinions tending to supply an answer to the question he poses.—I am, etc.,

Plymouth, Sept. 8.

ERIC WORDLEY.

Future of Medical Education

SIR.—As student subscribers to the *Journal*, we would like to express our great appreciation of Mr. Donald McDonald's excellent article on the future of medical education.

It is undoubtedly desirable, as he emphasizes, that there should be a closer relation between the student's pre-clinical (and especially pre-medical) studies and those which engage his attention during the clinical period. One of us has a vivid recollection of hearing a lecturer (not in our own College) informing his botany class that knowledge of the subject-matter of his lecture that afternoon was essential for their examination, but that it did not matter how soon afterwards they forgot it, as they would have no further use for it. Such a desirable relation between preliminary and more advanced studies would, however, seem to require a rather more radical alteration of the curriculum.

We can fully endorse, too, from a little personal experience and much conversation with our fellows from other hospitals, Mr. McDonald's statements regarding the tendency of the specialist to teach from the rare case. "You must examine and learn all about this case—you'll never see another one like it" is an instruction we have heard more than once. We must, however, admit that we ourselves have been fortunate in that the

majority of our own teachers have recognized that the "every-day" case is the one that the student must know thoroughly before concentrating on the rarities. In fact, some of them have actually deplored the reputation, which students from this hospital have earned from examiners, of knowing the "small print"—sometimes to the exclusion of much that is of more practical importance. In this hospital, too, the "lecture," pure and simple, has been very largely replaced by the lecture-demonstration or clinical lecture in the ward—to the general satisfaction of staff and students alike.

On one point, however, we would, like Goethe, crave for "more light." We agree with Mr. McDonald's condemnation of the reasons for which many students enter medical schools, but fail to see how more scholarships will select students "because they will make good doctors." Mr. McDonald must know, as we do, students who can be relied on to pass any examination but whose intellectual ability seems limited to this examination "cramming." The scholarship, too, which will elicit the desirable type of temperament will be, surely, a revolutionary affair. It seems to us that a well-planned and well-administered curriculum might do much during its five to six years to mould temperament in the desired direction.—We are, etc.,

IAN A. J. MCCREADY.

St. Bartholomew's at Friern Hospital, Sept 8 R. T. ROUTLEDGE.

SIR,—May I take this opportunity to express the hope that "A Medical Student's View" on the future of medical education (September 6, p. 327) will not be accepted as the view of all students. This view is in striking contrast to that of the great teacher which precedes it, where the necessity for less instruction and more education in the wider sense is emphasized; one might be tempted to believe that the majority of students wished to be spoon-fed with courses on the evolution of behaviour, psychology, and sociology.

Early pre-clinical teaching may be "uninformative, and a deadweight on the enthusiasm" of an unimaginative student, and this may reflect on the way it is taught, but not on the inclusion of these subjects in the curriculum. If the student stops to light his pipe and think, there is more to be learnt from dissecting "parts" and reading "Gray" than can be remembered by mnemonics. Ward rounds do not provide the best opportunity for "asking questions and taking part in discussion." We are all too familiar with the type of person who asks all the questions. If the phrase "reading from textbooks has been redundant since the invention of printing" means anything, it is not in accordance with the results, whether judged from the point of view of examinations or of the ultimate production of doctors "blessed with humanity and judgment."

I hope that the future of medical education will not be dependent on more lectures and more people to answer questions. The most valuable source of education is what the student can learn for himself from his patients. The writer of the second of the two articles makes no reference to this except to say that "out-patient clinics are fairly good for this purpose if they are not overcrowded." The general out-patient clinics which I have attended have only been overcrowded with patients; let there be more time spent in bandaging cut fingers and less in listening to expert talk on obscure diseases. The experiences of the midwifery student on the district must remain an outstanding source of the type of education which is required. Are junior house appointments, when the newly qualified doctor has to make his own decisions for the first time, to be ignored as a source of education? Surely the improvement of these facilities of contact with patients is of greater importance than more teaching.

When the medical practitioner has to be the physical (and sometimes spiritual) adviser to men and women of every type the need for a broad outlook is obvious, but this is not to be learnt from a course of lectures. There is no call for a year in the curriculum to be set aside for gaining experience, for those who ask all the questions will gain nothing, and those who do not will find their experience for themselves. The student will be better able to cope with the "maladjusted, possibly mildly neurotic, patient" if he spends a proportion of his time drinking beer in low pubs than if he attended a course on "oecology."—I am, etc.,

A. P. BENTALL,
Horse-surgeon.

London, S.W.3, Sept. 5

Medical Education, Culture, and State Aid

SIR.—While Prof. J. A. Ryle (September 6, p. 323) laments the decay of medicine as a cultural profession and is anxious to counteract this tendency, the statement is made in your leading article (p. 340) that 45% of university students are in receipt of State grants.

Is it not possible that the cultural degeneracy to which Prof. Ryle bears evidence may be an outcome of this profuse State aid to entry into the profession? It must be obvious that a boy whose parents have the means to put a son to medicine will have more opportunity of exercising a choice of career than one whose career is determined by obtaining a scholarship. Culture is a process of slow and continuous growth from a very early age, largely dependent on many factors, such as environment, heredity, etc., involved in education and not necessarily associated with mere instruction and the possession of a good memory.—I am, etc.,

St. Mawes, Cornwall, Sept. 7.

B. H. SHAW.

Planning for Mental Health

SIR.—I was very interested in your leading article in the *Journal* of August 23 and the article, "Planning for Mental Health," in the same number. I have specialized in the treatment of the neuroses and psychoses since 1918, and the results of my psychotherapeutic experience may be of interest.

1. I am entirely in agreement with you that there is an immense need for preventive measures if the problem is to be dealt with at all. I have long ago come to the conclusion that this is the major need, and as the result of practical experience come to the opinion that a great amount of mental ill-health could be prevented by a judicious nation-wide propaganda and the education of prospective parents in the elements of mental hygiene in children.

2. I agree that for successful psychotherapy patients should be caught young. I have urged the need for this for years, but in practice it very rarely happens. This is the fault partly of the parents and partly of the attending doctor. I have long ago been forced to the realization that completely to cure a chronic neurosis in a person, say, over 35 years is a herculean and probably hopeless task. The most that can be hoped for is usually improvement only and/or prevention of further deterioration. This may sound pessimistic, but it is not; it is realistic, and had better be accepted to avoid future disappointment.

3. The number of doctors adequately trained in psychological medicine or having any knowledge of the mechanisms of the neuroses and psychoses is practically nil. The vast proportion of medical practitioners are sceptical of the real existence of the psychoneuroses and have no realization of their numbers, their seriousness as illnesses, their symptoms, or methods of diagnosis. They practically never refer such cases to specialists for diagnosis and treatment, and if they do it is after every form of physical treatment has been tried and failed. Frequently it is the patient or his relations who insist in the end.

4. With the exception of two or three post-war years, when there was a greater interest in the psychoneuroses, it is certain that in the last twenty years there has been no change for the better in the state of affairs described in para. 3.

5. You are right in saying that a special type of personality is needed to be successful in this branch of medicine. Infinite patience, sympathy, tact, common sense, and a complete lack of criticism are some of its ingredients. Without these, technical skill and knowledge are useless.

6. You ask whether it is possible to pick out such personalities before they become trainees. In my experience only those spontaneously take up psychotherapy who have some degree of neurosis themselves or who have been cured by psychotherapy. Within my time a number have come, and gone. They could not stand the pace or perhaps the poverty. I feel sure, however, that if the teaching of psychological medicine were really adequate a number of students would make this fascinating branch of medicine their speciality and by so doing reveal the possession of a suitable form of personality.

7. In my experience the practice of psychotherapy requires more sacrifice of time and patience for less financial return and involves more disappointments than probably any other form of medicine. All one's efforts can be nullified by some un-

favourable but unalterable element in the patient's environment. I do not believe that there is a reasonable income to be made regularly except by the very few psychotherapists, and there is certainly no room for more. I do not wish to dissuade anyone from taking up this branch of medicine, but the facts are as stated. I have never made nearly as much as I made in general practice with less effort.

8. I have come to the conclusion that a knowledge of the technique of psycho-analysis is essential whatever form of psychotherapy it is intended to practise. By this knowledge alone can come an understanding of the mechanisms of neurosis and an appreciation of the nature of the underlying mental conflict. Psycho-analysis is the best form of therapy for the young. No other form can equal its results if successful, as they generally are or ought to be. For the middle-aged and elderly a combination of very superficial analysis with some form of suggestion is probably the best and only permissible form of psychotherapy. —I am, etc.,

Leeds, Sept. 1.

E. WRIGLEY BRAITHWAITE.

The Mental Defective in the Army

SIR,—Dr. F. J. S. Esher's article on this subject (August 9, p. 187) and the correspondence it has elicited show clearly how ineffective existing legislation concerned with mental defect has proved in practice in discovering mental defectives in the community, and thus, incidentally, preventing their recruitment in the Army. Dr. Allan Warner (September 6, p. 353), referring to three extreme cases quoted by Dr. Esher, asks appositely "how the education authority dealt with them at school, and expresses the opinion that "if the section of the Education Act relating to mentally defective children had been properly administered, they would have been notified to the mental deficiency authority." Dr. Warner, like myself a former education medical officer, knows very well the flaws in that administration and even in existing legislation.

There can be no possible doubt that the ascertainment of defectives in the community and the application to them of the provisions of the Mental Deficiency Act will never be adequate so long as the section of the Education Act relative to mentally defective children is not properly administered. That Act has, of course, no reference to the two lowest grades—the idiot and the imbecile—who are directly certified under the Mental Deficiency Act and who are, in any case, not so likely to be enlisted accidentally in the Army. The Education Act is concerned with feeble-minded children, for whom it is made a duty of local education authorities to provide special schools or classes. The Mental Deficiency Act imposes on education authorities the further duty of notifying to the mental deficiency authority children leaving these special schools or classes when it is thought desirable that they should be dealt with under that Act by way of supervision or guardianship or institutional care.

While it is true that most of the larger cities and towns have provided special schools sufficient at least for the education of a considerable section of their feeble-minded children, others have failed to do so, and in some areas, mostly rural, special schools or classes are not practicable. Although the Act encourages authorities not having a special school to send their children to the special schools of an adjacent area, this provision is for the most part ignored. There is the further difficulty that it is only the children who have attended a special school or class who can legally be notified under the Mental Deficiency Act. An authority that has no special school or class has, therefore, no incentive to discover its defectives and, as a rule, does not discover them.

Obviously there are two remedies for this position. One is that education authorities should be compelled to carry out their duties under the Education Act, so far as special schools or classes can be justified in their individual areas. And the second is that as special schools or classes are admittedly not possible everywhere, it should be made legal to notify any child found to be defective, whether or not he is, or has been, in a special school. The mentality of the child is the prime consideration, whatever type of school he has attended. This second provision, which would require an alteration in the existing law, would also meet the case of the child who is only discovered to be defective late in his ordinary school career—too late, perhaps, to justify admission to a special school.

This suggestion for an alteration of the law, together with others relative to the education of children of subnormal mentality, was put forward just before the outbreak of war by a committee (of which I was a member) appointed at the instance of the Central Association for Mental Welfare, representative of many bodies, social, educational, and medical, concerned with mental defect. In the report of that committee it is stated that one of the greatest obstacles to the efficiency of the Mental Deficiency Act has been this restriction upon notification of defective children.

The remedy for these difficulties is in the future. Meantime Dr. Esher and your correspondents are in search of a method of preventing recruitment of defectives unsuited for Army service which can be applied now. The examiners on a medical board are naturally chiefly concerned with physical fitness, and it is no reflection upon the profession to say that the majority of them have had no experience in the diagnosis of mental defect. As Dr. Warner emphasizes, there are no quick and easy methods of detecting mental defect except in its lowest grades. One can in a rapid survey find only grounds for suspicion, and then reference to an expert for a more definite opinion should be possible. Suspicion may be aroused by the recruit's facial appearance in some cases—so-called stigmata should be ignored—or by his general demeanour or by his sluggish responses or movements. As suggested by more than one of your correspondents, a short reading test may be given, but much will depend on the matter given to be read. There appears to be no reason why examiners on medical boards should not be equipped with a copy of Burt's standardized reading tests for this purpose.

Not every mental defective is unfit for some form of Army service, and even the expert's decision in individual cases may not be easily made. Too much significance should not be attributed to mental age. A case with a relatively high mental age approaching the normal may be quite unsuitable on other grounds—difficult behaviour, lack of initiative or staying power—while one of lower mental age may by virtue of stability be a useful recruit. For that reason I would deprecate the fixing of a minimum mental age, but I agree with Drs. W. J. S. Reid and David Russell (September 6, p. 353) that the age suggested by Dr. Esher is too high and does not admit sufficient latitude in selection. It is most important that the examiner should be able to obtain reliable information as to the possible recruit's history—school history if possible, general social reactions, success or otherwise in work. These, together with the results of personal examination by such tests as he prefers, including, of course, performance tests, should give the examiner a sound basis for decision.—I am, etc.,

Epsom, Sept. 9.

HENRY HERD.

Treatment of Impetigo

SIR,—The interesting letters on the treatment of impetigo contagiosa by Dr. F. R. Craddock and Captain M. H. L. Desmarais (September 6, p. 356) persuade me to mention one or two points in the treatment of this far too common disease. As many who suffer from it are poor, expense is a most important factor, while the national necessity for economy in chemicals must also be borne in mind. Dr. Craddock refers to 20% gentian violet—an excellent treatment; but the 2% aqueous solution of gentian violet used for years in this department is just as efficacious, is cheaper, and is less liable to irritate the skin. With this method the average time for cure is just over ten days, all types of the disease included. Squibb's compound quinolor ointment, which Captain Desmarais mentions, is invaluable, particularly for impetigoes of the scalp and for those cases of the subacute type which tend to develop into sycosis barbae, but it is expensive, and some patients' skins do not tolerate it well. The application of sulphanilamide, either in powder or paste form, gives good results, but appears to be no more efficient than gentian violet, is much more expensive, and seems wasteful at a time when supplies are required for more urgent purposes. Finally, the classic treatment with ammoniated mercury, either as ointment or paste, though often successful, tends in many instances to cause a chemical dermatitis with a spread of the infection, especially if an ointment is used.—I am, etc.,

Skin Department, Royal Infirmary,
Edinburgh, Sept. 8.

G. A. GRANT PETERKIN.

SIR.—I was interested in the number of articles on the treatment of impetigo contagiosa in your recent issues, and while I agree with continual changes in the interest of progress in the therapeutics of dermatology, do we not find that in the simple conditions like impetigo contagiosa many "new" medicaments with so many different proprietary names tend to lead us astray and into treatment which is prolonged and often costly? Why not go back to the "old" treatment taught to many of us as students and use ung. hydrarg. ammon. dil. This should be applied twice daily and only following removal of the crusts and scabs by dry hot boracic fomentations. The condition invariably clears in seven to ten days.

In children and in those adults where there is difficulty in confining the areas of infection and where there is a tendency to auto-infection, I have found that after two to three days of the above treatment the application of lotio eau d'Alibour N.F. (lotio cupro-zincica) t.d.s. has a most gratifying effect: the condition is immediately arrested and cure in ten days can be expected. The application of adhesive plaster over a wool pledget soaked in cupro-zincica, as suggested by Dr. M. E. J. Packer (September 6, p. 364), could be used in those cases where the areas are small and isolated, but I should think that adhesive plaster would tend to devitalize the healthy epidermis and so form a nidus for further infection, particularly on the face, where the condition is commonest. I agree with Captain M. H. L. Desmarais (September 6, p. 356) that rest and institutional treatment, particularly for children, help.

Might I suggest that the temperature observed by Dr. Noel C. Bleasdale (September 6, p. 363) in his cases treated with mercuriochrome may have been due to a mild streptococcal septicaemia or to a nephritis, which is a complication of impetigo.

I would like to tabulate the following few points: (1) Impetigo contagiosa is usually a mixed infection with either staphylococci or streptococci predominating—ung. hydrarg. ammon. dil. clears these where the former preponderate and cupro-zincica where the latter are in ascendancy. (2) Treatment with sulphapyridine or other sulphonamide may be necessary in resistant cases and in those cases where a temperature develops. (3) Resistant cases with a temperature should have a chemical analysis of the urine done. (4) Auto-inoculation is common, and detailed instructions must be given to avoid this, and for this reason institutional treatment with rest is often advisable.—I am, etc.,

Sheffield, Sept. 9.

E. BERTOCK.

Bronchogenic Tuberculosis

SIR.—Your annotator has misinterpreted (p. 343) my use of the expression "bronchogenic tuberculosis" (p. 154), which was intended to indicate the mode of spread of the disease and not its origin. Although his further comments point to rather superficial reading of my paper, a few words on the use of the expression may be generally helpful. The suffix *-gen*, of Greek derivation, signifies "born" or "of such a kind" (Concise Oxford Dictionary). The bacilli which cause a fresh pulmonary lesion in an already infected person may come from the outside air (aerogenous lesion), from the blood stream (haematogenous lesion), or by the bronchi from a focus which may itself originally have been aerogenous or haematogenous. A focus arising in a bronchus gives rise to tuberculous bronchitis, which is not an essential feature of the early lesion that spreads later by the bronchi, and may itself be haematogenous in origin. From this it appears that the expression "bronchogenic tuberculosis" has no *raison d'être*. Its use, though not strictly etymologically correct, was therefore unlikely to cause confusion in connexion with the common type of tuberculosis that spreads by the bronchial system. Moreover, such an interpretation of *-gen* seems in keeping with the meaning "of such a kind." Your annotator states that "the origin of such a lesion [isolated pulmonary focus] is still obscure and may well be haematogenous." That this is a very common origin was definitely established by Pagel as far back as 1930,¹ and was clearly indicated in my paper to which your annotator refers.

I hope it will be generally agreed that a distinct term for the common type of tuberculosis that spreads by the bronchi is necessary. Three other alternatives were available. The use of "phthisis" is condemned by some because its meaning of "con-

sumption" is not specific. I frankly lacked the courage to introduce "bronchophorous tuberculosis," which would be etymologically accurate. And "bronchovectorial tuberculosis," containing a hybrid word, would have been even less acceptable. The term "bronchogenic" in this connexion is not original. Thus the distinguished American physician, James Alexander Miller, uses it in the expression "bronchogenic phthisis." If "phthisis" is rejected, "bronchogenic tuberculosis" appears to be a case of *faute de mieux*.

I should like to comment on one further relevant point. Contrast plays a very large part in radiological technique. Texture as well as size of focus matters in the final result. The same technique will show up a minute calcified focus or a small fibrotic lesion, but not necessarily a larger infiltration. Your annotator states that "the films so obtained [by miniature radiophotography] are sufficiently detailed to show even very small lesions." Does this apply to very small infiltrations? I find it difficult to reconcile his statement with that of Dr. Sparks, whose paper he quotes. "The image [of miniature radiophotography] was, in fact, reminiscent of that procurable in a chest radiograph of about twenty years ago." Careful study of the cases published in comparisons of miniature radiophotographs with full-size films fail to show among them any definite cases of early bronchogenic tuberculosis. Those workers who nevertheless affirm that miniature radiophotography is quite satisfactory for the detection of early pulmonary tuberculosis must think of "early pulmonary tuberculosis" as pulmonary tuberculosis in a person with no symptoms, or with symptoms that have not yet led him to consult a doctor. Such a definition will include many people with lesions far from early, and is therefore likely to do a disservice to the cause of mass radiography and the control of the disease.—I am, etc.,

Hounslow, Middlesex, Sept. 8.

G. GREGORY KAYE.

Cardiac Arrest during Anaesthesia

SIR.—As I intimated in my article on cardiac massage, I expected criticism. Far from wishing to evade Dr. H. J. Brennan's question, I thought that my letter of August 16 (p. 243) would have given him the data he required.

Obviously, it is ridiculous to assume that anaesthetists located in widely separated surgical centres (six English cities) are "grossly incompetent." Further, it should be obvious that these anaesthetists would employ the anaesthetic agents which are in vogue in England. In other words, my experience should represent a good cross-section of anaesthetists and anaesthetics. This being so, I am sure that Dr. Brennan will understand how impossible it is for me to state that no chloroform has been used in this or that case.

I wonder whether surgeons for whom Dr. Brennan anaesthetizes pry into the anaesthetic room and watch what *drugs* are being employed. I have little doubt that his surgeons also are too occupied in preparing for the operation, and I am sure they have too much confidence in Dr. Brennan's judgment to warrant such intrusion.—I am, etc.,

London, W.1, Sept. 9.

HAMILTON BAILEY.

* * This correspondence is now closed.—ED., B.M.J.

Status Lymphaticus and Sudden Death

SIR.—It has been contended that a diagnosis of status lymphaticus is not sufficient as a cause of death; but, in spite of the eminence of the members of the Committee that reached this conclusion, there are many who doubt the truth of their decision.

I have recently performed necropsy on a soldier aged 30 who collapsed and died suddenly while on duty. He was a well-built man with no history of previous illness. Indeed, he was quite famous as an athlete. The relevant post-mortem findings were as follows: narrow aorta; spleen rather larger than normal, with very prominent Malpighian bodies; mesenteric glands enlarged and numerous; two small areas of white fibrous tissue in the posterior wall of the left ventricle; and a thymus that weighed 5½ oz. (fortunately I have three witnesses to this remarkable finding). In every other particular the body appeared to be healthy.

Is status lymphaticus to be regarded as having killed this man, or are the small areas of myocardial fibrosis to be blamed? The latter were so small that it is difficult to suppose that they had

¹ "Lungen-tuberkulose" in *Handbuch d. spec. Path. Anat. u. Histol.*, ed. Henke and Lubarsch, Vol. 3, Part 2, pp. 225, 344, 413.

much bearing on the matter; but when I came to read up the whole subject I found that Vasilu (*Man. Anat. patol. clin.*) states that in cases of sudden death of persons with status lymphaticus interstitial myocarditis (or cellular infiltration of the myocardium) is present. Unfortunately, I did not keep any portion of the heart for histological examination, either in this case or in any other case of status lymphaticus I have seen.

As far as I am aware the committee mentioned above did not investigate the structural changes in the heart; and I write this note in the hope that every case of status lymphaticus will in future be subjected to detailed histological examination.—I am, etc.,

London, W.1, Sept. 6.

A. PINEY.

The Thomas Splint

SIR,—I heartily agree with Major Hosken's remarks on the use of the Thomas splint (September 6, p. 355).

The first-aiders at my post can apply the splint in under ten minutes. They have been instructed to work in teams of two. The splint has been applied in the dark, working with gas masks on, and with the use of one hurricane lamp only. It was assumed that the electric current had failed. Just recently, at a Red Cross inspection by a well-known surgeon, one team was highly commended for the way the splint had been applied.

The practice has come in very useful, for a fractured femur was brought into the post and a Thomas splint was applied; the patient was comfortable and did very well subsequently at the hospital to which he was removed. Incidentally, this patient was so grateful that he offered £5 to the post, which, of course, could not accept the money.—I am, etc.,

Willesden, Sept. 6.

LOUIS SHELDON,
M.O. in Charge, First-aid Post.

Anglo-Soviet Medical Committee

SIR,—An Anglo-Soviet Medical Committee has been formed to arrange the interchange between the medical profession of this country and the Soviet Union of the latest material on the clinical and scientific aspects of medicine. Such an interchange can be of considerable value at the present time to members of the profession in both countries, and we believe that a large number of doctors in this country would be willing to co-operate in the work. Those interested and those prepared to assist by summarizing and abstracting English articles and translations of Russian work should write to the Hon. Secretary, Anglo-Soviet Medical Committee, c/o the Royal Society of Medicine, 1, Wimpole Street, W.1.—We are, etc.,

DAWSON OF PENN.

JOHN A. RYLE.

W. E. GYE.

WM. FLETCHER SHAW.

F. GOWLAND HOPKINS.

ALFRED WEBB-JOHNSON.

PHILIP MANSON-BAHR.

C. M. WILSON.

Sept. 12.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Titles of the degrees of M.B., B.Chir. have recently been conferred by diploma on Mrs. A. E. Burns of Newnham College.

UNIVERSITY OF LONDON

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN

The following scholarships have been awarded for 1941:

St. Dunstan's Medical Exhibition: S. R. Yeates. A. M. Bird Entrance Scholarship: B. M. Bingham. Mrs. George M. Smith Scholarship: K. Corbishley. Extra Mrs. George M. Smith Scholarship: H. Mushin. Mabel Sharnau-Crawford Scholarship: B. M. Buck. MacIntyre Evans Scholarship: P. M. E. Cook. Sarah Holborn Scholarship: O. Cooke. Special Sarah Holborn Scholarship: Q. M. F. Adams. Dr. Margaret Todd Scholarship: E. C. C. Horburger. A. M. Bird Scholarship for Clinical Studies: R. M. Haslam. Alfred Langton Scholarship: B. J. Goff. Ellen Walker Bursary: K. N. Berger. Special Ellen Walker Bursary: R. N. G. Holloway and J. C. M. Yuill. Flora Murray Bursary: E. E. Simpson. Emma Beilby Bursary: B. D. Owens. Special John Byron Bursary: I. Hewitt. A. M. Bird Postgraduate Scholarship in Pathology: C. Thomas, M.R.C.S., L.R.C.P.

Obituary

HASTINGS GILFORD, F.R.C.S.

We regret to announce the death of Mr. Hastings Gilford at the age of 80. He practised for many years as a surgeon at Reading and was well known for his thoughtful writings on disorders of growth and development and on various aspects of the problem of cancer.

He was born at Melton Mowbray in 1861 and studied medicine at Guy's Hospital, whence he qualified M.R.C.S., L.R.C.P. in 1887. He took the F.R.C.S. in 1889, after working as clinical assistant at the Evelina Hospital for Sick Children. He was for many years surgeon, and afterwards consulting surgeon, to the Reading Dispensary and a vice-president of the Reading Pathological Society. During the last war he worked as surgeon-in-charge of the Sutherland War Hospital.

Hastings Gilford joined the British Medical Association in 1889 and was for years a regular participant in the scientific work of the Annual Meetings; between 1901 and 1904 he contributed six papers to the Surgical and other Sections. His book *Disorders of Post-Natal Growth and Development*, appeared in 1911; in 1913 he read a paper at the seventeenth International Congress of Medicine on "The Influence of the Ductless Glands on Development," and in the same year he was appointed a Hunterian Professor by the Royal College of Surgeons of England and lectured on "The Nature of Old Age and of Cancer." Thenceforward his mind was almost continuously occupied with the origin of tumours. His book *Tumours and Cancers: A Biological Study*, was published in 1925, and another, *The Cancer Problem and its Solution*, in 1934, and many letters from his pen on this subject appeared in the *British Medical Journal*. Relying solely on the clinical and post-mortem observations made during the last hundred years, he rejected the vast mass of information that has emerged from laboratory experiments. His view was that our civilization makes for degeneration; that everywhere around us, in our hospitals and charitable institutions, movements are at work which act benevolently on the individual but malevolently on the race; in short, that sentimentality prevails over common sense, to the detriment of civilized man. The effect of this general degeneration, he held, was to produce a degradation of cell structure, a precancerous condition in which the cells, if left to themselves, tend to die out, but under suitable stimuli take on the abnormal proliferation obtaining in cancer. In his last letter published in these columns (July 2, 1938) Mr. Gilford proclaimed anew his faith that not only were the causes of cancer to be found, but that they had already been found and were now being sorted out and investigated. "Cancer is not one disease but a vast group of diseases. Cancers are primarily of internal origin, as contrasted with the bacterial diseases, which are primarily of external origin. Cancers vary in kind with the nature or species of tissue or of animal, so that cancer of one species of tissue differs from that of another, and cancer of one species of animal from that of another species. As with the bacterial diseases, the causes in general are twofold: (a) predisposing, and (b) activating." This idea lay at the centre of an argument which he had often expounded before at great length. Brimful of his subject, he could not realize that prolixity lost him many readers.

Dr. AENEAS ROSE, medical officer of health, East Barnet, who died on August 26, was a son of the Highlands, his father having been chief forester to the Duke of Atholl. He was educated at Edinburgh University, where he graduated M.A. with first-class honours in moral philosophy, and became a master at Edinburgh Academy. While continuing to teach Rose studied medicine, and took his M.B., B.Ch. in 1906. After holding house appointments at the Queen's Hospital, Hackney, and Great Ormond Street Hospital, he settled in New Barnet, where he quickly built up an extensive practice, becoming also in 1924 medical officer of health to the urban district council. Rose was a man of brilliant attainments coupled with social charm and a gift for entertaining that made him both a delightful host and a welcome guest. Children of all ages adored him, and nothing gave him

greater pleasure than the tea-parties to which he invited his young friends in the school holidays. During the war of 1914-18 he served as a surgeon in the Royal Navy, and was for some time on the staff of Dartmouth College, a post for which he was admirably fitted. He took a very active part in the work of the Barnett Division, B.M.A., of which he was chairman in 1933-4 and 1939-41, and it was largely due to his efforts that the yearly programmes invariably contained the names of many eminent lecturers. If the annual dinner which opened the winter session was an outstanding success it was mainly because Rose had a hand in organizing it. Outside his professional activities he was an enthusiastic fisherman, and all his leisure was spent in fishing the rivers of Hertfordshire or those of his beloved Scotland. He will be greatly missed in New Barnett both by his patients and by his professional colleagues. Of few can it be more truly said: he was a brilliant scholar, a great sportsman, and a prince of good fellows.—W. G. H.

Mr. OSWALD TILSON DINNICK, F.R.C.S.Ed., who had been practising for many years at Launceston, Cornwall, died there on September 4 after a brief illness. He was born in Canada of Cornish ancestry, and graduated at Toronto University as M.B. in 1904. After holding resident appointments both in Toronto and in New York, and acting for a while as a ship surgeon, he came to this country, took the Conjoint diplomas and the Edinburgh Fellowship in surgery, and worked several years at the Royal Cancer Hospital in the Fulham Road, London. Two or three years before the war of 1914 it was discovered accidentally (in the course of a life assurance examination) that he was suffering from glycosuria, which prevented him from joining the R.A.M.C., though he actually did see some war service in a voluntary capacity under the Red Cross. Most of the war period, however, was spent in the Royal Cancer Hospital as surgical registrar, where the absence of most of the surgical staff on service gave him very wide operative experience under the tuition and encouragement of Sir Charles Ryall, then senior surgeon. After the war his illness progressed, and he was actually in coma when the first coSIGNment of insulin reached England from Canada, just in time to save his life and allow him many years of useful service to his fellow men in Cornwall. A fine natural surgeon, and a ready-witted amusing companion, he was a very well-read and cultured man, with many outside interests as well as a first-rate knowledge of his profession: he was also well known as a raconteur. Mr. Dinick is survived by his second wife (*née* Mitchell), also a member of our profession.

Dr. GUY EDWARD MILLS WOOD, formerly medical officer to Merchant Taylors' School, died on September 4 at Hungerford, Berks. He was born in London on February 5, 1869, and from Rugby School went to study medicine at the Newcastle-upon-Tyne College of Medicine. He took the English Conjoint diplomas and the M.B. of Durham University in 1890, and many years later obtained the M.R.C.P.Lond. Between 1890 and 1893 he held a succession of house appointments at University College Hospital and the National Hospital, Queen Square, and was then for five years senior assistant at Rainhill Asylum, Lancashire. He came to London to take up the post of resident medical officer at the Charterhouse (Sutton's Hospital): in 1913 he was appointed medical officer to Merchant Taylors' School and medical officer in London for the Merchant Taylors' Convalescent Homes, Bognor. During the last war Dr. Wood served as civilian medical officer at the Fulham Military Hospital.

The North-East Ulster Division has lost a staunch member by the death of Dr. DAVID HUEY, of whom an obituary notice appeared on September 6. S. M. B. writes: Although one of the busiest of practitioners, he had the proud record of never having missed a Divisional meeting in the period between the last war and the present one and invariably appeared fifteen minutes before the stated time of the meeting. A past chairman of the Division, for years he represented it at the Annual General Meeting. He had all the best attributes of the old family practitioner, and kept himself familiar with the modern trend in medicine. He had the distinction of becoming an F.R.C.S. of Edinburgh at the age of 66. His genial smile and bluff personality will be missed by his colleagues in Northern Ireland and by the many friends he met each year at the Annual Meeting.

The following well-known medical men have died abroad: Dr. PAUL FERDINAND SCHILDER, aged 54, clinical director in the psychiatric division of the Bellevue Hospital, research professor of psychiatry at New York University College of Medicine, and one of the founders and past president of the Society for Psychotherapy and Psychopathology; Rear-Admiral WILLIAM CLARENCE BRAISTED, F.R.C.S.Ed., formerly Surgeon-General of the United States Navy, aged 76; and Dr. JOHN JOSEPH MACPHEE, emeritus professor of neurology at the University of Vermont College of Medicine, aged 80.

The Services

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Surgeon Commander ARCHIBALD NEWLANDS FORSYTH, R.N., who is reported missing, presumed killed on active service, was the son of the late Mr. and Mrs. Alexander Forsyth of Aberdeen. He was educated at Robert Gordon's College, Aberdeen, and at the University of Aberdeen, graduating M.B., Ch.B. in 1926. Two years later he entered the Royal Navy as surgeon lieutenant, was promoted to surgeon lieutenant-commander in 1934, and to surgeon commander last year. In March, 1940, the King granted him permission to wear the Insignia of Chevalier of the Order of Maritime Merit conferred upon him by the President of the French Republic in recognition of valuable services rendered in connexion with the rescue of survivors from the French steamer *Yolande* when wrecked on the coast of Shantung, China, on March 6, 1938. Surgeon Commander Forsyth was a member of the British Medical Association. He leaves a widow and one daughter and one son.

Surgeon Lieut. RALPH MORTON CALDER, R.N.V.R., who is reported missing, presumed killed, on active service, was educated at the University of Glasgow, where he graduated M.B., Ch.B. in 1935. He had held the posts of house-physician at the Western Infirmary and the Royal Hospital for Sick Children, Glasgow, and house-surgeon at Ayr County Hospital. He was awarded a postgraduate scholarship in experimental pathology by the Medical Research Council in 1937-8, and was a University of London Graham scholar in pathology at University College Hospital Medical School. In 1939 he contributed an article on splenic tissue to the *Journal of Pathology and Bacteriology*, and as recently as August 9 this year he reported a case of allergic shock following a Schultz-Charlton test in the *British Medical Journal*. He became a member of the British Medical Association soon after qualification. On the outbreak of war he joined up for service as an officer of the R.N.V.R.

ROYAL ARMY MEDICAL CORPS

Prisoners of War

Captain Ian MacDougal Guhrle Stewart.
Lieut. Louis Falconer Smith.

DEATHS IN THE SERVICES

Surgeon Captain EDWARD BUTLER PICKTHORN, R.N. (ret.), died at Culmington, Shropshire, on August 27. He was the youngest son of the late Inspector-General Thomas Russel Pickthorn, R.N., and qualified M.R.C.S., L.R.C.P. in 1892. He entered the Royal Navy soon afterwards, became fleet surgeon in 1904 and surgeon captain in 1918. He served throughout the war of 1914-18, receiving the medals. He leaves a widow.

Lieut.-Colonel KENNET BRUCE BARNETT, R.A.M.C. (ret.), died at Beaconsfield on August 31, aged 73. He was born at Hollywood, Belfast, on September 22, 1867, and was educated at Queen's College, Belfast, graduating M.B., B.Ch., and B.A.O. of the Royal University of Ireland in 1892. He also studied in Dublin and London, and took the F.R.C.S.I. in 1904. Entering the Army as surgeon lieutenant in 1894, he became lieutenant-colonel in 1915, and retired in 1919. He served in the Tirah campaign on the North-West Frontier of India in 1897-8, and received the Frontier medal with two clasps.

The Minister of Health has issued an Order, which came into effect on August 25 (Statutory Rules and Orders, 1941, No. 1294), requiring any person employed as a nurse in a mental institution to continue in such employment until his services are dispensed with. Conditions in regard to exemption and other matters are set out in the Order, which may be obtained from H.M. Stationery Office (price 1d.).

Medical Notes in Parliament

Silicosis and Anthracosis

On September 9 Mr. J. GRIFFITHS asked the Secretary for Mines whether any further measures were being taken to prevent silicosis and anthracosis among coal-miners. Mr. GRENFELL said that in regard to stone drifts and headings the measures recommended by the Royal Commission were being applied wherever the conditions so required; but the provision of the apparatus was not enough, and there was still need not only for the managements but for the workmen and subordinate officials to see that it was used more regularly and effectively and kept in good order, and he appealed again for their co-operation. Very prolonged and thorough investigation had been directed to the conditions associated with the incidence of the disease, and the Department were hoping for enlightenment and guidance from the report soon to be forthcoming from the committee of the Medical Research Council. Meantime, the chief undertaking in the anthracite area of South Wales in consultation with the divisional inspector of mines had issued to all its officials a far-reaching code of instructions about precautionary measures, and this had been made known to the representatives of the workmen, on whose co-operation they must largely depend in seeking to bring about a change in the long-standing methods and customs of their work. He was hopeful that this scheme of co-operative effort would prove successful, although a standard set of statutory regulations might well be necessary later when the position was clearer.

Blood Transfusion

Mr. ERNEST BROWN, Minister of Health, on September 9 informed Sir Robert Gower that considerable numbers of blood transfusions, for which both blood and plasma were required, had been given in dealing with air-raid casualties and Service patients, and increasing use was being made of transfusion therapy in hospital practice generally. The existing donor panels and their associated blood stores, together with the plasma produced at the processing centres, should provide adequate resources for casualties on a considerably larger scale than were experienced last autumn and winter.

Allocation of Medical Personnel

In reply to Sir E. Graham-Little on September 11 Mr. ERNEST BROWN said the Central Medical War Committee continued to act as a supply committee in providing doctors required by the various civilian and military services. It was not in any way superseded by the Medical Personnel (Priority) Committee presided over by Mr. Shakespeare, although in selecting the individual doctors it would naturally conform with any decisions taken by the Government on the recommendation of that committee as to the order of priority in which the demands of the various services were to be met. It was not intended that an appeal from a practitioner should be entertained by the Medical Personnel (Priority) Committee.

Number of Evacuated Children.—On September 9 Mr. BROWN told Colonel Carver that the estimated number of evacuated children now in the reception areas, compared with six months ago, was as follows:

	Unaccompanied Children	Children with their Mothers
February 28 ..	490,000	346,000
August 31 ..	450,000	300,000

Distribution of Oranges.—Major LLOYD GEORGE announced on September 11 that a scheme had been prepared for distributing any oranges which might become available. Children under 6 would receive priority. Distribution would be limited to one or more areas in rotation, and for the first seven days after oranges were in the shops they would be available only for the children. Difficulty of distribution would occur if the oranges were sent direct to maternity and child welfare clinics.

Medical Certificates for Miners.—On September 9 Mr. T. MORRIS asked the Secretary for Mines whether his attention had been called to the refusal of medical certificates by some doctors in Wales for miners who had been ill for one day and who needed such certificates

to secure the payment of the 1s. a day attendance bonus. Mr. D. GRENFELL replied that the general question of furnishing medical certificates had been raised by the British Medical Association, and was receiving consideration by the Departments concerned. In view, however, of the decision last week regarding the payment of the bonus, the question of certificates had ceased to be important in this connexion.

Fortification of White Flour.—Major LLOYD GEORGE stated on September 10 that the proposal to add calcium to white flour had not been abandoned. Fortification of white flour with vitamin B₁ had begun in mills supplying South Wales and would be extended to other districts soon.

EPIDEMIOLOGICAL NOTES

Discussion of Tables

Owing to difficulties arising out of war conditions a considerable time-lag has existed between the publication of the weekly summary of infectious diseases and the week for which the returns were recorded. It is now possible to reduce this interval by one week, and accordingly the statements for two weeks are given this week.

The incidence of measles has continued to fall, and the number of notifications for the week ending August 30 was the lowest figure recorded in England and Wales since notification of this disease began nearly two years ago. The notifications of scarlet fever and diphtheria have shown a small increase, and mark the beginning of the seasonal rise of these diseases. At present the rising trend is shown only by the northern counties, the largest increase in both diseases being recorded in Lancashire. In Scotland the increase in diphtheria is fairly general, although two-fifths of the total cases were reported from Glasgow. Whooping-cough has remained almost stationary in England and Wales since the large decrease in the number of cases recorded in the week ending August 2. The present notifications of this disease are a little more than three times those of last year. The increased prevalence reported from Scotland was mainly due to the experience of the towns of Greenock and Glasgow. The number of notifications of cerebrospinal fever has declined, and the figure of 99 for England and Wales was the lowest since the first week of January, 1940.

Dysentery

The number of cases of dysentery has fallen during both of the weeks reviewed. The largest of the local outbreaks during the week ending August 23 were: Essex 28, all in Colchester M.B.; Gloucestershire 26 (Bristol C.B. 25); Northamptonshire 16 (Northampton C.B. 8 and Northampton R.D. 8); Suffolk East 40 (Leiston-cum Sizewell U.D. 34—this district had an outbreak of 37 cases during the week ending August 2). During the week ending August 30 there were 20 cases in Bristol C.B., and this was the only large outbreak in the country. The increase in the notifications for Scotland was due to outbreaks in the counties of Lanark and Renfrew.

Poliomyelitis

The number of cases of poliomyelitis has declined during August. Only two areas had more than one case during the last week of the month—Lincoln (Lindsey): Lincoln C.B. 2; Buckinghamshire: Aylesbury M.B. 2.

Paratyphoid Fever

An outbreak of paratyphoid fever in Bristol C.B., which had its origin in a girl who handled food in a catering factory, resulted in 39 and 83 cases respectively during the weeks reviewed. In the second week the cases from Bristol were almost half of the total reported in the whole country.

Tuberculous Meningitis in South Wales

The recent quarterly report of the Cardiff and County Public Health Laboratory revealed that a large increase in the number of cases of tuberculous meningitis has occurred. The number of cases for the first six months of this year was 29, as compared with 11 and 14 for the whole of 1939 and 1940 respectively.

No. 34

INFECTIOUS DISEASES AND VITAL
STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 23.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	112	10	38	2	8	131	6	30	—	8
Deaths	—	—	—	—	—	—	—	1	—	—
Diphtheria	746	29	202	17	31	829	30	346	28	25
Deaths	22	2	5	1	5	12	1	8	—	1
Dysentery	170	25	41	—	—	40	4	46	2	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute Deaths	2	—	—	—	—	1	—	—	—	—
Enteric fever*	49	1	2	11	5	137	6	18	4	—
Deaths	2	—	—	—	—	1	—	—	—	—
Erysipelas	—	—	41	10	4	20	41	4	3	—
Deaths	—	—	—	—	—	—	1	—	—	—
Infective enteritis or diarrhoea under 2 years Deaths	32	5	7	22	7	33	4	20	9	4
Measles	1,454	62	17	76	6	6,688	47	320	—	1
Deaths	—	—	1	1	—	5	1	3	—	—
Ophthalmia neonatorum Deaths	92	5	19	—	—	96	5	13	—	1
Paratyphoid A and B ..	195	6	9	—	—	—	—	—	—	—
Deaths	1	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† Deaths (from influenza)	372	14	3	—	2	349	21	—	1	4
Deaths	4	10	—	—	3	6	2	—	—	—
Pneumonia, primary ..	—	126	7	—	—	19	96	3	2	—
Deaths	—	—	6	—	—	—	5	—	—	—
Polio-encephalitis, acute Deaths	—	—	—	—	—	9	—	—	—	—
Polio-myelitis, acute ..	24	2	3	4	1	39	—	4	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	—	17	2	1	1	1	13	4	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia ..	118	6	15	—	—	147	11	17	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	1	1	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	811	26	159	23	21	1,257	45	147	42	53
Deaths	—	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough ..	3,144	240	54	38	3	1,056	9	100	—	8
Deaths	19	3	2	2	—	5	1	6	—	—
Deaths (0-1 year) ..	241	21	52	31	23	266	41	56	21	20
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) ..	3,637	462	549	147	126	3,838	612	514	140	111
Annual death rate per 1,000 persons living ..	—	—	12.0	9.8	5	—	—	10.4	9.3	9.7
Live births	5,421	459	871	330	210	5,416	877	819	314	215
Annual rate per 1,000 persons living ..	—	—	17.7	21.9	5	—	—	16.6	21.0	18.8
Stillbirths	198	25	29	—	—	190	20	31	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	32	—	—	—	—	36	—	—

* Includes paratyphoid A and B for Eire and Northern Ireland.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes two cases of pneumonia for Scotland not otherwise notifiable.

§ Owing to evacuation schemes and other movements of population the birth and death rates for Northern Ireland are no longer available.

INFECTIOUS DISEASES AND VITAL
STATISTICS

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Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	99	7	39	2	3	111	7	21	—	2
Deaths	—	—	2	—	—	—	1	4	—	—
Diphtheria	805	27	232	11	30	908	51	325	21	16
Deaths	24	—	5	—	—	20	—	12	—	3
Dysentery	82	11	56	—	—	66	1	49	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute Deaths	3	—	1	—	—	2	—	1	—	—
Enteric fever*	68	8	2	3	10	122	6	15	3	1
Deaths	2	—	1	—	—	1	—	—	—	—
Erysipelas	—	—	54	6	3	18	43	2	2	—
Deaths	—	—	—	—	—	—	1	—	—	—
Infective enteritis or diarrhoea under 2 years Deaths	35	1	15	19	4	27	—	11	12	11
Measles	1,112	37	16	72	3	5,912	68	274	—	52
Deaths	—	—	—	—	—	8	2	1	—	—
Ophthalmia neonatorum Deaths	87	5	16	1	1	85	5	27	—	1
Paratyphoid A and B ..	197	3	17	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† Deaths (from influenza)	363	15	7	—	—	312	19	4	—	6
Deaths	6	8	3	—	1	6	—	—	—	—
Pneumonia, primary ..	—	145	2	—	—	19	118	3	—	—
Deaths	—	—	5	4	—	—	5	—	—	—
Polio-encephalitis, acute Deaths	5	1	—	—	—	4	—	—	—	—
Polio-myelitis, acute ..	23	—	4	4	—	31	—	3	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	1	1	14	5	1	4	4	16	—	2
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia ..	135	7	17	1	3	124	13	13	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	958	32	164	29	30	1,194	37	150	30	34
Deaths	1	—	—	—	—	1	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough ..	3,173	263	78	36	2	970	9	75	—	8
Deaths	11	2	2	2	—	7	—	1	—	—
Deaths (0-1 year) ..	254	21	73	36	21	258	24	52	31	26
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) ..	3,403	392	517	163	110	4,173	652	511	151	116
Annual death rate per 1,000 persons living ..	—	—	11.3	10.8	5	—	—	10.3	10.1	10.2
Live births	4,789	410	782	297	196	5,158	730	822	388	214
Annual rate per 1,000 persons living ..	—	—	15.9	19.7	5	—	—	16.6	25.9	18.7
Stillbirths	190	5	28	—	—	200	24	38	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	35	—	—	—	—	44	—	—

* Includes paratyphoid A and B for Eire and Northern Ireland.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes four cases of pneumonia not otherwise notifiable.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

Recruitment for the Sudan Medical Service, which has been suspended since the outbreak of the war, is to recommence. A notice of a vacancy will be found in our advertisement columns.

The address of the National Radium Commission office is now 6 Westminster Hospital, St. John's Gardens, London, S.W.1. Telephone: Victoria 8161, Extension 72.

The name of Dr. George McCracken, medical practitioner, Manchester, has been brought to notice for brave conduct in civil fence.

A sympathetic obituary notice of Sir D'Arcy Power appears in the *New England Journal of Medicine* of July 3.

A pamphlet entitled "Clothing Coupon Quiz: Answers to Questions on the Rationing of Clothing, Footwear, Cloth, and Knitting Yarn" was issued last week by the Board of Trade and is published by H.M. Stationery Office, price 2d. This provides ready reference to official rulings on the many questions put to retailers and to the Board of Trade since the introduction of the clothes rationing scheme. The coupon requirements for the clothing needs of man, woman, and child are clearly set out in tables. There is also a list of coupon-free articles.

Arrangements are being made in Eire for the manufacture of anaesthetics. For months past hospitals and chemists have found it difficult to secure adequate supplies, especially of ether.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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TELEGRAPHIC ADDRESSES.—EDITOR, *Aitology Westcent*, London; SECRETARY, *Mediscera Westcent*, London.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Treatment of Phosphorus Burns

Major-General T. S. COATES, in reply to the inquiry about treating phosphorus burns (September 6, p. 363), writes: (1) Wash the burn immediately with a solution of sodium carbonate (two tablespoonfuls to a pint of water). This treatment neutralizes any phosphoric acid formed as the result of the combustion of phosphorus, and partially destroys any free phosphorus present. (2) To free the burn from all traces of phosphorus, wash with 1% solution copper sulphate. Copper sulphate combines with free phosphorus, forming copper phosphide, thus preventing further ignition. (3) Remove the resulting dark-coloured deposit with forceps, and thoroughly wash with water containing a little antiseptic. For extensive burns requiring hospital treatment, ultra-violet radiation is recommended and dressings of picric acid, etc., as for ordinary burns. Phosphorus burns suppurate much more than ordinary burns, and the healing period is usually three to four weeks.

Timepiece for Blind Person

Miss CATHERINE E. WILLIAMSON writes: In answer to "Inquirer" (August 16, p. 254), if he would get into touch with the National Institute for the Blind in London he would receive full particulars as to the watches which were supplied in the last war for members of His Majesty's Forces in connexion with St. Dunstan's Hostel for the Blind in Regent's Park. These watches were inexpensive, rather large in size; the face was covered, and upon pressing a spring above the winder the face opened and disclosed the time, marked

by raised dots on the dial. I worked for three years at St. Dunstan's, and observed that these watches could be used by all types of cases, even those who were extremely badly injured and unable to lead a normal life. They were also used effectively by those who were slow of thought and perhaps not so well educated as others.

LETTERS, NOTES, ETC.

Abortus Fever and Sulphapyridine

Dr. J. WHITTINGDALE (Sherborne) writes: Since my note on the response of *Br. abortus* infection to sulphapyridine (August 9, p. 210) has provoked comment, may I be permitted to reply. The patient has remained well, and one may suppose that the dose of sulphapyridine effected a *sterilisatio magna* in this instance. Sir Weldon Dalrymple-Champneys, whose interest in this disease is well known, has been kind enough to inform me that of the reported cases that have been treated with the drug about 50% have apparently been cured. In this "vale of small dairies" cases of human infection with *Br. abortus* are not infrequent; it is therefore encouraging to be able to hope for a proportion of cures by means of a new drug, in place of the former regime of bed, with occasional doses of boiled milk intramuscularly.

Red Cross Work in Abyssinia

Red Cross work in Abyssinia is being carried out by a unit consisting of a medical officer, two surgeons, four Red Cross and St. John nurses, from England, and native dressers. Dr. A. J. Last, the medical officer to the unit, wrote on June 27 to the Deputy Commissioner of the British Red Cross Society, Khartoum: "The larger towns . . . are staffed by military doctors and the original Italian doctors. The latter cannot be sent to outlying districts, but must be kept in the larger towns on account of their personal safety. Tigre, on the other hand, had one Italian doctor only—in Adowa—and he was frightened and wanted to leave. . . . Dr. Gurney and I came to Adowa on June 13. We have taken over from the Italian doctor a former military hospital of some 200 or more beds. It is poorly equipped and staffed with incompetent native dressers. We have already begun to reorganize the place. In addition we see nearly 100 out-patients a day in the civil dispensary."

"Relaxation"

Dr. W. NUNAN (London, W.1) writes: Not being an Olympian, either as a permanent resident or in the guise of a tourist or passing explorer, but as a humble student of the literature and practice of what should be, and will be, an integral component part of the medical curriculum, may I draw attention to the airiness of the use, abuse, and ill use of the word "relaxation" in the literature of psychotherapy. A few recent examples of the nonchalant dismissal of the question of relaxation must suffice for my present purpose. In the communication of Majors F. L. McLaughlin and W. M. Millar (August 2, p. 158), which has given rise to this discussion, the authors wrote somewhat as follows: "Having placed the patient in a state of relaxation, etc." In a recently published book on the war neuroses one of the distinguished contributors to the symposium writes: "I get the patient to relax" (*sic*). Such quotations could be multiplied indefinitely, but the point is raised. One hears daily of such phrases, used by medical men to patients, as "You must try to relax," "You must relax," "Relax all your muscles," and so on. Patients say, "I cannot make myself relax," "I try to relax." The outstanding state of such patients is one of anxiety, and the anxious patient is tense. He tries to relax. He fails, because he becomes even more tense—trying and relaxing being "opposite numbers." A very contradiction in terms. His doctor, however, has insisted that the patient must relax—and the law of reversed effort at once applies. *Quis custodiet ipsos custodes?* The anxious one, indeed, does not relax even when he sleeps, and so is "more tired in the morning than when he went to bed." Naturally, because he has worked a "double shift." Perhaps these few incoherent remarks, touching lightly on the outside edge of a large, complicated, neglected subject, put up as a target, *ballon d'essai*, or what not, may draw some (informative) fire. What is relaxation? How is it obtained? Has one not seen exhausted soldiers—landed from Dunkirk and all that—lying on railway sidings, platforms, trucks, lorries, in waiting rooms, anywhere, everywhere—asleep and tense? The cat on the hearthrug, the tired dog, can relax. *Homo sapiens* cannot relax automatically. He must, alas! be taught.

Corrigendum

In his letter on the treatment of impetigo contagiosa (September 6, p. 356) Dr. F. R. Craddock is made to say that he uses a 20% solution of gentian violet. This should have read 2%. Dr. Craddock states that he has never attempted to use gentian violet in a solution stronger than 5%.

REHABILITATION OF INJURED AIR CREWS

BY

Flight Lieutenant R. N. HOULDING, M.B., B.S., F.R.C.S.Ed.

Medical Officer in Charge of Rehabilitation of Orthopaedic Casualties at an R.A.F. Hospital

Flying accidents are associated with peculiar injuries, many of which are rarely encountered in civilian practice. When the flight of a machine is suddenly arrested by impact with the ground it is only to be expected that those portions of the body which are in contact with or are attached to the machine will be subjected to the greatest stresses. The incidence of injuries of the feet and legs is high because they are less well protected against missiles than the rest of the body, and the small bones of the feet are liable to be fractured by impact against the rudder-bar. In the days when machines were not fitted with safety harness the skull was often smashed against the instrument panel. The safety harness has saved many lives, but is associated with another injury—compression fracture of the spine due to hyperflexion at the level of the retaining straps. Gunshot wounds produce a number of interesting peripheral nerve lesions. Petrol has caused many cases of severe burning of the face, hands, and legs, for some of which tannic acid treatment has proved quite unsuitable. Internal derangement of the knee-joint is a frequent cause of disability, due to lesions of the menisci and of the lateral and cruciate ligaments. The treatment of these casualties aims at the restoration of complete or maximal function, and the criterion of treatment is the category of the patient when he returns to his unit. He may be fit for full operational or restricted flying duties or fit only for ground duty. Every effort is made to make him fit enough to take to the air again, and many patients who might be discharged to ground duty are kept in hospital until maximal function has been regained.

If function is to be restored in the shortest possible time muscular wasting and joint stiffness must be prevented. Union of a fracture in perfect alignment means little to a patient until he has regained the synergic activity of his muscles, and recovery from paresis of a muscle group is of little avail if the joint which it activates has become stiffened. Muscles cannot be synthesized, and their power and tone can only be regained by voluntary contraction and relaxation. Progressive remedial exercises form a basis for treatment, but the willingness of the patient to contract and relax the affected muscles at all hours of the day, wherever he may be, is the real key to success.

The value of organized rehabilitation of orthopaedic casualties has already been established by such pioneers as Mr. H. E. Griffiths at Greenwich, Dr. H. E. Moore at Crewe, and Mr. E. A. Nicoll at Mansfield. Mr. R. Watson Jones has stressed many times the importance of rehabilitation, and his endeavours have not been without result in the Royal Air Force.

General Organization

Having received the necessary surgical treatment in an orthopaedic hospital, casualties are transferred to one of

several rehabilitation centres as soon as they have recovered sufficiently to become ambulant. The rehabilitation department attached to this hospital is contained entirely within a very large gymnasium, so that, having entered, patients have no occasion to leave until the end of the morning. The keynote of treatment is activity, in the form of progressive remedial exercises and games. The onus of recovering the function of an injured part is thrown on to the patient. The nature of his lesion is explained to him simply, and he is told what to do in order to overcome it. Passive treatment in the form of massage and electricity is avoided unless definitely indicated. By recording daily the range of movement of a stiffened joint with an angle

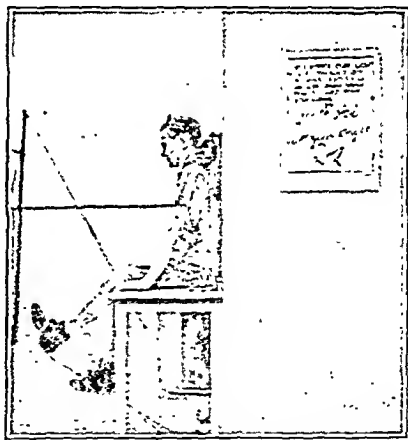


FIG. 1.—Suggestion and Co-operation! (The notice on the wall reads: "We cannot cure your weak muscles and stiffened joints, but we can show you how to cure them yourselves—and it is up to you to pull your weight.")

measurer, or the strength of a wasted muscle group against the resistance of weights running over pulleys, the patient becomes interested in overcoming his disability and enthusiastic over his progress (Fig. 1). Having gained his co-operation, it remains only to supervise his progress and to ensure that his activities are graduated. The progress made by every patient is recorded weekly in a folder, which has followed him from the R.A.F. hospital in which he received his initial treatment and which contains prints of the pertinent radiographs. This folder is subsequently returned to the surgeon who performed the initial operation.

The rehabilitation department is in the charge of a medical officer, who is assisted by a physical training officer, a sergeant, and three masseuses. The department is run in close collaboration with the sports officer, who organizes all kinds of games of a competitive nature for those in

walking plasters as well as for those who are nearly fit. The gymnasium contains a small but adequate four-cubiced physiotherapy department, the medical officer's office, a milk-bar at which the patients obtain some compensation for their expenditure of energy, and cloak-rooms. The floor space, approximately ten square feet per patient, is divided into four parts: the two largest areas are used for the general remedial classes and for special remedial exercises, the third area is used for skittles and other games, and the fourth is opposite the milk-bar and contains chairs and tables at which the patients may rest.

Every orthopaedic patient performs at least two sessions of special remedial exercises, mostly of a non-weight-bearing character, under individual supervision by a masseuse. When muscular tone is regained he joins the "nearly fit" class, in which he performs general remedial exercises of a muscle-developing nature and swimming, in addition to his special exercises, which he is encouraged to perform at every opportune moment throughout the day. Finally he graduates to the "fit" class and participates in all organized activities. The general remedial classes are run concurrently and last for three-quarters of an hour. They are followed by a ten-minutes rest interval and then by competitive games such as skittles and volley-ball; both classes then adjourn to the swimming-bath.

During the afternoon golf, tennis, swimming, and volley-ball tournaments are arranged by the sports officer, who is advised as to what each patient should and should not do. It is not always appreciated that dancing has considerable remedial value.

Occupational therapy is not employed to any great extent, since it is considered that more improvement is made in the early stages of treatment by encouraging the patient to concentrate on overcoming his disability by working away at it all day long. In the later stages the patient's attention is diverted from his injured part by participation in competitive games. Patients do not undergo vocational training whilst at this hospital.

The Need for Individual Supervision

In the words of Dr. Moore: "A certain percentage of injured persons will work out their own salvation after receiving the necessary surgical treatment, with little or no help and without any special prolongation of incapacity. However, there will always be quite a fair percentage who will require something more if they are not to drift and greatly prolong their disabilities. This is due to many causes, of which the chief are failure to get over their earlier difficulties, all kinds of retarding psychological factors, apathy, a desire to escape return to their former duties, and so on. Consequently individual supervision of their progress is an essential part of their treatment."

A patient who is left to his own devices after receiving surgical treatment will quite naturally be fearful of exerting too much activity rather than too little. It is therefore most important that he should realize that the function of a plaster cast is not to prevent him from using an injured part but to enable him to use it to the greatest extent that is compatible with immobilization of the fracture. If the plaster is properly applied and remains intact it will immobilize the fracture whatever the patient may do. Supervision is necessary to ensure that the plaster does remain intact and comfortable and that the patient does make frequent use of every joint which is not necessarily immobilized.

Manipulation and arthrotomy are followed by effusion into the joint and surrounding tissues, and if the effusion is allowed to persist adhesions and wasting will develop rapidly. By means of teaching the patient to contract the

muscles which activate the affected joint before the operation, and by ensuring that he contracts them at frequent and regular intervals after the operation, the duration of incapacity is considerably shortened. Wasting and loss of tone of the quadriceps femoris muscle is of common occurrence and is apt to be associated with pain and effusion in the knee-joint if the patient performs too violent weight-bearing activity. This is because the lateral ligaments of the knee-joint were never intended to withstand strains in a mechanical sense but to evoke increased tone in the quadriceps muscle whenever they are subjected to tension. Should the quadriceps, "the guardian of the knee-joint," be weakened, the lateral ligaments may easily be stretched and cause effusion and pain, which is liable to keep the patient awake at night and is to be distinguished from stiffness on awakening, which wears off with exercise. Without supervision a patient with wasted thigh muscles may either be fearful of exerting sufficient activity to regain the strength and tone of the quadriceps or may exert too much weight-bearing activity, so that in either event the vicious circle of wasting and effusion will become chronic and incapacity is unnecessarily protracted. With supervision excessive muscular wasting is avoided and, by restricting activity to non-weight-bearing exercises until muscular tone is regained, the period of incapacity is minimal.

It is most important to treat the patient as well as his lesion and to ferret out any "fears" which he may hide in the back of his mind. A careless statement such as "he will never fly again," if overheard by the patient, may greatly retard his progress by destroying his will to recover. Daily observation of progress engenders optimism, and the progress made by others, in addition to suggestion by posters and by the staff, ensures co-operation from the patients. Compulsion is seldom necessary, and is avoided to the greatest possible extent because it tends to evoke an attitude of obstinate resistance. Before discharging a patient to flying duties it is important to ensure that he has regained confidence in his ability to perform all normal activities. A patient who has regained full movement and muscular tone after excision of the patella may yet be fearful of running. Encouragement and participation in competitive games will overcome this natural phobia.

Physiotherapy

Physiotherapy is of great value for selected cases. It is a form of passive treatment and as such is given sparingly, because some patients are only too happy to lie at their ease on a couch and receive treatment which, for remedial purposes, is a poor substitute for their own activities. Warmth facilitates the movement of any joint by inducing hyperaemia and relaxation, and the only problem is how to direct the heat where it will do most good. A hot bath, a radiant-heat cradle, and a diathermy set each have their particular uses, but in the rehabilitation department only radiant heat is used to loosen up stiffened joints before starting remedial exercises. Faradism is used only to assist a patient to acquire the knack of contracting muscles that are very much wasted, and once he has learnt to do this the faradism is discontinued, because it is considered better to avoid passive treatment and to encourage the patients to regain muscular strength and tone by their own exertions. Galvanism serves to reassure a patient with a peripheral nerve lesion that the parietic muscles will still contract, and is also of some value for the dispersal of static congestion. An experienced masseur is able to loosen muscular adhesions by deep massage, but this treatment is seldom necessary if the patient has contracted his muscles at regular and frequent intervals throughout any period of necessary immobilization.

Patients perform their remedial exercises under the supervision of a masseuse, and this arrangement is found to be more satisfactory than to use a specially trained physical training instructor for exercises and restrict the masseuses to physiotherapy, because otherwise certain patients will tend to evade the physical training instructor for more pleasurable treatment at the hands of the masseuse. It is probable that masseurs are more suitable for the treatment of non-commissioned ranks, but I believe that masseuses are better able to obtain the co-operation of young officers.

Fractures

For the purpose of rehabilitation, patients with fractures fall into two groups—those who are uniting and require immobilization, and those who have united and require remedial treatment to restore the strength and tone of their muscles and the movements of their joints. Obviously effective treatment of the first group will minimize the treatment required by the second group and will curtail the period of incapacity.

There is no really practical method of hastening the union of a fracture, and a month or a year may pass before union is sound, but this period can be minimized by completely immobilizing the fragments and stimulating their blood supply by muscular contraction. Incomplete immobilization must retard union by shearing across the developing callus which bridges the gap between the fragments. Repeated shearing of the callus will lead eventually to sclerosis of the bone ends, which is the cause of established non-union, and the pseudarthroses which reside on the shelves of our pathological museums.

To immobilize a fracture of the shaft of a long bone it is necessary to fix the joints at each end of the bone in a degree of flexion sufficient to prevent rotation occurring between the fragments. Complete immobilization of a fracture can only be ensured by internal fixation with a bone graft or a plate, and it is probable that a plaster cast alone seldom effects complete immobilization because of the interposition of soft tissues between the plaster and the bone. Union of a fractured tibial shaft may be slightly delayed when treated in an above-knee walking plaster; nevertheless if the patient walks properly, rocking from the

by muscles: the bones form only a frame, and our object is to restore function.

To adapt a leg plaster for walking purposes our practice is to use a wooden heel, which is laced on to the plaster by means of a canvas "spat," and a toe-cap (Fig. 2). The heel is hollowed out on its upper surface, to which is glued a layer of half-inch sorbo rubber. The heel and toe-cap are standardized so that they may be used on almost any plaster. They enable a patient in a below-knee plaster to walk so naturally that a casual observer would not notice



FIG. 3.—Activity!

anything wrong with him; and if the heel of an above-knee plaster is raised with a three-quarter-inch plaster slab before applying the walking-heel, and the heel of the shoe on the sound leg is raised with a three-quarter-inch wooden block, the patient is able to walk without sticks or crutches with an almost natural gait (Fig. 3). Unlike the walking-iron, the wooden heel affords sufficient stability for the patient to be able to balance on his injured limb. This stability gives him confidence and encourages him to rock forwards on to the toes instead of pivoting his foot outwards on the stud of the iron as he steps forwards. Attention to the detailed construction of a walking plaster is well repaid, because if a patient actively contracts the flexor muscles of his toes while walking and is able to walk without limping muscular wasting and stiffness are minimal when the plaster is discarded and function is rapidly regained. Several weeks of incapacitation of a patient who is being treated in an above-knee walking plaster may be prevented by mobilizing the knee-joint two weeks before discarding the plaster. This is not done by replacing the above-knee by a below-knee plaster, but by reinforcing the anterior part and cutting away the posterior part of the above-knee portion of the plaster so that the patient is able to sit and swing his leg, thereby regaining flexion movement. For walking, the plaster is bound to the thigh with a crêpe bandage. So long as the knee-joint is splinted in the flexed position no rotation can occur at the fracture. After discarding the plaster full movement of the knee-joint is regained by non-weight-bearing exercises, flexion and extension, rowing and bicycling, until the strength and tone of the quadriceps muscle are regained. Full movement of the tarsal joints and ankle-joints is usually regained within a week as the result of walking and remedial exercises, and the patient is not discharged until his calf muscles are

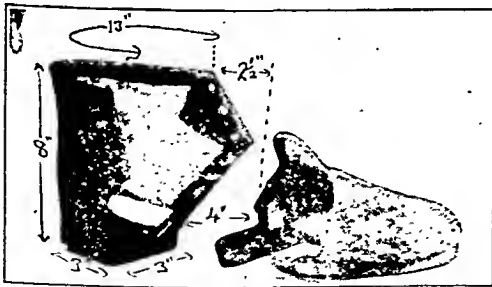


FIG. 2.—Walking-heel and toe-cap used to adapt a leg plaster for walking purposes. This heel affords sufficient stability for the patient to be able to balance on his injured limb, and encourages heel-toe movement.

heel on to the forefoot and pushing off with his toes, there will be a minimal amount of muscular wasting and stiffness when the plaster is discarded. This is because venous drainage from the dependent limb is maintained by intermittent muscular contraction, and static congestion, which causes partial anoxaemia, rapid muscular wasting, and adhesion formation, is prevented. In the treatment of any fracture just as much attention should be paid to the soft tissues as to the fracture. For movement is effected

powerful enough for him to be able to raise himself on to his forefoot without assistance.

After discharging a walking plaster the extremity of the limb will become swollen during the daytime unless the soft tissues are supported by an elastic or some other kind of bandage, and this tendency to swell will persist until sufficient tone is regained in the calf muscles to maintain the venous circulation of the limb. This is explained to the patients, and they are instructed to avoid standing and always to elevate the limb when sitting so that it drains by the action of gravity. Congestion is the prelude to adhesion formation, and while it persists, muscular tone will not be regained. This is but one reason why it is important to maintain the tone of the calf muscles throughout any period of necessary immobilization.

Compression fracture of one or more vertebral bodies, as the result of hyperflexion of the spine, is a common injury among air crews who have crashed. Many of these cases are unassociated with injury to the spinal cord, and the patient is able to walk away from the site of the crash, although he complains of a constant aching pain in his back. Cases that require transportation should be rolled on to a stretcher and carried flat, because hyperextension of an injured cervical spine may cause dislocation, and hyperflexion of the lumbar spine may increase the compression. Compression fractures can usually be decompressed by the pull of the anterior longitudinal ligament which occurs with hyperextension of the spine by the two-table technique. Comminuted fractures can usually be realigned very satisfactorily by this method, but they unite slowly and extension should be maintained for at least five months in a Watson-Jones plaster jacket. Neurological examination often reveals symptoms referable to root compression in cases of compression fracture of the spine. These symptoms are relieved by extension of the spine but will recur if immobilization is discontinued too early. Premature mobilization of a fractured vertebral body may be followed by progressive wedging and absorption of bone. No harm is done by unnecessary immobilization of the spine provided that the tone of the musculature is maintained, but premature mobilization may produce chronic symptoms.

Activity is an essential part of the treatment of these patients throughout the period of immobilization. Extension exercises are performed daily and a progress chart is kept of the weight which each patient is able to raise over a pulley by extending his spine. If the fracture is firmly consolidated and the power and tone of the back muscles are maintained, these patients are able to return to flying two weeks after discharging their spinal jackets.

Manipulation

Manipulation is of value for increasing the range of a stiff joint that has become stationary and for relieving the symptoms in a joint that gives rise to pain at one extreme of its range of movement.

Manipulation of a stiff joint is indicated only when the surgeon is satisfied that as the result of his own unaided activities the patient is unable to gain any increase in the range of movement of the joint and that the joint has not been subjected to any form of passive stretching. The manipulation should be performed under full surgical anaesthesia, so that the muscles are completely relaxed and the surgeon is able to feel the resistance which he has to overcome. The operation should not be performed until the adhesions have become crisp and avascular so that they snap easily and are followed by a minimal amount of reaction, and manipulation should therefore not be repeated at intervals of less than two months. No matter how great the discomfort the patient should begin active

unaided movements of the joint as soon as he has recovered sufficiently from the anaesthetic, and should repeat these movements at hourly intervals. He should retain 75% of the increase gained under anaesthesia and recover the remainder subsequently.

Flexion of the knee-joint may be limited by adhesions between the patella and the femur, in which case manipulation of the joint will very probably fracture the patella; the latter should be mobilized before manipulation is attempted. Before manipulation a stiff joint should be radiographed to exclude bony block. Every effort is made to obtain at least 90 degrees of flexion of the knee-joint, and radio-ulnar movement is absolutely essential for the management of an aircraft.

Manipulation of a joint in order to relieve pain at one extreme of its range of movement should not be attempted unless the manipulator has an intimate knowledge of the normal movements, both voluntary and involuntary, of the affected and neighbouring joints. Adhesions resulting from prolonged stasis are usually broken down by the patient's own activities, but occasionally pain may persist which can be localized to one joint and one particular movement. Focal infection, if present, should be eradicated before manipulation is attempted.

Derangement of Joints

The stability of any joint is dependent upon two factors—the shape of the articular surfaces and the strength and tone of the muscles which activate the joint. Dislocation of the shoulder-joint is a not uncommon injury among air crews. This joint depends almost entirely for its stability upon the strength and tone of the muscles which surround it, and unless the tone of these muscles is fully restored dislocation is liable to recur. A surprisingly large proportion of these injuries are associated with nerve lesions, due presumably to the violence of the dislocating force. The knee-joint is sometimes dislocated. One patient who ruptured the internal lateral ligament and both cruciate ligaments regained 100 degrees of flexion movement and the joint was completely stable unless he was caught off his guard, so that he was able to run and to play games, and this was because he regained excellent tone and great power of the quadriceps femoris muscle. Rupture of the external lateral ligament is sometimes associated with injury to the common peroneal nerve.

Decrease in the range of movement of a joint by shortening of muscles or their tendons may arise from prolonged



FIG. 4.—Extension splint to overcome contracture of flexor tendons.

splinting. This may result in flexion of the fingers when the wrist-joint is extended. The wrist must be stabilized by a plaster splint, and the fingers can then be slowly extended by the pull of elastic which is stretched between a wire frame and stalls worn on the fingers (Fig. 4). The

patient is encouraged to flex the fingers at frequent intervals against the pull of the elastic, and as he relaxes the flexor tendons are stretched.

The After-treatment of Burnt Hands

The rehabilitation of patients with burnt hands requires much patience and perseverance. Provided that the tendons and joints of the fingers have not been destroyed, the degree of recovery that is possible may exceed all expectation. The first thing is to assure the patient of this, and the second is to see that he works away at his stiff joints all day long. Whatever the initial treatment has been after burning, the skin is usually very thin and tender and sweats profusely. The stiffness is due to general adhesion formation around the tendons and joints of the fingers, and is caused by the initial reactionary oedema. The fingers are usually straight as the result of splinting. Movement is regained by immersing the hand in olive oil or in paste made with fuller's earth, which is heated to a temperature of 110° F. for two sessions of fifteen minutes daily. The patient is encouraged to squeeze a piece of rubber sponge or a ball while his hand is being heated. For the rest of the day he wears a detachable splint which dorsiflexes his wrist, and a glove to the finger-tips of which are attached lengths of elastic that are tied around a hook in the splint (Fig. 5). The constant pull of the elastic tends

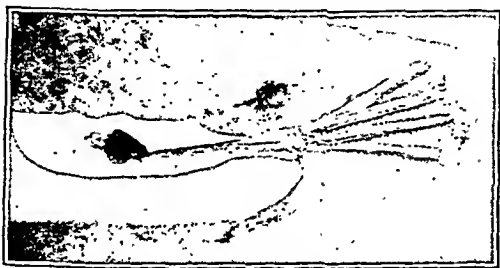


FIG. 5.—Flexion splint to overcome stiffness after burning.

to flex the fingers, and the patient is encouraged at all times to oppose this by extending them. Treatment may take many weeks, but to regain the use of a hand justifies any amount of trouble.

Summary and Conclusions

In this paper the principles underlying the rehabilitation of injured air crews are described. Orthopaedic casualties are transferred to a rehabilitation centre after having received necessary surgical treatment in an orthopaedic hospital. Some of these would probably work out their own salvation without further supervision, but others would certainly prolong their incapacity unnecessarily. These casualties are therefore kept under almost constant supervision in order to restore maximal function and make as many as possible fit for further flying duties, and also to curtail incapacity.

Each patient is studied individually, for with his co-operation graduated remedial activity will restore function more rapidly than any form of passive treatment. Muscular wasting and stiffness, associated with immobilization, are prevented to a great extent by active contraction. A fracture is no reason for neglect of the soft tissues.

The criteria by which successful rehabilitation is judged are: first, the category of the patient on returning to duty; and, secondly, the time that he takes to regain function. Figures are as yet inconclusive, but 16% more patients were discharged to flying duties during the first six months that this department was working than during the six months before it opened.

TREATMENT OF HAEMORRHAGIC DISEASE OF THE NEWBORN*

BY

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The recognition of extreme prothrombin deficiency as by far the most frequent cause of spontaneous haemorrhage in the newborn and the discovery that vitamin K is essential for the maintenance of the normal plasma prothrombin level have raised to the status of a specific deficiency disease what had perforce been accepted as a misadventure which "occurs without apparent reason" (Tallerman, 1937). Previously the only positive findings had been the report of Whipple (1913) that he had seen no prothrombin in a specimen of blood obtained after death from a fatal case of neonatal haemorrhage, and the observation that the clotting time tended to be prolonged for the first five days of life, returning to normal about the tenth day (Rodda, 1920). The treatment of haemorrhagic disease was correspondingly vague, the earlier clinicians advising local application of styptics, and, in the case of bleeding from the cord, even encircling the umbilicus with a deep suture. Injections of gelatin solution and of whole blood intramuscularly were introduced about the same time. This latter measure, despite the early recognition that spontaneous recovery from the haemorrhagic state occurred often enough to make its therapeutic value doubtful (Schloss and Commiskey, 1911, 1912), is still widely used as a routine treatment.

In the severer cases there has been general agreement that blood transfusion is a more efficacious procedure. The introduction of vitamin K, and more especially of vitamin K analogues, into clinical practice, and the demonstration of the rapid elevation of the prothrombin index which follows the administration of these substances to the newborn (Macpherson *et al.*, 1940), suggested another and apparently specific line of treatment for haemorrhagic disease, the successful use of which has already been reported in Europe and America (Nygaard, 1939; Waddell and Guerry, 1939; and others).

Since profound hypoprothrombinaemia is now recognized as the characteristic abnormality of the blood in haemorrhagic disease of the newborn, it follows that the efficacy of any method of treatment can be measured by its capacity (1) to raise the prothrombin content of the plasma so rapidly that the haemorrhage stops in a short time; and (2) to maintain the prothrombin at so nearly a normal level that the haemorrhagic tendency does not recur.

This communication reports an attempt to evaluate by these standards the merits of intramuscular injection of whole blood, blood transfusion, and injection of vitamin K analogues as treatment for haemorrhagic disease of the newborn.

Method Used

All prothrombin estimations have been made upon capillary blood by a modification of the method evolved in this hospital (Innes and Davidson, 1941) and found to give results closely comparable to those obtained by methods requiring the use of venous blood (Quick *et al.*, 1935; Ziffren *et al.*, 1939). The test has been performed as originally described except that (1) the oxalated blood has always been diluted with four times its own volume of saline; (2) the solutions have been kept at a constant temperature; (3) the lecithin-venom solution described by Hobson and Wits (1940) has been preferred, as it was

* Part of the expenses of this investigation has been defrayed by a grant from the Earl of Moray Endowment.

found to give a more definite end-point for the lower values of prothrombin. All results have been expressed as the "prothrombin index" (Illingworth, 1939) and charted as percentages of normal.

The Investigation

Ten cases of true haemorrhagic disease of the newborn have been treated by injection of whole blood into the buttock, by blood transfusion, or by injection of vitamin K analogues. The results of each line of treatment are reported in the first three sections below. Two cases of icterus gravis (erythroblastosis foetalis) also developed spontaneous and persistent haemorrhages, the treatment of which is briefly recorded in the fourth section.

1. INTRAMUSCULAR INJECTION OF WHOLE BLOOD

Intramuscular injection of whole blood has been employed in three cases. The effect upon the prothrombin index and upon the haemorrhagic manifestations is shown in Figs. 1, 2, and 3.

Case 6531.—Primipara. Normal labour (duration 21 hours); spontaneous delivery. Birth weight, 6½ lb. Birth condition satisfactory. Haematemesis (red and altered blood) at 32 hours of age. 10 c.cm. whole blood into buttock. Clinical condition did not improve. Haematemesis continued till further treatment with vitamin K analogue was given twenty-five hours later.

Case 6780.—9 para. Prolonged inert labour (duration 60 hours). Spontaneous delivery. Birth weight, 5½ lb. Put to breast. Haematemesis at 24 hours of age, followed by melaena. 17 c.cm. whole blood into buttock at 32 hours. Bleeding continued with increasing pallor, so that transfusion was required at 38 hours.

Case 7252.—Primipara. Occipito-posterior position requiring manual rotation and later forceps, both under anaesthesia. 76½ hours' labour. Birth weight, 8½ lb. Glucose-saline followed by one feed of breast milk and water 1 oz. Haematemesis first occurred at 32 hours of age. Gastric lavage 10 hours later gave return of frank blood. 10 c.cm. whole citrated blood into buttock at 49 hours, 17 c.cm. at 52 hours, and 9 c.cm. at 55 hours. Four hours later haematemesis recurred, the clotting time was found

to have risen to 12 minutes, and the prothrombin index had fallen to a level lower than it had been before treatment. Bleeding had persisted from heel-stab throughout this time, but stopped two hours after the injection of vitamin K analogue intramuscularly (see below).

The elevation in the prothrombin index obtained by the intramuscular injection of whole blood has proved to be so slight and so transient that only in Case 6531 did it even temporarily affect the course of the haemorrhagic disease. Moreover, in Case 7252, in which repeated injections

were given, the temperature was raised to 101° F. or over during the ensuing thirty-six hours and both buttocks were tense and painful. The risk of this procedure in less favourable surroundings is obvious.

2. BLOOD TRANSFUSION

Two cases have been treated by whole fresh blood transfusion (Figs. 2 and 4).

Case 6780 (continued).—So much blood had been lost from the alimentary canal that haemoglobin was 40% at 38 hours. 90 c.cm. of whole blood transfused into superior sagittal sinus. Approximately an hour later haemoglobin was 55% and prothrombin index 66, and all superficial bleeding had stopped. The last vomit of altered blood appeared 90 minutes later, and melaena lasted till approximately 56 hours. Cyanosis and restlessness were pronounced after the transfusion, the latter being controlled only by repeated doses of chloral.

Case 6947.—Primipara. Assisted breech delivery after 36 hours' labour. Melaena appeared and oozing from abrasion on scrotum began at about 90 hours of age. Transfusion of 50 c.cm.

whole blood into superior sagittal sinus at 96 hours. Bleeding stopped at end of transfusion, but recurred 5 hours later and persisted (soaking the dressings applied) for 12 hours till further treatment was given (see below).

Both cases were characterized by a rapid improvement in the prothrombin index and by the early cessation of bleeding. In both, however, subsequent readings showed an almost equally rapid fall in the prothrombin index. This fall was arrested in Case 6780, a level (about 50%)

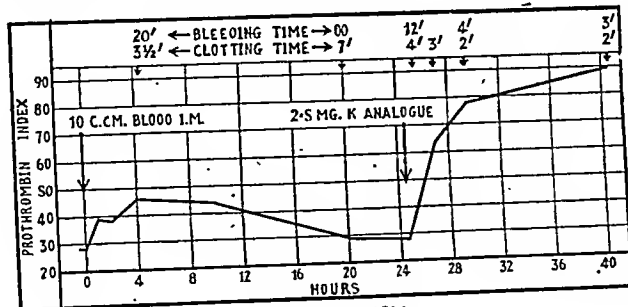


FIG. 1.—Case 6531.

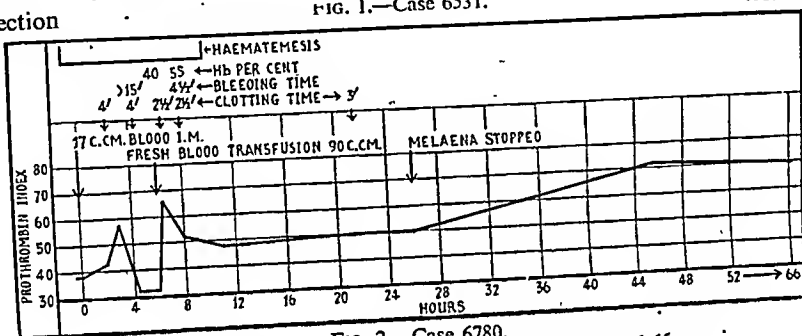


FIG. 2.—Case 6780.
Correction: 55 haemoglobin should be over 2½' and 66.

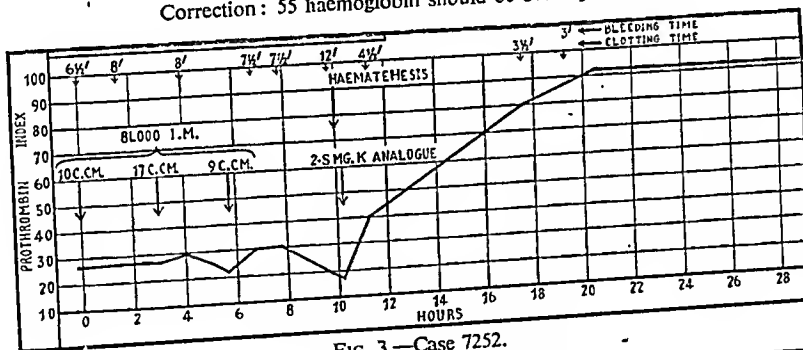


FIG. 3.—Case 7252.

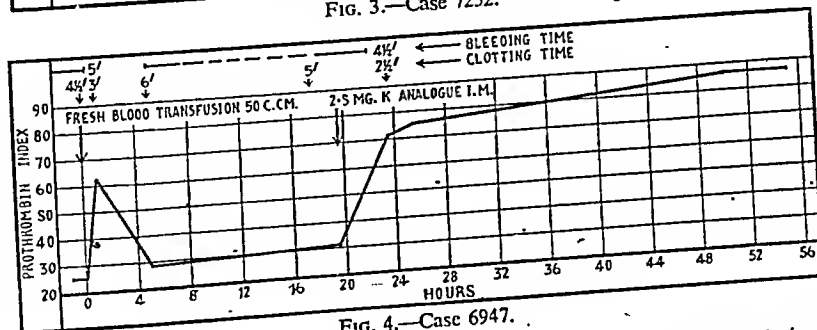


FIG. 4.—Case 6947.

above the bleeding threshold persisting for about twenty hours before further, apparently spontaneous, elevation occurred. To this case a very large transfusion (approximately one-third of its own blood volume) had been given. In Case 6947, in which the estimated blood volume was about five times greater than the volume of blood transfused, the prothrombin index fell almost to its original level and bleeding recurred five hours after the transfusion had been given.

3. INJECTION OF VITAMIN K ANALOGUES

Vitamin K analogues have been given by injection to six cases (Figs. 1, 3, 4, and 5). Fig. 5 shows the effect obtained clinically and upon the prothrombin index by intramuscular injection of 2.5 mg. of 2-methyl-1:4-naphthoquinone in oil (B), and by intramuscular injection of 5 mg. (A) and the intravenous injection of 2.5 mg. of water-soluble 2-methyl-1:4-naphthohydroquinone disuccinate (C). In each instance bleeding was controlled within about two hours. The prothrombin index curves show a rapid and remarkably parallel rise to a high level, which was subsequently maintained throughout the whole of the neonatal period. So far as can be judged, intravenous injection does not produce better results than deep intramuscular. It is important to give the oily solution deeply, as too superficial an injection will promote irritative local lesions.

Case 5754.—Primipara. Easy 10-hour labour with spontaneous delivery of 4½-lb. child following medical induction for pre-eclamptic toxæmia. Clinical jaundice with pale faeces appeared on fourth day and steadily deepened. Bleeding from heel-stab persisted from 156 to 165½ hours. 5 mg. 2-methyl-1:4-naphthohydroquinone disuccinate given by intramuscular injection at 163

hours. Clotting activity remained at normal despite the following findings: Faecal fats—total, 33.7%; split, 29.7% of total. Icteric index, 333. Laevulose tolerance test: 30 min., 6 mg. per 100 c.cm.; 60 min., 6 mg.; and 120 min., 7 mg. Died at 264 hours, apparently from hepatic dysfunction.

Case 5551.—Classical Caesarean section of election for hypertension. Birth weight, 9½ lb. Birth condition satisfactory. Persistent ooze from heel-stab began at 29 hours. Intramuscular injection of 2.5 mg. 2-methyl-1:4-naphthoquinone at 31 hours led to cessation of bleeding two hours later.

Case 6765.—6-para. Normal labour (duration 11 hours). Spontaneous delivery. Birth weight, 5½ lb. Copious melaena first noticed at 54 hours of age. Intravenous injection 2-methyl-1:4-naphthohydroquinone disuccinate at 71 hours. No further fresh bleeding. Melaena persisted for further 20 hours, suggesting a bleeding-point high in the intestinal tract.

In three cases (Figs. 1, 3, and 4) vitamin K analogues were given after haemotherapy had failed to control haemorrhage or to raise and maintain the prothrombin

index. In each instance an immediate and lasting response was obtained both clinically and in the level of the prothrombin index—an effect too rapid to be influenced by any concomitant tendency to spontaneous recovery, and in

Table showing Prothrombin Index

Case No.	Before Vitamin K	After Vitamin K	
		Less than 12 hours	Less than 24 hours
6295	35	70	78
6633	24	—	85
6912	33	—	65

marked contrast to the results of the other methods tried. In three other cases which have been treated by injection of 2.5 mg. of 2-methyl-1:4-naphthoquinone the prothrombin index estimations have been made less frequently than in the cases already recorded. In each instance, however, frank bleeding stopped in a short time and the prothrombin index rose to and remained at normal or nearly normal levels (see Table).

4. ICTERUS GRAVIS

Two cases of icterus gravis showed spontaneous haemorrhages which were treated successfully by the intramuscular injection of 2.5 mg. of 2-methyl-1:4-naphthoquinone in oil. The prothrombin index and certain other details of Case 7152 are charted in Fig. 6.* From the therapeutic point of view the interesting feature is the rapid and sustained effect given by vitamin K analogue even when a laevulose-tolerance test indicated a considerable depression of liver function.

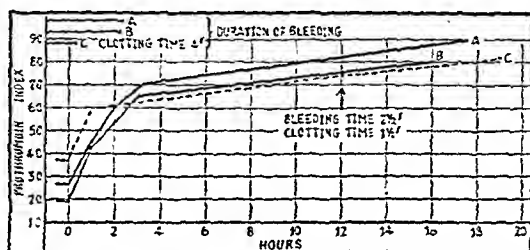


FIG. 5.—A=Case 5754. B=Case 5551. C=Case 6765. (For description see text.)

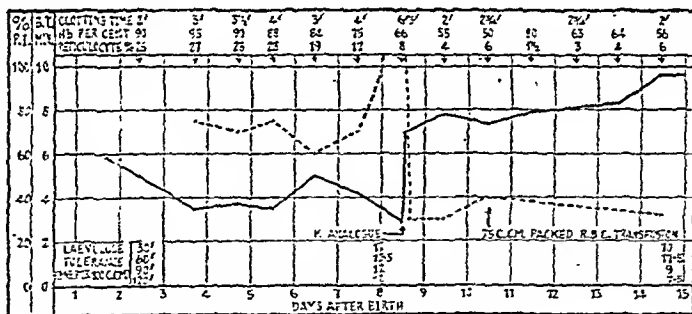


FIG. 6.—Case 7152. Broken line=bleeding time (B.T.). Continuous line=prothrombin index (P.I.).

Discussion

In spite of the proved effect of vitamin K in increasing the clotting activity of blood in such a way that spontaneous bleeding ceases in a very short time, it has been authoritatively stated that the administration of adult blood intravenously or by repeated intramuscular injections not only is a safer measure for general use but gives "results . . . among the most striking in therapeutics" (*Lancet*, 1940, 1941). Clearly the very small and fleeting response even to the repeated injection of adult blood into the buttocks can be instrumental in controlling the haemorrhagic tendency only when the prothrombin index is already rising spontaneously. Moreover, repeated injection of so much blood is not devoid of danger. Blood transfusion in the newborn is a procedure that can be undertaken only in hospital, and even there may be followed by untoward

* These cases will be recorded in more detail later by Dr. J. L. Henderson, to whom I am grateful for the reticulocyte and haemoglobin estimations.

reactions. The evidence from two cases treated by transfusion supports the observation that even when a comparatively large volume of blood is given to an adult the effect upon the clotting activity is transient (Stewart, 1939). It appears from Case 6947 that when a transfusion of average volume is given the immediate effect upon the prothrombin index is dramatic (more rapid, though more limited, than can be obtained from the injection of vitamin K analogue alone). Unless, however, this early rise is supported by concurrent spontaneous restoration the prothrombin may fall to its original level and bleeding recur in a very few hours.

The prompt and maintained increase in the plasma prothrombin and the rapid control of haemorrhage (within two hours of administration where bleeding was superficial) after the injection of vitamin K analogues are manifestly quite independent of any coexistent tendency to spontaneous recovery. Moreover, 2.5 mg. of 2-methyl-1:4-naphthoquinone intramuscularly restored the prothrombin index and maintained it at adult levels even when the laevulose-tolerance test indicated deficient hepatic function (Case 7152). The site of injection (intravenous or intramuscular) has no effect upon the rapidity of action, and there is no material difference between oil-soluble and water-soluble preparations. The simplicity of this method and the extreme rarity of conditions in which vitamin K analogues will not be effective in arresting the haemorrhagic tendency suggest that one of them should be employed first in all cases of spontaneous and persistent bleeding in the newborn. It is probable that in the most severe cases, in which prolonged or massive haemorrhage is exsanguinating the patient, simultaneous treatment by transfusion and injection of vitamin K analogue should be given. The rapid action of the transfusion in elevating the haemoglobin and plasma prothrombin levels would then be reinforced by the slightly slower and much more sustained effect of the vitamin K analogue on the clotting activity of the blood.

I am much indebted to Dr. E. McCallum, who has helped me with the prothrombin estimations in several of the cases described; and to Dr. J. L. Henderson for his interest in bringing some of these cases to my notice and for his assistance in other ways. Also I wish to thank Dr. W. F. T. Haultain, Dr. Douglas Miller, Prof. R. W. Johnstone, and Prof. Charles McNeil, who have given me every facility to carry out these investigations on the cases under their care. I am indebted to Glaxo Laboratories Ltd. and to Roche Products Limited for generous supplies of vitamin K analogues.

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The borough of Chelmsford, with an estimated population of 33,040, reports twenty-eight deaths of children under 1 year during 1940, and only ten deaths among young persons between 1 and 25 years. An attempt was made to establish a day nursery for children between 2 and 5, but the scheme had to be abandoned, chiefly owing to the difficulty of bringing and collecting children in the black-out, and of obtaining money, staff, and accommodation. The M.O.H. notes a good response to the diphtheria immunization campaign, and only three cases were reported during the year, with no deaths.

THE CAUSES UNDERLYING THE RECENT INCREASED INCIDENCE OF AND MORTALITY FROM TUBERCULOSIS IN GLASGOW

BY

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AND

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Pulmonary Tuberculosis

It would appear that for five years preceding the outbreak of war in 1939 the incidence of and the mortality from pulmonary tuberculosis were tending to stabilize themselves in Glasgow at figures of around 1,650 notifications and 960 deaths per annum. During the first year of war the returns under the above two headings were 1,908 and 1,177 respectively, a rise of approximately 250 notifications and 200 deaths. This increased incidence and mortality is being maintained during 1941.

The following table shows the total number of notifications and deaths from pulmonary tuberculosis during the past seven years, together with a forecast for 1941 based on the returns for the first half of the year:

Year	Notifications	Deaths	Year	Notifications	Deaths
1934	1,646	873	1938	1,748	960
1935	1,757	972	1939	1,574	972
1936	1,647	979	1940	1,908	1,177
1937	1,654	955	1941*	2,190	1,342

* Estimated figure—i.e., twice the notifications and deaths during the first half of 1941.

The seasonal incidence of notifications from pulmonary tuberculosis for the years 1939, 1940, and 1941 was studied when it was found that the graphs for 1940 and 1941 followed closely the path of the graph for 1939, but at a slightly higher level. It was observed that the rise in notifications during 1940 and 1941 was normally distributed throughout the year, and did not occur in any one particular season.

The age and sex distribution of the notified cases of pulmonary tuberculosis for 1939 and 1940 are tabulated below:

Age	Males		Females	
	1939	1940	1939	1940
— 5 years	34	47	21	40
— 15 "	68	45	50	71
— 25 "	237	287	341	437
— 35 "	162	218	162	214
— 45 "	130	164	72	82
— 55 "	119	127	42	27
— 65 "	79	79	25	26
— 65 "	23	31	9	13
Total	852	998	722	910

The total number of notifications was 1,574 in 1939 and 1,908 in 1940. During the first half of 1941 there were 1,095 notifications and 671 deaths—figures that indicate that the disease is continuing to increase in incidence.

It will be seen from the table that the increased incidence has taken place almost entirely between the ages of 15 and 45 in males and 15 and 35 in females, and that both sexes show an all-round increase of 20% over the 1939 returns.

Non-pulmonary Tuberculosis

The comparative figures for non-pulmonary tuberculosis for 1939 and 1940 also show that a considerable rise in the number of notifications and deaths from this form of tuber-

culosis had occurred in the latter year. The relative figures were: 561 notifications and 255 deaths for 1939, and 669 notifications and 329 deaths for 1940. It will be seen that the increase, approximately 17%, in this group is slightly lower than among the pulmonary cases.

The following table subdivides the notified cases of non-pulmonary tuberculosis into their particular types.

Year	Abdomen	Spine	Hip	Other Bones and Joints	Genito-urinary	Skin	Lymph Glands	Meninges	Multiple
1939	52	39	39	85	29	21	90	137	2
1940	80	60	37	101	38	18	130	184	4

From this it is seen that the spine, the meninges, and the lymph glands have shown the greatest increase in tuberculosis, while other sites have remained relatively unaffected. It was considered worth while to extract the age and sex distribution of the meningeal cases in order to discover which age groups were chiefly affected. It was found that the increase occurred in children of both sexes under 5 years, and to a lesser extent in females aged 15 to 25.

Possible Reasons for the Increased Incidence

It is evident from the above details that there must have been some factor in 1940 which was not present in 1939, or, if present, was intensified in 1940. The possible reasons for this increase are considered under separate headings.

(a) *Increased Virulence of the Tubercle Bacillus.*—The figures show that the notifications and deaths during 1940 increased in equal ratio, but there is no proof that the bacillus has become more virulent.

(b) *Malnutrition and Deficient Diet.*—This is not an important factor in the increased incidence of tuberculosis, for the following reasons: (1) The State has controlled the distribution of essential foods in such a way that each individual obtains a fixed minimum quantity of basic foodstuffs sufficient in itself to maintain the normal person in good health. (2) It can be presumed that if deficiency of diet was the main factor the various age groups would be affected equally when expressed on a percentage basis, whereas from the tables it has been seen that the maximum rise occurred in the 15-45 age group. This group comprises the workers, many fewer of whom were unemployed, and who on account of higher wages were able to feed themselves well.

(c) *Tubercle Bacilli in Milk.*—This may be considered a factor in producing some of the additional cases of tuberculosis affecting the lymph glands, but the fact that the number of cases of abdominal tuberculosis has remained stationary indicates that it cannot be the main reason for the increased incidence among non-pulmonary cases.

(d) *Examination by Military Medical Boards.*—These examinations have undoubtedly revealed some unsuspected cases of tuberculosis in the age group 20-35, but the number of cases so notified is not nearly comparable to the actual increase.

(e) *Exertion or Strain of Army Life.*—That the unaccustomed rigours of Army life have not been a dominant factor in the increase among males during 1940 is shown by the fact that the number of civil notifications in that year exceeded the total returns for 1939.

(f) *Long Hours in Shelters.*—This may cause a slight increase in the number of registered cases, but it is obviously of minor importance. Raids in Glasgow have been so infrequent that shelters have not been occupied to any considerable extent, and only a very small percentage of the population frequent them when there is no warning.

(g) *Overcrowding in Factories.*—Were contact infection in factories an important feature, one would have anticipated a proportionately greater percentage increase among pulmonary as compared with non-pulmonary tuberculosis—in fact, the increase is roughly 20% in each case.

(h) *Long Hours, Overwork, Strain, and Curtailed Rest.*—It has been noted that the main increase involved the age groups, 15-45 in males and 15-35 in females. This is the period of

maximum working activity, when long hours of overtime are often undertaken. It must also be remembered that many a period normally devoted to rest or recreation has now to be sacrificed to fire-watching or Home Guard duties. In addition to this we have ascertained that young adults of both sexes are frequenting dance halls and picture houses with great regularity, and in numbers as high as, if not higher than, before the outbreak of hostilities. The significance of the rise in the 15-45 group in males becomes even more apparent when one realizes that the number of civilian males in this age group in 1940 has been considerably depleted by the calls of military service.

In the case of females the institution of marriage and the ties of family life necessitate a shorter working life among large numbers. This would account for the drop in female notifications at an earlier period than with males—a fact that is confirmed by the following tables of occupations:

	1939	1940
Pre-school children and scholars	173	165
Military class	35	71
Professional class	35	30
Commercial class	215	211
Domestic class	309	321
Miscellaneous	121	208
Tradesmen		
Unskilled workers	674	932
Skilled workers		
Labourers		

Our conclusion, therefore, is that it is a combination of long hours, overtime, strain, and ill-spent leisure which is the factor producing the rise in the number of cases of tuberculosis, and it may be assumed that the increase will be at least maintained so long as these factors remain unchanged.

AVOIDABLE DISABILITY SEEN IN RECENT AMPUTATIONS

BY

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Since the present war began many publications have appeared on the subject of amputation. The multiplicity of advice given renders difficult the choice of procedure for those with little or no experience upon which to draw. It is not the object of this paper to criticize individual methods of amputation, but simply to draw attention to certain types of case in which different operative technique and after-care would have resulted in speedier recovery with less disability. At the present stage it is impossible to evaluate some of the newer methods, but it is not too early to point out that procedures are still being employed which have already been condemned by examination of the results of the amputations performed in the last war. All the patients forming the basis of these observations have been seen in one of the special hospitals after primary amputation in Army or Emergency Medical Service units.

As amputation below the knee presents the greatest number of difficulties and comprises a large proportion of all amputations, the causes of prolonged disability will be

PROLONGED DISABILITY IN AMPUTATIONS BELOW THE KNEE

- | Cause | Effect |
|--|---|
| 1. Bad design of skin flaps..... | (a) Healing by secondary intention with or without terminal low-grade osteitis.
(b) Painful scar.
(c) Intertrigo from loose folds.
(d) Late breakdown. |
| 2. Skin grafting of bare areas..... | Stump will not stand artificial limb. |
| 3. Too early re-amputation..... | Post-operative sepsis. |
| 4. Failure to use skin traction in guillotine amputations..... | (a) Pain and misery.
(b) Loss of length at re-amputation. |
| 5. Failure to use post-operative splintage (applies especially to knee)..... | Flexion deformity. |

considered in detail in relation to this stump. The various headings will also be found to cover, to some extent, disability in relation to other amputation stumps.

Skin Flaps

No blame can be attached to the surgeon when the injury does not permit of planned flaps, but numbers of almost identical stumps have been seen where the design leaves no doubt that they have been planned as such. An example is the use of equal lateral flaps, giving an antero-posterior scar. This fashion has been recommended in a recent publication on war surgery because of the better drainage afforded. Good drainage is unquestionably advisable, but methods must surely be employed which do not cause additional disability. The objection raised to equal lateral flaps in amputation below the knee is the occurrence of a scar on the subcutaneous part of the tibia. In the post-operative period failure to heal by first intention exposes the tibia and adds many additional weeks to hospital treatment. Should the scar heal by first intention it is still placed at the point of maximum pressure between the end of the tibia and the socket of the prosthesis when the leg is swung forward in walking. Late breakdown may occur, especially if the scar is adherent to the bone.

It is not with these late complications that we are most concerned, but with those stumps that have not yet healed and show a small area of apparently dead bone projecting from the end. Radiographs of these stumps may eventually show terminal sequestration, but only after many months of waiting. Re-amputation below the knee while the wound is still open is impossible without risk, as the majority only measure six to seven inches below the knee. When the wound has healed or almost healed with a thin covering of scar tissue, re-amputation, with removal of one inch or more of bone, may enable the surgeon to cover the stump with sound skin flaps. To allow a patient to be fitted with his prosthesis when the stump end is covered only by scar tissue is to lay the foundations of trouble and disappointment. Therefore re-amputation, though wasteful of time, is necessary in order to provide a serviceable stump. It is hoped that the practice of using equal lateral flaps for amputations below the knee will rapidly disappear.

Another type of flap, the long anterior, which has been the standard textbook recommendation for many years, is still seen in recent amputations. Fortunately its use appears to be on the wane, for it has proved to be one of the least desirable flaps on account of its poor blood supply. Necrosis of the skin at the distal part of the flap may be a post-operative complication, but is not nearly so serious as necrosis of the skin overlying the tibia. The problem presented by ulceration of part of the flap over the tibia is exactly similar to that described in connexion with the antero-posterior scar. As Verrall has stated, the ideal scar, from the point of view of both skin nourishment and limb-fitting, is secured by the use of short anterior and long posterior flaps.

A number of stumps are still found with too generous a skin covering, and require the removal of superfluous skin before the artificial limb can be worn in comfort. This is a minor operation and adds little to the total disability period, but it deserves mention because some patients, already fitted with limbs, have had troublesome intertrigo from infolding of the skin or friction in the socket. Skin flaps should be tailored neatly on the stump at the time of amputation. If this is done there will be fewer possible sites for haematoma formation with the attendant risk of sepsis, and the time necessary for shrinking the stump will be lessened. The ideal stump is, of course, firm and tapering to the end, with rounded contours and a minimum of flabby tissue.

Skin Grafting

Although skin-grafting has been performed on a few occasions the results have been unsatisfactory. Re-amputation, as soon as sepsis will allow, has been the only method of securing a serviceable stump. Various types of free graft and the tube pedicle graft, transferred in two stages from the abdomen, have been done. The Thiersch graft is not strong enough to stand the wear of the socket, and the whole-thickness grafts encountered so far have been so irregular with scars in vulnerable positions that limb-fitting was out of the question. Patients who have undergone several operations for grafting, with a long pre- or post-operative period of stump dressing, are naturally disappointed when informed that re-amputation is necessary.

Guillotine Amputations without Skin Traction

Too many cases of this type have been seen; the patient's misery is so real and so unnecessary. In the rush and hurry inseparable from this form of amputation time is really saved by taking a few seconds longer to cut through the skin at a lower level than the other structures. Two or three sutures can then be inserted over a generous gauze pack. This method is quicker than the application of skin traction with a weight over the end of the bed, and is effective for all but the very rare case in which it is desired to keep open the whole area of cross-section for drainage purposes. Skin traction has been applied at a late stage with little success. Three to four inches have often been lost at re-amputation in the thigh, while the loss in the lower leg has usually been less.

Too Early Re-amputation

Patients who have already undergone re-amputation have been received with discharging amputation stumps. It does not seem to be fully appreciated that re-amputation of two to three inches of a stump which is septic or has been septic is a procedure fraught with considerable danger of post-operative sepsis. With a clear five inches or more the risk is less. Stumps should be healed, or almost healed, before re-amputation is performed, and it is advisable to allow the patient to be up and about before the operation in order to activate latent sepsis, which otherwise might make its appearance at the time of operation or later. Ideally, before operating on the patient in whom every inch is of importance, the surgeon should wait for healing by scar tissue and a period of massage and heat to test for latent sepsis, but in view of the time involved operation may sometimes be considered a justifiable risk when the bare area appears really clean without a trace of surrounding oedema or tenderness. After all, re-amputation is a plastic operation done at leisure, and the result is usually of much greater importance than the excision of a facial scar, which has so much time and care lavished on its performance by plastic surgeons.

Flexion Deformity at Knee or Hip

This is one of the most easily avoided disabilities connected with amputations in the lower extremity, yet it is surprising how often it is encountered when the patient is sent for limb-fitting. Knee-joints are safe from this deformity if bandaged to a back splint for the healing period, but in amputations above the knee the hip-joint must be inspected to see that extension remains full. Ward routine should preclude the possibility of the stump resting on a pillow. Flexion deformity of either hip or knee is a serious disability, and its complete correction is an extremely difficult problem. In fact, if the deformity has lasted for more than a few weeks it is unlikely that it can be entirely cured.

A CASE OF UNILATERAL CLUBBING OF THE FINGERS

WITH A SUMMARY OF THE LITERATURE

BY

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The first observer to describe this rare condition was Ogle in 1859. Others to describe and collect cases were B  cl  re (1901), Castex and Mazzei (1939), Groedel (1907), Hatzieganu (1923), H  gler (1920), Loucaides (1932), Mendlowitz (1938), Pigney (1920), Souques (1919), and Walsh and All-dredge (1934). A case observed recently is now described.

Case History

A male quarry worker aged 54 was admitted complaining of pain in the right arm and a lump on the right side of the neck for six months. At first the lump was not painful, but it gradually increased in size and pain occurred, first in the right upper arm



Fig. 1.



Fig. 2.

and later in the forearm. The patient also noticed a change in the shape of his fingers. There was no cough or dyspnoea, and no history of syphilis was admitted.

On examination a pulsatile swelling, 2½ by 2½ inches, was seen just above the right clavicle; a systolic thrill and murmur were present over the swelling. There was pitting oedema and venous engorgement of the right upper limb. The right hand was constantly warmer than the left. There was pronounced finger clubbing of the right hand and curvature of the nails; the left hand was normal (Fig. 1). The power in the right upper limb was poor compared with the left (the patient was right-handed). The sensation and reflexes were normal in both arms, and the circumference of the arms 3 inches above the elbow was: right 8½ inches,

left 9 inches (measured after oedema had subsided with rest and one month's treatment). The pulse at the right wrist was less forceful than that at the left. Blood-pressure readings were: right arm 118/84, left arm 124/88. The heart showed no enlargement clinically, but there was a systolic murmur over the aortic area. The pupils reacted to light and accommodation; the knee-jerks were present. No tracheal tug was observed. The sedimentation rate (Cutler) was 25 mm. in one hour, and the Wassermann reaction was strongly positive. Radiographs showed: (1) extensive soft-tissue shadow above the right clavicle, but nothing abnormal in the chest; (2) slight decalcification of both hands, right greater than left; (3) slight decalcification of bones of right forearm.

The case was diagnosed as syphilitic aortitis, with right subclavian aneurysm and secondary unilateral clubbing of the fingers of the right hand; and rest, potassium iodide, and mercury were prescribed. Later bismostab 0.2 gramme was given weekly. The aneurysm gradually decreased to about three-quarters of its original size, and the oedema and much of the pain and venous dilatation disappeared.

The patient, when seen six months later, had voluntarily discontinued treatment for three months; his aneurysm was much larger, and the clubbing more pronounced (Fig. 2). He has recently been operated on successfully, the aneurysm having been tied off both distally and proximally. It is too early to assess any change in the clubbing, but all his symptoms have disappeared.

Discussion

Clubbing of the fingers occurs bilaterally in various conditions, chiefly in cardiac and pulmonary disease. Other

Cases reported in the Literature

Reporter	Observer	Accompanying Lesion
B��cl��re (1901)	B��cl��re	Aneurysm of R. subclavian artery
Castex and Mazzei (1939)	Castex and Mazzei	Innominate and R. subclavian aneurysm
"	"	Aneurysm of L. subclavian artery
Groedel (1907)	Groedel	Aneurysm of descending arch—compression of L. subclavian artery
"	Bernhardt	Aneurysm of L. subclavian artery
"	Berent	"
"	Ogle	Aneurysm of R. subclavian artery
"	Canton	Aneurysm of subclavian artery
"	Thomas Smith	"
"	Osler	Intrathoracic aneurysm (exact site not given)
"	"	"
Hatzieganu (1923)	Hatzieganu	Aneurysm of R. brachio-cephalic trunk
H��gler (1920)	Joachim	Aneurysm of aortic arch
"	Ebstein	Aneurysm of R. subclavian artery
"	Klaus	Old dislocation of shoulder
"	Forster	Aneurysm of aortic arch and subclavian artery
"	Hatzieganu	" " " "
Loucaides (1932)	Loucaides	" " " "
Mendlowitz (1938)	Mendlowitz	R. subclavian aneurysm
"	"	Aortic aneurysm
"	"	Phlebotaxis
"	"	Carcinoma of R. upper lobe bronchus
Pigney (1920)	Pigney	Dilatation of ascending aorta and aortic arch
"	De Jong	Bullet which passed through axillary vascular region. No exact details of lesion
"	Baur	Aneurysm of L. subclavian artery
Souques (1919)	Souques	Phlebotaxis
Walsh and All-dredge (1934)	Walsh and All-dredge	Aneurysm of R. innominate artery
"	Barney Brooks	Aneurysm of R. axillary artery
"	Stanley Smith	Aneurysm, site unquoted

states, such as cirrhosis of the liver, ulcerative colitis, sprue, amoebic dysentery, and post-thyroidectomy myxoedema, occasionally present clubbing (Mendlowitz, 1938). It therefore seems difficult to deduce a single cause, and circulatory, chemical, and nervous factors may all play a part.

Of the 29 cases of unilateral clubbing of the fingers reported in the literature, 24 occurred with aneurysms, chiefly of the subclavian arteries (see Table). In the remaining 5 pressure was observed on the vessels and nerves of the affected limb. This pressure seems to be the only factor common to all the 29 cases, but it is not clear whether it was on the arteries, veins, nerves, or lymphatics, or on a

combination of these, as the clinical signs accompanying the clubbing varied considerably. In the case reported above there was, clinically, obstruction of the vessels as shown by oedema, venous dilatation, pulse, and blood pressure. Subsequently, pressure on the nerves gave rise to pain.

Ogle (1859) thought that the clubbing was due to the presence of an increased amount of venous blood in the affected limb and that this was caused by interference with the axillary circulation. Other observers thought it was due to interference with the sympathetic nerves running with the vessels, but as it is now known that sympathetic nerve fibres do not run down the whole length of the arteries this theory seems untenable.

Mendlowitz (1938) investigated the circulation in the arms of 4 cases of unilateral clubbing and found no evidence of a circulatory cause. He compared the maximum heat elimination and blood pressure gradient from brachial to digital areas in both the normal and affected arms and found that no significant changes in the blood flow had occurred in the affected finger-tips. However, only 4 cases were investigated, and the results of the experiments were not very conclusive. Local anoxaemia due to circulatory embarrassment still remains a very probable cause of clubbing.

Chemical causes, such as toxæmia, seem very probable when bilateral cases are considered. Thus, bronchiectasis, a disease with general toxæmia, is commonly accompanied by bilateral clubbing. However, if general toxæmia were always the cause, unilateral clubbing should never occur. There remains the possibility that the localized pressure, for instance from an aneurysm, might precipitate incipient clubbing on one side, and that the other side might eventually show clubbing if the patient lived long enough. It is interesting to note that cases of an aneurysm causing pressure and pronounced clubbing in one hand have sometimes shown slight clubbing of the other hand (Béclère, 1901; Hatzieganu, 1923). It seems unlikely that pressure on the nerves of the arm could be the cause of clubbing, as although nervous symptoms are common in unilateral cases they do not occur in bilateral cases.

Finally, it may be noted that in 2 of the reported cases the clubbing disappeared wholly or partially after operation on the aneurysm (Hatzieganu, 1923; Höglér, 1920). This is convincing evidence that pressure is the primary factor in unilateral cases. Local circulatory embarrassment follows this pressure, causing anoxaemia and, hence, probably the clubbing. Anoxaemia from circulatory embarrassment or general toxæmia in bilateral cases may well account for the clubbing, so conforming with the final factor in unilateral cases.

Summary

A case of unilateral clubbing of the fingers is described.

The cases previously reported are tabulated.

The difficulty of explaining the exact causation is stressed and the possibilities are discussed.

I wish to thank Prof. E. J. Wayne for permission to publish this case, and Dr. L. C. D. Hermitte for the photographs.

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Medical Memoranda

Cirrhosis of Liver and Perforated Gastric Ulcer in an Infant of 6 Months

The only type of infantile cirrhosis which I can trace in medical literature is one which occurs in India. It was first described by Twining in 1832, and its morbid anatomy was investigated by Gibbons in 1891. A full account of this disease is given by Sir Upendranath Brahmachari and Phanindranath Brahmachari in volume 8 of the *British Encyclopaedia of Medical Practice*. I can find no record of a similar condition in this country, nor of any case in which the terminal event was a perforated gastric ulcer, though Brahmachari refers to gastric and intestinal haemorrhage as a common complication. A non syphilitic cirrhosis, originating as an intralobular and progressing to a multilobular cirrhosis, occurring in an infant of this age and terminating in a perforated pyloric ulcer at 6 months must be very uncommon in this country; and if the brother's liver was also cirrhotic the condition must be, as in the Indian case familial. Two other children appear to be healthy.

CASE RECORD

A male child aged 5½ months was sent to me by Dr. Bruce of Newport. The history was that he weighed 9 lb. at birth, and that, beyond a somewhat intense icterus which persisted for some days, the puerperium was normal. It was found, however, that the infant did not thrive on the breast. Dried milk preparations did not result in improvement, and on these the stools were fatty in appearance. On sweetened condensed milk he thrived for a time, but on resuming dried milk he lost weight. It was found that the liver was very large, extending to the umbilicus. No free fluid was detected in the abdomen and there was no enlargement of the spleen. There had been no jaundice since the neo-natal period. A former child of the same family had also had a much enlarged liver, and had died of pneumonia at 2 years of age. A provisional diagnosis of von Gierke's (glycogen) disease was made.

The blood sugar was first investigated. The fasting blood sugar was 100 mg. per 100 c.cm.; one hour after a feed of 5 c. of sterilized milk it was 225 mg., and after two hours 160 mg. No effect of adrenaline was observed, for in von Gierke's disease this drug does not raise the blood sugar. On this occasion the fasting blood sugar was 140 mg.; 5 oz. of adrenaline 1 in 1,0 raised this to 160 mg. The urine contained glucose and acetone. The blood count was: red cells, 3,700,000 per c.mm.; haemoglobin, 80%; white cells, 12,400 per c.mm. (polymorphs 29, lymphocytes 70%, large mononuclears 1%). The Wassermann reaction was negative. I concluded that this was not a case of von Gierke's disease, but a true diabetes mellitus with hepatic megaly, and decided to try the effect of 3 units of soluble insulin twice a day. On the second day the infant suddenly collapsed and died at 11.15 a.m.—four hours after his third dose of insulin. Just before death he passed a quantity of blood per rectum. No time did he seem to have any pain.

Post-mortem Examination.—The abdomen contained about 8 to 10 oz. of cloudy fluid. The liver had the typical appearance of multilobular cirrhosis. On raising the liver I discovered the cause of the cloudiness of the fluid in the abdomen, a perforated ulcer of the pylorus on the greater curvature exuding partially digested milk, and this, mingling with straw-coloured ascitic fluid, produced the turbid appearance. The small and large intestines were full of blood. The spleen was normal in size. The liver weighed 22 oz. The pathological report on the liver was as follows: "Sections show considerable cirrhosis; this is to some extent of multilobular type, numerous delicate fibrous bands are seen surrounding most of the individual lobules, and conforming more to a billobular (Hanot's) cirrhosis, though there is no evidence of active duct regeneration."

My thanks are due to Dr. Bruce for his account of the history of this case, and to Dr. Douglas Thornton for his report on sections of the liver, as also to his staff for pathological investigation.

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Reviews

THE SCIENTIFIC ATTITUDE TO LIFE

The Scientific Attitude. By C. H. Waddington. Pelican Books. (Pp. 126. 6d.) Middlesex: Penguin Books, Ltd.

In 1932 an eminent man of science wrote: "Not meddling with morals and politics; such I would urge is the normal condition of tolerance and immunity for scientific pursuits in a civilized State. . . . Science should remain aloof and detached, not from any sense of superiority, not from any indifference to the common welfare, but as a condition of complete intellectual honesty." We do not give the writer's name as he has doubtless changed his mind, since the events of subsequent years have proved the inadequacy of such a point of view. Science can no longer remain aloof, impartially dispensing material comfort with one hand and methods of destruction with the other. A scientific training should imply a scientific attitude to life. All too obviously this has rarely been the case in the past, and a scientist's opinion on matters outside his subject has often been not worth much more than that of a film star on politics.

The younger generation of scientific workers, to their honour be it said, are intensely interested in the impact of science on the outside world, and Dr. C. H. Waddington, himself a researcher of repute, has attempted to define his views on what the scientific attitude to life should be. He tells us that his little book originated from discussions at the club which produced the Penguin *Special Science in War*. It reads like a rough draft of his ideas, but he modestly states that a number of his friends laughed him out of the "more excruciating absurdities" of that draft. It is to be wished that those friends could have helped him in other ways, for there is a lack of lucidity and a disregard of the niceties of the English language which hamper the effectiveness of this obviously sincere work. This is not surprising, as much of the author's thought seems to be still in a state of fermentation. Penetrating beneath the froth of this ferment we read his main thesis to be a rejection of the plea that science is and must be ethically neutral. He maintains that a scientific attitude to the world does not in the slightest deny the emotional effects produced on men by their experience: what it tries to do is to classify the mechanisms by which these effects were produced. Man is the only animal to discover the secret of getting results in the material world, which is to let one's actions be governed by an objective analysis of the situation. Our task is to enable this analysis to get results when applied to politics. The author is critical of both Fascism and Communism, though he clearly inclines to the left. He realizes that his plea for the application of conscious control to the economic functioning of society, which he regards as a step forward in evolutionary progress, will meet with opposition, for with Wilfred Trotter he recognizes that people object strongly and irrationally to anything which touches a part of their personality that is out of order. Science can satisfy the other side of man's nature which demands a belief in some authority, a thrill of romance. Science can not only satisfy reason, but he believes it could also provide this thrill and this authority: it is able to provide mankind with a way of life which is, in the first place, self-consistent and harmonious; and, secondly, free for the exercise of that objective reason on which our material progress depends. It is all to the good that many of our younger men of science are devoting so much thought and energy to the difficult problems that lie ahead, but they will do well to remember that authorship, like the laboratory, has its special technique.

HISTOLOGY FOR MEDICAL STUDENTS

Textbook of Histology for Medical Students. By Evelyn E. Hewer, D.Sc. Second edition. (Pp. 364: illustrated, 17s. 6d. net.) London: William Heinemann (Medical Books) Ltd. 1941.

The writing of textbooks for medical students on special subjects has become, with the advance of knowledge, an increasingly difficult task, since the time allotted for the study of such subjects in the already overburdened curriculum is very short. Dr. Evelyn E. Hewer has overcome this difficulty with much success, and has contrived to accentuate those points which are essential; and, also realizing the desirability of giving some indication of the meaning of the various morphological features which are described, she has introduced supplementary notes of practical importance, bearing upon the relation of certain changed appearances in cell structure to phases in the life-history of the cell, functional activity, certain diseased conditions, and changes due to the mode of fixation or staining of the tissue. A considerable number of new and excellent photomicrographs have been added to those of the preceding edition, and also some new schematic drawings. The latter, however, in our opinion are capable of improvement in their technique, this being scratchy and of a blackboard type. One would like to have found in this book a more adequate description of the central nervous system and also of histogenesis, the latter of which may be regarded as having the same fundamental relation to histology and general pathology that general embryology has to anatomy and surgical pathology. The general neglect of this study has hitherto led to the perpetuation of certain initial errors, and more particularly with regard to the structure of some of the connective tissues. This is obviously due to the failure of many writers to appreciate the full meaning of some well-established facts—such as the formation in the early stages of implantation of the ovum, of continuous multinuclear plasmodial strands, and the primary continuity of mesenchymal tissue in the embryo—upon the formation of corresponding structures in the adult body—for instance, chorion epithelioma and many forms of connective tissue. The book, however, is well written and contains much new and interesting matter, and it will well serve its purpose—namely, an introduction to the study of histology for medical students.

CARLOS FINLAY AND YELLOW FEVER

Carlos Finlay and Yellow Fever. By Carlos E. Finlay, M.D., F.A.C.S., Professor of Ophthalmology, University of Havana. Edited by Morton C. Kahn, M.A., Ph.D., Sc.D. (Pp. 249. 21s. net.) Published under the auspices of the Institute of Tropical Medicine of the University of Havana by the Oxford University Press, New York.

So far back as 1881, long before anything was known of the insect transmission of disease, Carlos Finlay put forward his hypothesis of the transmission of yellow fever by the mosquito, based on what was known of the epidemiology and pathology of the disease. In later years he added more and more cogency to the reasoning by which this view was upheld. He even selected as the vector the species of mosquito that we now know does convey the disease. At a time when practically nothing was known of mosquitoes in the Tropics Finlay bred and studied *Aedes aegypti*, at that time the *Culex* mosquito. He also carried out feeding experiments, using this mosquito, with the view of transmitting the mild disease and so bringing about protective immunity to the person bitten. In regard to such experiments one can only say that at the time they did not carry complete conviction, so that it was nearly twenty years later before the results of the U.S. Army Yellow Fever Commission showed with certainty that yellow fever was conveyed by the mosquito and not by aerial contamination or fomites. Nevertheless Finlay in 1893, long before the first operations

were undertaken against yellow fever by the destruction of mosquitoes, advocated such measures, along with protection from bites of infected mosquitoes as the essential action necessary in the prevention of yellow fever.

These remarkable facts have recently been vividly brought to the reader's attention in a book by his son, Carlos E. Finlay, giving an account of Finlay's family and personal life and the researches which led to his mosquito theory. This is told not as a formal history but in the intimate detail of an observer behind the scenes. Incidentally the book gives an informative picture of the whole progress of research on yellow fever from the early observations to the more recent discoveries, together with what is known as a result of historical research of the origin of this once dreaded disease. It is well documented, and authentic dates and references are given throughout. It forms an important contribution to the history of our knowledge of tropical diseases.

Notes on Books

Your Health in Wartime: A Doctor Talks to You, by Dr. CHARLES HILL, is published at 1s. by the University of London Press. This little book is a revised version of a series of broadcasts given last January, with the addition of a section on food. In simple yet attractive style suitable for children of school age Dr. Hill deals with such topics as the way germs spread and how the body defends itself against them, touching lightly on the

methods adopted to strengthen those defences. Then the bearing of cleanliness on health is discussed, together with the importance of ventilation, rest, and sleep. In the final chapter on food emphasis is laid on the importance of proteins as body-builders, which, as is well known, cannot be replaced by any other food-stuff. "If there is a shortage of one body-builder we must rely on another." Years ago Sir Robert Hutchison said that in order to have enough protein it was necessary to take too much. This paradox implies that in the breaking down of food proteins it is best for the body to have a wide choice in order to select the most appropriate building material. He regarded this as a means of increasing resistance against disease. Unfortunately it is just the proteins which are being most severely rationed. This may be inevitable, but scarcely justifies the self-commendation to which the Ministry of Food is rather prone. It is well that everyone should know the important facts so engagingly set forth in this book.

Medical officers of the South African Army Medical Corps now on active service, when writing home, have often expressed their wish for medical literature, especially such publications as may be applicable to field conditions in Africa. Some of them have access to the *Bulletin of War Medicine*, published in England by the Medical Research Council, but for those not so favourably placed the South African Red Cross Society has entrusted to a subcommittee the task of providing an abstract service especially designed for S.A.A.M.C. officers. Copies have reached this country of Nos. 1 and 2 of the *Digest of War Medicine*, published by the South African Red Cross Society, P.O. Box 8726, Johannesburg, Transvaal, South Africa.

Preparations and Appliances

EXTENSION FOOT-PIECE AND SUPPORT FOR USE WITH THE THOMAS LEG-SPLINT

Colonel E. A. MCCUSKER, M.C., A.D.M.S. of a Canadian Division, writes:

For some time it has been evident to me that a simpler method of applying the Thomas splint must be devised in order to obtain the maximum benefit from its use, in addition to which the procedure is wasteful of time and material. The difficulties encountered in the ordinary method of application are numerous: (a) Many bandages are required to make a trough in which to support the fractured leg. (These need adjusting, which is difficult in the dark, and they require so much handling that cleanliness is impossible.) (b) The clove-hitch presents difficulties to the inexperienced. (c) The calliper is not satisfactory, nor is the skewer. (d) A short piece of wood or metal must be carried for a windlass to obtain traction. (e) The reversible stirrup (Sinclair) must be carried, it is not steady, and a bandage must be used to anchor the foot to it. (f) Suspension cannot be obtained until the patient is placed on the stretcher. The suspension bar is then put in position and bandages must be used to suspend and anchor the splint. (g) The patient cannot be removed from the stretcher without removing the suspension bar.

To simplify this technique it is suggested that a stockinet be slipped over the Thomas splint to form the supporting trough. This can be sterilized and carried in a waterproof case attached to the splint. It requires little handling and can be put on in the dark.

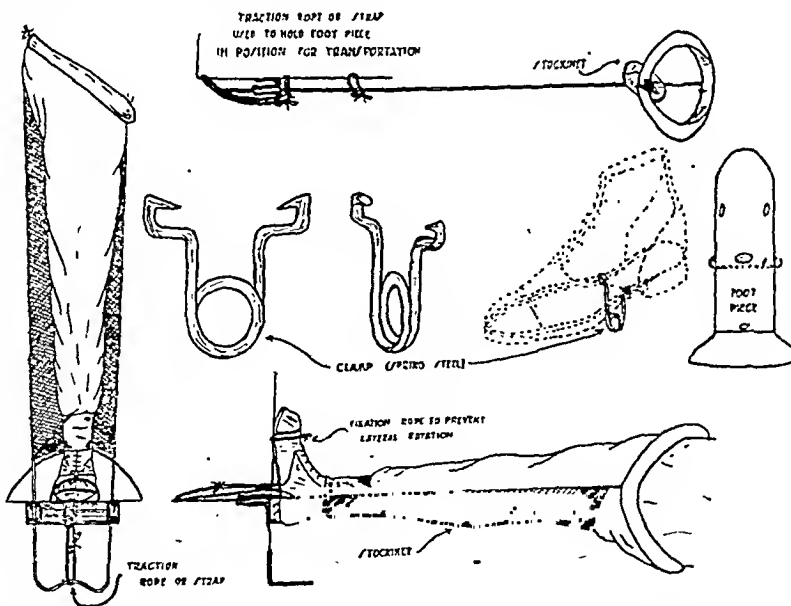
It can be washed several times and decontaminated if exposed to gas. It is inexpensive. (If surgical stockinet is not available the leg of an old pair of under-pants serves admirably.)

The combined extension foot-piece, which can now be slipped on, takes the place of all other equipment in that: (1) The spring instep clamp is attached to the waist of the boot and

passes through the oval hole in the centre of the foot-plate. The toe is fixed to prevent lateral rotation. (2) Extension is obtained and maintained by a rope or strap from the spring instep clamp to the notch in the end of the splint. (3) From the heel of the foot-piece a bar of light iron extends downwards two inches, then bends at right-angles towards the body to rest on the ground or on the stretcher and takes the place of the suspension bar. (4) The patient can be moved readily to and from the stretcher. (5) The toe-piece extends high enough to carry the weight of blankets.

(6) The foot-piece is attached to a cross-bar by a hinge: this bar is turned at each end to fold around the parallel bars of the splint, on which it can slide to the desired position, but which prevents any lateral or rotary movement. When not in use the foot-piece folds through 90 degrees to lie parallel to the bars of the splint. It is tied in this position, and cannot be lost.

The advantages of the method are, first, its simplicity, economy, lightness, and mobility; secondly, that highly trained personnel are not required for rapid and satisfactory application.



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SHELTERS AND THE COMING WINTER

War has brought in its train two interrelated social revolutions. One is evacuation; the other, the crowding of urban populations into shelters. The first thing that comes home to a visitor to an air-raid shelter in London or any large town is the necessity for evacuation of every child up to school-leaving age and of elderly and infirm persons. If this were complete many shelter problems would no longer arise. The fact has to be faced, however, that the habitual shelter population does include a large proportion of children as well as other persons for whom life in even the best-conditioned shelter is detrimental.

Improvement has undoubtedly taken place during the past twelve months of trial and experiment. This is borne out by an investigation recently undertaken on behalf of this *Journal* of shelters in many London boroughs and in seven principal cities of Great Britain, some of the results of which are summarized in this and last week's issues. Some shelters now come up to a standard with which only the most fastidious could find fault, but many others fall far below that level. One important fact, nevertheless, is that in well-arranged dormitory shelters the conditions of health and amenity are better than many of the very poor, who are the most regular of the shelterers, experience in their own homes. The authorities in different areas, even in adjacent boroughs, have approached this new problem in very diverse ways. Some seem almost to resent the fact that it is their duty to provide this accommodation, and they carry out only the niggardly minimum required; others deal with the problem imaginatively and on bold lines. Some have appointed a special official to look after the shelters; others have attempted no kind of co-ordination between the four or five different departments concerned in construction, equipment, and maintenance, thus causing long delays in getting work done, with a result less satisfactory than it might have been. The Ministry of Health has recently issued a pamphlet entitled *Air-raid Shelters: Notes on Principal Provisions*; this contains some excellent advice which, if followed in the spirit as well as in the strict letter, would ensure good shelters all over the country and eliminate the anomalies that at present exist.

The service of the medical aid post shows striking variations in different places. Sometimes so great an emphasis is laid upon the emergency character of this provision that the posts are hardly used at all. But where those responsible are alive to the necessity and opportunity for preventive measures the posts are in constant requisition, much timely advice is given, and many patients are referred to their own doctor or to a hospital. In some shelter communities it has been

possible to introduce diphtheria immunization on a large scale or to practise the systematic spraying of children's throats. How valuable an aid-post service may be is illustrated from the experience of a large shelter in a provincial town where, owing to its reconstruction from a disused canal, the floor was constantly damp and the walls reeking; yet there was very little illness last winter among the thousands of people it accommodated, thanks to the work and vigilance of the doctors and nurses attached to the post. The treatment of the child problem in the shelters is very unequal. In many places the children seem to be ignored. In others they are watched carefully in order that advantage may be taken of any apparent deviation from health to insist upon evacuation. One obvious omission is the complete lack of provision for nursing mothers to tend their infants in privacy. Only in the model medical aid post now being constructed at Newcastle, apparently, has any thought been given to this matter. Another point noted was the absence of inspection lamps or torches for the services of the medical aid posts, and of surgical material for dealing with cuts and lacerations.

The original timber-and-canvas bunks, which were easily damaged, becoming filthy from use and harbouring any parasite which might find its way into the shelter, are gradually being replaced by all-steel bunks, larger, of better construction, and more restful for the sleeper. There is now usually more space between bunks, and sometimes a plywood screen is placed at the bunk head to prevent droplet infection. Some shelters are bunked to capacity, with no room to move about. Most authorities discourage sleeping in shelters in the absence of an "alert." One city is proposing to remove every night ten thousand of its in-town population to special shelters on the periphery of the city.

The provision for cleansing is one of the most unsatisfactory features in many areas. Sometimes everything is left to the shelterers themselves or the responsibility is placed upon the shelter wardens; sometimes there are occasional visits from the cleansing departments. In a few instances shelters are provided with both water-closets and chemical closets, the latter remaining closed unless a breakdown in the water supply or drainage occurs. The provision of drinking-water is most primitive in some places. In one large city cans were found provided in most of the shelters; elsewhere, stone jars or a sealed container. But in the great majority of shelters a tap is taken from the main. Lighting is another difficulty. Some authorities have installed an alternative source should the main system be put out of action. One city has an emergency battery set in every shelter, but in another the only emergency lighting in most of the shelters is naked candles. Hurricane lamps or oil lamps are often provided, but in places there is no emergency lighting at all. Sometimes provision is made for dimming the lights at a certain hour to permit of the people getting better sleep, but elsewhere, notably in the London tube stations, the lights glare brilliantly all the night long. In one big city, after complaint had been made that the bright lights prevented sleep, the authorities substituted lights so feeble that it is impossible for people to read or usefully to occupy themselves in the evening. For heating the shelters the Ministry of Health recom-

mends Cura stoves, but if these are to function properly they must be put in by an expert. A most successful heating installation was seen at Liverpool in the shape of a concrete box or cover containing a heating element. Another good type of heater was a thermostatically controlled heating bar seen in several places. In no case was gas-heating seen, and the few oil stoves are gradually being replaced by electrical appliances. Some officials argued that so long as the shelter is dry the people will keep themselves warm, but in some basement shelters the draughts in cold weather must create an arctic-like atmosphere.

The actual construction of shelters is not primarily a medical problem, but from all aspects of health, physical and psychological, the narrow trench shelters and adapted tunnels and tube station platforms are not satisfactory, because in these passages there is not enough room for movement. The best kind of shelters are those which can be bayed off into approximately square compartments, with a section for medical aid post, canteen, and recreative facilities. The keystone of shelter life is the warden. If there is a good warden there is a good shelter. Women wardens, especially the motherly type not younger than 40, are in most instances more suitable than men. In its recent memorandum the Ministry of Health has recommended the employment of women wardens in the proportion of one to four or five men. It would be advantageous if the proportion in the large shelters—that is, those holding 500 and over—were at least one woman to two men and in smaller shelters one woman to one man. Two large provincial authorities prefer women wardens to men as they find they are more conscientious and have a better influence in the shelters.

No doubt shelters will be developed and improved still further. The shelter problem is by no means solved. Perhaps when the solution is reached and the perfect shelter makes its appearance the need for it will have passed away.

COLLAPSE THERAPY IN PULMONARY TUBERCULOSIS

The benefit that individual patients derive from collapse therapy is now generally admitted. The opposition by some workers to its wider application therefore needs examination. It is sometimes maintained that the proportion of cases suitable for this treatment is very small, because usually either the disease will heal with a sanatorium regime or rest in bed, or it is already too advanced. In this view the time factor is considered of little importance, and the fact that indications for collapse vary with the experience and skill of the treating team of physician and surgeon is ignored. Sometimes, also, published results are quoted to show the slight benefit gained by large groups of patients from individual collapse methods. We have already pointed out¹ that the results can be truly assessed only when collapse therapy is regarded as a whole, for the decision to use it implies that "the least serious method

applicable to the particular case will then be chosen, to be followed by others the choice of which will depend on the effect obtained by the first." Other workers appear to regard collapse therapy as a substitute for rest in bed, and not as an ancillary method which, if good results are to ensue, must be supported by complete rest until quiescence is established. Others, again, stress—perhaps overstress—the difficulties and potential complications, which, in fact, largely depend on proper choice of method and conduct of treatment. They tend to consider the more drastic methods of collapse to be almost reckless, and their caution is supported by the belief that "chronics," if left alone, carry on for years a comfortable though restricted life. But this expectation is not supported by vital statistics, and pays scant regard to the personal factor—that is, the various circumstances on which the patient's life will depend.

Up to the present collapse therapy on a scale that might be expected to influence fatality rates in whole communities has been practised in very few centres. It is not surprising, therefore, that Drolet in his statistical studies² found that "surgical treatment," and incidentally "sanatorium treatment" too, has so far had little effect upon these rates. (A source of error may have been introduced by Drolet in his calculations, as suggested by Bogen³ and recently emphasized by Potter.⁴) We have already drawn attention⁵ to results of widely applied collapse therapy, and this must be taken to mean its use at an early stage of treatment. Results recently given by Potter⁶ deserve publicity. A follow-up study was made of two groups of patients: the first, treated in sanatorium between 1926 and 1932, consisted of 1,458 patients, of whom 6.2% received collapse therapy; the second, treated between 1932 and 1938, consisted of 1,619 patients, of whom 61.2% "were subjected to one or a combination of the procedures of pneumothorax, phrenic interruption, and thoracoplasty." The radiographs taken of all patients on their admission were reviewed, and the present criteria of the American National Tuberculosis Association were used in classifying the stage of the disease. In each case the course of the disease was followed by serial films and/or clinical observations. The groups were found to be comparable with one another in age and in extent of tuberculosis. "Far advanced disease" existed in 88% of each group.

From the period between 1932 and 1938 only 19 patients could not be traced. In this group there were 151 patients in whom disease was controlled by rest alone. For 276 the outlook was considered hopeless from the beginning, and the remaining 992 were considered suitable for collapse therapy. In 378 (38%) of these the collapse was effective: at the end of the six-year period 323 were working or ambulant, and 13 (3.4%) had died. In 553 pneumothorax was abandoned and other forms of collapse proved ineffective: 81 of these were working or ambulant (in 49 the cavity closed spontaneously), and 240 had died. In 61 the collapse was effective on one side but there was a cavity in the contralateral lung; 30 were working or ambulant and

² *Amer. Rev. Tuberc.*, 1938, 37, 125.

³ *Ibid.*, 1939, 39, 597.

⁴ *Ibid.*, 1941, 41, 587.

⁵ *Ibid.*, 1941, 41, 184.

⁶ *British Medical Journal*, 1938, 2, 75.

¹ *British Medical Journal*, 1936, 2, 1267.

² *Ibid.*, 1938, 1, 1212.

4 had died. (Potter also gives figures to show the good remote, as well as immediate, results of effectively collapsed cases.) When the 1,458 patients treated in 1926-32 were classified according to the stage of tuberculosis and indications for collapse therapy (by the same standards as the more recent group, 109 being untraced), it was found that collapse therapy should have been attempted in 801. According to the follow-up findings in the 1932-8 group effective collapse might have been anticipated in 38%—that is, in 305 patients; only 3.4% of these (that is, 10 patients) should have been dead at the end of the six-year period in 1932. Actually 222 had died by then. Comparing the whole of each group of patients, Potter found that at the end of the six-year period 1926-32 1,026 of the 1,458 traced patients (that is, 76%) had died; 109 were untraced, and it may reasonably be expected that a large proportion of these died too. At the end of the six-year period 1932-8 only 708 (or 44% of the 1,619 patients) had died (19 patients being untraced).

These figures appear to be the most convincing yet brought forward to prove the value of collapse therapy. But we agree with Potter when he says: "We do not mean to imply . . . that the results in effective collapse therapy are entirely responsible for the difference in the total death rates in the two periods, for more energetic application of bed-rest, and the clinical improvement in the ineffectively collapsed cases which not infrequently followed, served to prolong life in the patients treated in later years."

INEFFICIENT STEAM STERILIZATION

Puerperal tetanus, of which a case was recorded in this *Journal* last month by MacLean and Challen,¹ is an exceedingly rare disease, and when it occurs its origin may be in doubt. Nevertheless the fact that Pulvertaft² was able to attribute a case of tetanus after hysterectomy to infection from an unsterilized vulval pad led, by way of a request from the Medical Officer of Health for the County of London, to the appointment by the Royal College of Obstetricians and Gynaecologists of a committee to investigate the possible transmission of anaerobic infections by surgical dressings, with special reference to vulval pads as a source of tetanus. This committee has now issued its report.³ Two of its nine members were bacteriologists, Dr. G. W. Goodhart and Prof. J. McIntosh, and they undertook an investigation of the properties of cotton-wool which took them into factories as well as laboratories, the results of which make it perfectly clear why this material invariably contains spore-bearing bacteria. Brown cotton-wool undergoes no chemical treatment, and therefore contains bacteria from the soil in which it was grown. White cotton-wool is bleached by boiling in alkali and subsequent treatment with chlorine, and this process sterilizes it, but after washing in water—a treatment which at the factory investigated loaded it with cocci owing to the multiplication of these organisms in a softening plant—it is dried in a current of hot air. The blower fans in the premises examined were close to the floor in such a situation as to suck up dust from crude cotton-wool and even street dirt; cotton-wool is, of course, an excellent filter for particulate matter in air, and the large volume of air necessarily employed served therefore

to recontaminate the material thoroughly. Sporogenous bacteria were in fact cultivated from all samples examined: these included *Cl. welchii* in several cases and proved *Cl. tetani* in one. To filter the air used for drying or to sterilize the material in bulk in the factory may or may not be practicable, but unless and until such a precaution is taken, cotton-wool requires efficient steam sterilization before use for surgical purposes. The committee then inquired into the efficiency of this process as carried out in various hospitals. Their general conclusion is that although the autoclaves were generally of satisfactory design certain features of their use were open to criticism. In some cases those responsible for packing material in drums were unaware that overnight packing can prevent adequate penetration by steam. Sterilization was not always carried out under rigidly controlled conditions of time and temperature; and sometimes, when such conditions were observed and the apparatus furnished automatically a graphic record of working, it was no one's business to inspect this and to reject any batch of dressings for which the record was unsatisfactory. Periodic tests were not always made, and when made consisted in some cases of observing colour changes in capsules, a method of test which is considered unreliable. The report therefore makes detailed recommendations about the manner of using autoclaves, the main points in which are loose packing of drums, evacuation to a negative pressure of 20 to 25 inches of mercury, the maintenance of a steam pressure of 20 pounds for 20 minutes, and a monthly bacteriological test with spore-bearing anaerobes. If steam sterilization is so often imperfect, it may well be asked why accidents consequent on it are so rare. The probable answer is that previous washing frees such articles as towels of most of their bacteria, and cotton-wool, though in a class apart owing to the regularity with which it is contaminated with resistant bacteria, is not ordinarily used in such a way that infection from it is likely to occur.

HEALTH IN THE SOVIET UNION

The Society for Cultural Relations with the Soviet Union arranged in London a largely attended week-end school for teachers, when various aspects of Soviet life were demonstrated. One session was devoted to health and medical services. Dr. Joan McMichael, who travelled extensively in Russia shortly before the war, described the preventive aspect from which the Soviet Government approaches these problems. Free medical treatment is the right of every Soviet citizen according to Article 120 of the Constitution, and the surveillance of the Government extends from a little before the cradle (ante-natal services) to a little beyond the grave (the storage of healthy cadaver blood in the institute at Moscow). Dr. McMichael paid special attention to the school health services, where a great deal seems to be done by the children themselves. In the upper classes of Soviet schools the children elect their own health inspectors, one of whose duties is to keep a daily diary, noting all absences, with a view to the early discovery of infectious illness. The children also elect five or six of their health inspectors to attend the municipal schools health assembly. During an anti-malarial campaign throughout the Soviet Union the children were encouraged to work in their own laboratories on the problem of the malarial parasite, and at an all-Union conference on malaria in Moscow these children sent along their own representative, who contributed some original work on the subject which was highly acclaimed. Dr. McMichael praised the ingenuity of the Russians in

¹ *British Medical Journal*, August 30, 1941, p. 322.

² *Ibid.*, 1937, 1, 441.

³ *J. Obstet. Gynaecol. Brit. Emp.*, 1941, 48, 374.

giving health subjects a popular appeal. The museums in Russia, including the health museum with its models and films of health and sanitation services, are crowded at every hour of the day. The nearest equivalent to the Soviet polyclinic is one of our large health centres with some introductions from the out-patient department of a voluntary hospital, but it is quite separate from the hospital, and, although there are beds for examination purposes, there are no in-patients. A dietetic restaurant is attached to all these polyclinics. Consulting-rooms and equipment are, of course, provided by the State, but the patient can see his or her own doctor and can be referred by him to a specialist in the building. If the patient's doctor has reason to believe that the working or housing conditions of the patient are deleterious to health he has the right to make personal investigations and to recommend changes to the management. Soviet hospitals, Dr. McMichael said, did not greatly differ from hospitals elsewhere, but one unusual feature was the monthly or fortnightly conferences of the whole hospital, including the staff from consultants to ward-maids, and the patients. The ambulance service in Moscow is so organized that if an accident occurs anywhere in the city the victim is brought to the central hospital within eight minutes, where a surgical team awaits him and blood transfusion is given if necessary. She spoke of many other features of Soviet life, such as the dairy kitchens and breast-milk stations attached to the maternity and child welfare centres, and the statement of protein, carbohydrate, and fat values given on the menus in the State restaurants.

COMPULSORY PASTEURIZATION IN ONTARIO

In 1938 the Province of Ontario, convinced that further progress in rendering the milk supply safe needed something more than voluntary effort, decided upon compulsory legislation. An amendment to the Public Health Act was therefore introduced making pasteurization compulsory in all cities and towns irrespective of the size of the population. Provision was also made for applying the Act by Order in Council to any other area recommended by the Minister of Health. The purpose of this clause was, of course, to bring in at a later date rural areas, pleasure resorts, and other places that were likely to present special difficulties at the start. One important feature of the Act is the requirement that all milk must be pasteurized in plants that have been approved by the Provincial Department of Health, and that a yearly certificate of approval must be obtained for each plant to show that it is still conforming to the official demands. Anyone familiar with the lack of uniformity of control in Great Britain, where pasteurizing plants are licensed by local authorities often having little or no knowledge of the important factors concerned, will appreciate the wisdom of this enactment. Though this legislation has been in operation for only two years, considerable progress has been made. According to Dr. A. E. Berry,¹ Director of the Division of Sanitary Engineering in the Ontario Department of Health, 27 cities and 147 towns came automatically under the Act. Seven different Orders in Council have since been passed designating villages, townships, and rural areas. All villages and police villages of 500 inhabitants or over have been brought under the Act, and many smaller communities are likewise included. It is estimated that over 98% of all milk now sold in Ontario for consumption in the fluid state is pasteurized. To do this 813 licensed plants are necessary

—a figure probably more than double that for the rest of the Dominion. Difficulties have been encountered, as was to be expected, but on the whole progress has been remarkably rapid and opposition has not been serious. By exonerating local authorities from the necessity of deciding for or against pasteurization—a decision that had formerly to be taken by bodies largely untrained in public health methods—and by insisting on uniform requirements for all pasteurizing plants in the Province, it has removed two important obstacles to a progressive programme of milk control. The difficulty of providing sparsely populated rural areas with adequately pasteurized milk is proving by no means insuperable. Plants have been established at convenient centres from which milk can be delivered over relatively wide areas. It is as yet too early to say what the effect on the eradication of milk-borne diseases is likely to be, but it is interesting to note that the typhoid fever death rate in 1939 was halved, that cases of undulant fever were reduced by about 45%, and that a substantial diminution was apparent in the infantile mortality rate. Ontario is to be congratulated on being the first large area in the British Empire to introduce compulsory pasteurization. It is to be hoped that others will soon follow its example.

INTRAPERITONEAL SULPHANILAMIDE

It was only after four years of its systemic use that sulphanilamide began to be tried extensively as a local application. No one regarded it as an antiseptic in the ordinary sense until the work of Fildes and his collaborators explained the mechanism of its action; for the mystification which preceded this we have chiefly to thank those German and French authors who maintained that its action on bacteria was indirect and in some unspecified way required the co-operation of the body as a whole. For a year or more now sulphanilamide powder has been proving its worth as an application to infected wounds, whether as a prophylactic or for the treatment of chronic infections, particularly streptococcal. No doubt other uses of this kind will be found; dermatology appears to afford an extensive scope for trials of the method, and possibilities of successful local application of sulphathiazole in the upper air passages are envisaged by M. E. Delafield and Edith Straker¹ in a recent issue of this *Journal*. Now a further new use for sulphanilamide has been found by S. Rosenberg and N. M. Wall,² who advocate its local use 'in peritonitis—an interesting suggestion, because, although these authors do not refer to it, some of the earliest experimental work on sulphonamide compounds has a bearing on this method of treatment. The peritoneum was the battleground of a controversy between Levaditi on the one hand, who maintained that local introduction of the drug in streptococcal peritonitis in mice was ineffective, and argued hence that sulphanilamide had to undergo some change elsewhere in the body before it could act, and Colebrook on the other, who found that intraperitoneal injection of the drug was effective. We now know, of course, that there is no *a priori* reason why sulphanilamide should not act locally in peritonitis provided that the bacteria concerned are susceptible to it, that adequate distribution can be achieved, and that the drug persists *in situ* long enough to secure a useful effect. Rosenberg and Wall first tested the method in rats, giving them an intraperitoneal injection of cultures containing coliform bacilli and various nondescript cocci made from cases of suppurative appendicitis or peritonitis.

¹ *British Medical Journal*, 1941, 2, 221.
² *Surg. Gynec. Obstet.*, 1941, 72, 568.

¹ *Canad. publ. Hlth. J.*, 1941, 32, 208.

and treating them by intraperitoneal injection of sulphanilamide suspended in saline. This treatment saved about half the animals if applied immediately, and some even if delayed; it appeared to be more effective than subcutaneous injection of the drug. It has since been tried in ten patients with peritonitis, mostly of appendicular origin, with encouraging results, quantities of from 1 to 4 grammes of sulphanilamide powder being "placed" in the peritoneal cavity at the end of the operation: this treatment was usually followed by systemic administration, the subcutaneous route being chosen. Although a few observations were made on blood sulphanilamide levels after this initial procedure, it is clearly desirable to know more about the rate of absorption from the inflamed peritoneum, and to discover if possible what degree of diffusion takes place in the peritoneal cavity itself: it is a little difficult to picture the dispersion of such comparatively small doses throughout the area affected in a widespread peritonitis. Further observations should also take account of the nature of the infection, including anaerobes: these were apparently eliminated from the inoculum in these authors' animal experiments by the method of cultivation employed, and they are disregarded in the clinical reports. It is by no means certain which of the very various bacteria escaping from a perforation in the lower part of the alimentary tract are chiefly responsible for the damage which ensues, and their susceptibility to sulphanilamide varies greatly, *Streptococcus faecalis*, for instance, being completely resistant to it. Such studies might even throw some light on the alleged complicity of *Cl. welchii* toxaemia in producing the graver manifestations of peritonitis.

PASSING OF ANTI-PNEUMOCOCCAL SERUM

We have discussed on several previous occasions the possible future of serum treatment in pneumonia. So far as we are aware, in this country it is dead or at least moribund, but its progress here has always lagged far behind that in the United States, and general adoption of the method would have been a slow process even in the absence of competition by chemotherapy. In America serum treatment and all the diagnostic facilities which it demands have in many centres been organized to perfection, and produced solid and striking results on a scale unapproached elsewhere. It is from there that the final judgment on the future place of serum in treatment must come. Since the first somewhat sceptical reception of sulphapyridine in America opinion has slowly veered towards increasing emphasis on the value of chemotherapy and less on that of serum. Alternation of the two treatments for the sake of comparison ceased some time ago, and nearly all patients receive chemotherapy. But the list of alleged indications for giving serum in addition or even, exceptionally, alone has remained considerable: these, as reviewed in our columns a year ago, were said to include hepatic and renal disease, disorders of the blood-forming organs, extensive consolidation, profuse bacteraemia, advanced age, and pregnancy. Combined treatment also had the sanction of well-attested experimental support: mice, in this as in other infections, respond better to serum plus drug than to either alone. Although this position might well have been sustained indefinitely, a further stage in the displacement of serum treatment to a minor role seems to have been reached in the studies of N. Plummer and his colleagues¹ at the Bellevue Hospital, New York. In all their 607 cases chemotherapy was begun as soon as specimens of blood and sputum had been obtained: the type of pneumococcus was determined, and as soon as this

information was available alternate cases of each type were also given concentrated rabbit anti-pneumococcal serum. The two series are therefore as strictly comparable as the design of this study could make them; and an analysis of their clinical features also shows uniformity between them. When a case due for serum treatment had already responded to chemotherapy when a type diagnosis was forthcoming serum was not given, but the case remains for the purpose of assessment in the drug-plus-serum group, a policy which tends perhaps to flatter this treatment: to remove the case from this group would of course unduly weight the scales in favour of chemotherapy alone. Among 306 patients treated by chemotherapy alone there were 34 deaths, a mortality of 11.1%: of 301 patients receiving drug and serum 44 died, or 14.6%. The exclusion of deaths within twenty-four hours of starting treatment reduces these mortality rates to 9.3 and 9.8% respectively. The trivial difference between these figures persists throughout a closer analysis: there is no greater difference whether the cases were treated early or late, whether they were in the higher or lower age groups, and whether or not they had bacteraemia—a feature the incidence of which in this series was 20.6%. Composite temperature records of the Type I and Type II cases show an almost identical rate of fall in both forms of treatment. There is no important difference in the frequency of various complications; 10 patients diagnosed as having pneumococcal endocarditis and 7 complicated by pneumococcal meningitis all died whether serum had been given or not. The drugs used were sulphapyridine in three forms, sulphathiazole, sulphamethylthiazole, and sulphadiazine, and there is little to choose between them, but the three last named were used in too few of the cases for any exact conclusions to be drawn about their relative merits. It should be added in explanation of the fairly high gross mortality that all cases of pneumococcal pneumonia were included, regardless of their distribution or origin; in a large proportion of the fatal cases pneumonia was a complication of some other serious disease.

The authors' final conclusion is inevitably that serum need be given only to those patients who cannot tolerate sulphonamide treatment, or who do not respond adequately to it within twenty-four or forty-eight hours. This second indication is open to argument, and the first, strictly interpreted as meaning patients who have previously had severe toxic reactions, is a rarity. It has to be remembered that the production of concentrated serum for treating the many different types of pneumococcal infection is a laborious and costly process, and increasing restriction of indications for its use may reduce demand to an uneconomic supply level. Will anti-pneumococcal serum, though a far more potent therapeutic agent, go the same way as anti-meningococcal?

The Czechoslovak Executive Committee of the recent meeting of Czechoslovak-Polish doctors has sent the following message to the British Medical Association: "The members present at the meeting of Czechoslovak-Polish doctors, held in Edinburgh on September 11 and 12, unanimously decided to send their best greetings to their colleagues in the British Commonwealth of Nations. The present period, in which the fate of humanity is being decided, emphasizes the exceptional importance of the close co-operation of all democratic medical science, as well as the early reparation of the severe deterioration in health caused by the war let loose against democratic forces, and also for closer medical co-operation in all its spheres after the war. The Czechoslovak and Polish doctors are looking forward with all their hearts to this collaboration with the British medical world."

¹ *J. Amer. med. Ass.*, 1941, 116, 2366.

A PROCEDURE FOR THE TREATMENT OF GAS CASUALTIES

BY

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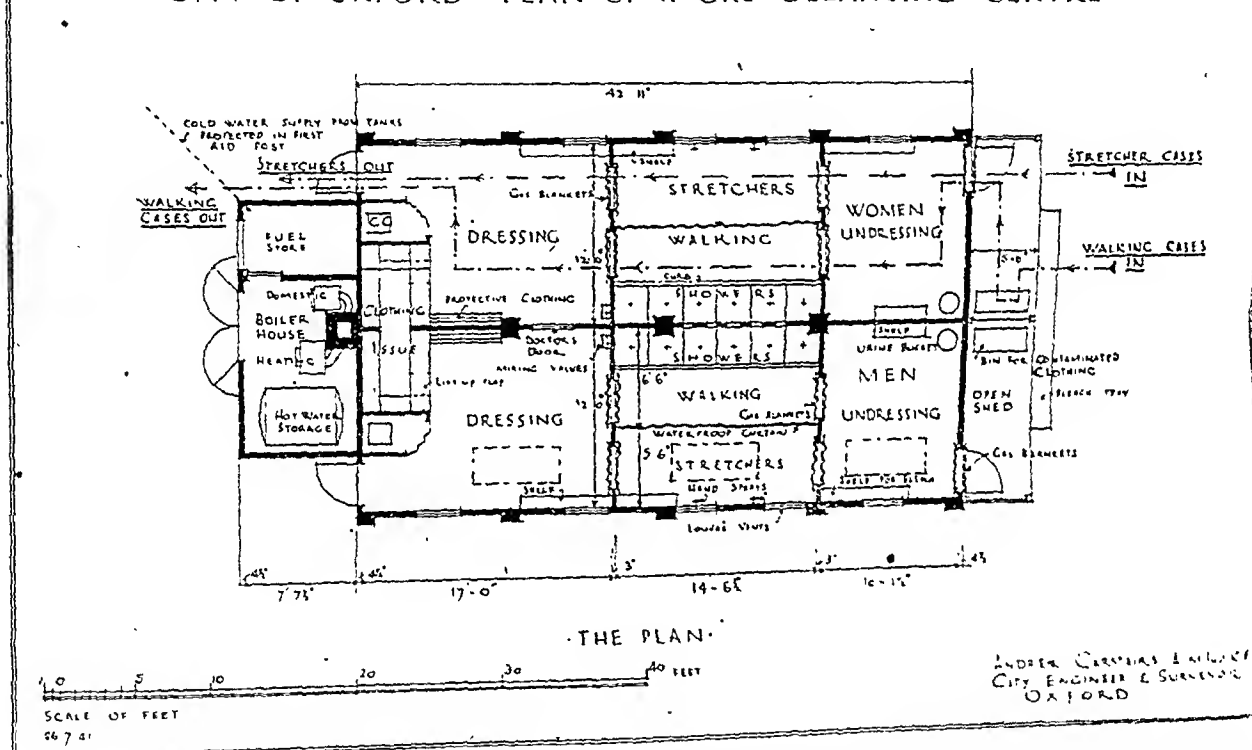
The cleansing of gas casualties presents two major problems: first, the treatment of the gas burns on the body surface; secondly, the marking, cleansing, and returning to the rightful owners of all gas-contaminated clothing. From the nature of the physical and pathological processes underlying vesication by blister gases it is at once obvious that excessive elaboration of the second of these two

divided into male and female sides, each side consisting of a stripping-shed, an undressing-room, a shower-room, and a dressing-room, with a common equipment store. The city engineer has kindly permitted us to publish a copy of the plans, from which the general lay-out of the various rooms may be seen; this may be compared with the plan recommended in the Ministry of Health Circular No. 2241 (December, 1940).

Personnel

Efficiency and smooth running cannot be obtained if the centre is understaffed. In our opinion the minimum number of workers in each room on each side is two. In addition to the two workers in each stripping-shed the superintendent, if male, should be in charge of the outside workers on each side, and should be responsible for the orderly admission of casualties to the centre. If the superintendent is a female then a third responsible male worker must take charge of the sheds. In the

CITY OF OXFORD: PLAN OF A GAS-CLEANSING CENTRE.



problems will lessen the effectiveness of the treatment applied to the actual burns by reason of the delay necessarily involved. To obtain the most satisfactory results speed is essential, and we must aim at securing a system of marking clothes for subsequent identification which will not unduly delay the starting of treatment. The problem is further complicated by the fact that only a limited amount of protective clothing is available for any one cleansing centre, so that the number of workers is thereby limited.

In view of the special difficulties attendant on the decontamination of gas casualties and the general organization of cleansing centres we feel that it may be of some value to describe a procedure, based on the official recommendations, which has been worked out and tested at a cleansing centre in Oxford. If this description serves only to call forth criticism of the procedure adopted it may direct the attention of the authorities concerned to some practical but none the less important problems.

In conformity with the official regulations the building that has been erected to house the cleansing centre is

shower-room one worker shall be responsible for douching the eyes of all casualties, while the other is in charge of the showers. It would add greatly to the efficiency of the centre to have a third worker in this room to assist with the eye-douching.

Following on the principle of stationing a responsible person in the stripping-shed to be in charge of admissions, we have decided that it is of greatest advantage for the medical officer to limit, if possible, his activities to the shower-room and dressing-room. By so doing he can work without the hindrance of protective clothing, can direct the treatment of any serious eye lesions, and can supervise general first-aid measures in the dressing-room. Of the two workers in each dressing-room one shall be responsible for all clerical work (patient's name, address, nature of injury, etc.); the other will supervise the dressing of casualties and will carry out first aid where required. In addition, one or two workers, depending on circumstances, will be required to take charge of the equipment store and to issue towels and clothing.

Equipment

In order to carry out the procedure of cleansing suggested here the following is the absolute minimum of equipment necessary for efficient treatment of casualties and for safety to personnel:

- 9 protective suits
- 13 pairs wellington boots
- 5 pairs protective gloves
- 5 helmets
- 5 hoods
- 12 pairs rubber gloves
- 5 rubber aprons
- 6 douche-cans with tubing and nozzles
- 2 bleach trays
- 12 buckets
- 6 bins
- 2 boot-brushes
- 4 pairs tailor's shears
- 4 pairs scissors
- 6 hand-basins
- 1 drum dry bleach
- 4 containers for bleach (tins or boxes)
- 10 hurricane lamps
- 5 electric torches
- 4 stools
- Anti-gas ointment No. 2
- Sodium bicarbonate
- Soap
- Wooden spatulas
- First-aid equipment
- Towels
- Sets of clothing
- Civilian respirators

- 1 container of dry bleach (to replenish bleach solution)
- Tray with bleach solution and brush (*Note 1*)
- 1 bucket of bleach solution
- 1 bucket of water
- 2 pairs tailor's shears
- 1 jar anti-gas ointment No. 2
- 2 wooden spatulas
- Hurricane lamps and electric torches
- File of "bag units" (*Note 2*)

Note 1.—The tray should be filled to a depth of about 1 in. with a thick suspension of bleach in water.

Note 2.—The "bag unit" consists of: (1) *Bag A*—A large numbered sack (21 in. wide, 30 in. deep); (2) *Bag B*—A slightly smaller numbered sack to which is loosely fastened a numbered tally attached to string loop for passing over patient's head. Each of the two bags and the patient's tally are identically numbered. The bags are folded up and fastened together with a single loop of cotton or a paper band so as to be readily separable.

Each member of the centre is expected to have been issued with a C.D. respirator. It will be noted that the suggested equipment exceeds the official issue in several respects.

In training the personnel of a cleansing centre it is helpful to divide their functions into: (a) duties of personnel on arrival at cleansing centre—these duties involving the setting-up of the centre in such a way that treatment may start immediately the casualties begin to arrive; (b) duties of personnel during cleansing procedure. It will be profitable here to consider these two aspects of the work separately.

Duties of Staff on Arrival at Centre

The first member of the staff to arrive must open the centre and lower all air-lock blankets. Such members of the centre as have been trained for work in protective clothing should begin to dress immediately on arrival. The first two of these workers to arrive on each side (that is, male and female) will be expected to put on full protective clothing (suits, wellingtons, protective gloves, gas-masks, helmets, and hoods) and to work in the stripping-shed. The next two to arrive on each side will prepare to work in the undressing-rooms, and will therefore put on suits, wellingtons, gas-masks, and rubber gloves. We are well aware of the fact that thin housemaid's rubber gloves do not provide a high degree of protection against mustard gas or lewisite; on the other hand, it is essential that the undressing-room personnel shall be able to work rapidly and, if the need arises, remove difficult articles of clothing unhampered by full protective gloves. We suggest, therefore, that workers in these rooms shall wear medium-thickness rubber gloves and shall take further precautions to decontaminate the surface of these gloves as described later.

Members trained only for work in shower-rooms and dressing-rooms will be expected to carry out their duties immediately on arrival. *Shower-room attendants*, having put on wellingtons and rubber aprons, must adjust the water-mixing valves and test the temperature of the water issuing from the showers. They must then fill the douche-cans with 1 to 2% sodium bicarbonate solution and hang them on hooks ready for use (nozzles should be opened till rubber tubing is filled; this will also ensure that neither tubing nor nozzles are blocked). They must then thoroughly wet all air-lock blankets. *Dressing-room attendants* must first collect and arrange the equipment in the stripping-sheds and undressing-rooms. On completion of this they will assist the dressing of any workers who have not yet finished putting on protective clothing.

When the above duties have been carried out all workers will go immediately to their posts, where they will check over the equipment and await the arrival of casualties.

Cleansing Procedure

The sequence of cleansing takes place in four stages—stripping-shed, undressing-room, shower-room, and dressing-room. The particular function of each stage in the scheme, which not only allows cleansing of the patient but also provides that he shall regain his washed clothing, is as follows:

STRIPPING-SHED

The two workers wear protective clothing, wellingtons, protective gloves, gas-masks, helmets, and hoods. (The personnel and equipment recommended in this and the following sections apply to one side only—that is, male or female.) Equipment consists of:

Procedure.—On the arrival of a casualty the worker picks up a bag unit, detaches Bag A and hangs Bag B on a hook placed in the wall about 3½ feet from the ground. The patient is instructed to stand in the tray of bleach solution, to remove the contents of the pockets of his outer clothing, and to place them in Bag B. The worker meanwhile brushes the boots with the bleach solution. All coats, skirts, and hats are now removed from casualties and placed in Bag A; any other clothing obviously contaminated with liquid gas is also to be removed and placed in Bag A. After brushing with bleach solution the boots are removed, laces being cut to speed up the process if necessary. The boots are then dipped in a bucket of water to remove excess bleach, which would otherwise damage clothing, and are then put into Bag A. Bag A is now placed in a bin to await removal to a laundry. If it is desired that each article of clothing sent to the laundry should be numbered, the contents of Bag A can quite simply be numbered individually, using safety-pins, on arrival at the laundry, or at the cleansing centre after all casualties have been treated and sent away. If splashes of gas are observed on exposed skin or hair they are treated with anti-gas ointment No. 2, applied with a wooden spatula (wooden tongue-depressors serve excellently); if obvious erythema of the skin has already developed no ointment is applied. The patient now takes Bag B and passes into the undressing-room.

It is important that the floor of the shed shall be swilled down with bleach solution, from the bucket provided, at the starting of work and at intervals thereafter.

UNDRESSING-ROOM

The two workers wear protective clothing over underclothes (or protective aprons over boiler-suits), gas-masks, wellingtons, and medium-thickness rubber gloves. The equipment is:

- 1 container of dry bleach
- 1 bucket of bleach solution
- 1 bowl of bleach solution and 1 of water
- 2 pairs scissors
- Anti-gas ointment No. 2 and spatulas
- Several changes of rubber gloves
- Latrine buckets
- 3 bins

Procedure.—Each patient is instructed to undress completely as rapidly as possible and to place his clothing in Bag B, which he has brought in with him; for speed it is desirable that the bags should be hung on hooks to facilitate the insertion of clothes. If either of the workers detects any heavily contaminated clothing that has escaped removal outside, this is to be removed from the patient and placed in a bin labelled "Clothes"; this clothing will ultimately be destroyed or, if national policy dictates that no clothes are to be destroyed, numbered pins may be attached to Bag B, one of which would now be fastened to the clothing before placing in the bin. The clothing can then be decontaminated and returned to the owner. Patients are also instructed to remove their gas-masks last, unless they are liquid-contaminated: gas-masks are then placed in a bin labelled "Respirators" for subsequent recovery. Any liquid splashes on the skin or on the hair are to be treated with anti-gas ointment No. 2 if this has not already been done. When the patient is completely undressed the numbered tally is detached from the bag and hung round the neck, and he is then passed through to the shower-room carrying his bag. In view of the limited protection afforded by the rubber gloves worn in

this room workers must be instructed to dip their gloved hand in the bowl of bleach solution provided, followed by rinsing in water, as often as possible—e.g., at five-minute intervals; further, if the gloves become liquid-contaminated they must be changed at once for a fresh pair, after washing the hands in bleach, and the contaminated gloves placed in a bin; they can later be decontaminated by boiling for two hours.

The floor of the undressing-room must be swilled down with bleach solution at the beginning of work and at intervals thereafter.

SHOWER-ROOM

The two workers wear rubber aprons over boiler-suits and wellingtons. The equipment consists of:

- Soap
- 3 douche-cans for eyes, containing 1 to 2% sodium bicarbonate solution
- 2 stools

Procedure.—On entering the room each patient, after being instructed to sit on the stool provided, is to have both eyes well irrigated. He is then instructed to step under a shower, having previously put his bag in some convenient place. When thoroughly wet he steps out from the shower and soaps his entire body; on completion of this he gets under the shower for a final rinse. Particular attention must be paid to wetting and soaping the hair. The patient finally picks up his bag and passes through to the dressing-room. If for any reason patients are unable to wash themselves this will be done by the workers, who will in any case supervise all washing.

DRESSING-ROOM

Each patient is now handed one towel and one set of clothing. Before leaving, his name and address, particulars of any injury, and number on bag are taken down. The neck-tally is given up, and he is issued with a form giving instructions as to the method of decontamination of the contents of Bag B. Ideally the contents of Bag B should be uncontaminated; in practice, however, it is very possible that this will not be the case, and we feel that in the interests of safety the bag and its contents should always be decontaminated. It is suggested that the form be worded as follows:

WARNING

The contents of this bag are dangerous. They must not be taken into the house, and cannot be used with safety until they have been decontaminated as follows:

First empty all pockets and spread the contents, together with any other loose valuables, on the ground in such a way that they are not likely to be blown away or spoiled by rain. Leave for not less than forty-eight hours. Keys and other metal objects may be taken into the house directly and decontaminated by boiling for one hour in plain water.

All clothes and the empty bag should be hung out of doors and left for not less than forty-eight hours; all articles that will stand it should then be boiled for two hours in plain water.

Immediately after handling these articles the hands must be well washed with soap and water.

The empty bag is subsequently to be presented at the distribution centre in exchange for the decontaminated outer clothing.

When the attendant in the dressing-room is satisfied that all these steps have been carried out, the patient is provided with a fresh gas-mask and is allowed to leave the building.

Discussion

In order to prevent vesication after contact of the skin with mustard gas or lewisite it is well known that treatment with soap and water must be begun within ten minutes, and that this interval should be reduced as much as possible if the best results are to be obtained. If contamination of the eyes has occurred early treatment is even more essential.

The decontamination procedure outlined above is an attempt to define and standardize the duties of the various workers at a cleansing centre in such a way that washing with soap and water may be started at the earliest possible time coincident with (a) a system of marking the clothing for subsequent identification and (b) the safety of the personnel of the centre. In the interest of speed, therefore, we have attempted to eliminate so far as is possible the responsibility of any member of the personnel to decide whether contamination of a particular article of clothing or of any part of the body has or has not occurred. It is for this reason that we have adopted the policy of removing all outer clothing in the stripping-shed and of irrigating the eyes of every casualty. At the same time, if, in the course of his duties, a worker happens to detect gross contamination of the skin or hair we have suggested that anti-gas ointment should be applied in case of any subsequent delay in getting under the showers. Anti-gas ointment will also obviously be of use in the accidental contamination of any of the workers. Further, it is in order to accelerate the process of undressing that we have adopted the use of rubber gloves in place of the official protective gloves for the workers in the undressing-rooms.

In view of the difficulty experienced by workers in giving verbal instructions to casualties while wearing respirators we suggest that notices printed in bold type should be exhibited in the stripping-sheds and undressing-rooms, giving concise instructions concerning the more important points of procedure. The notices that we are using are worded as follows:

For the stripping-shed:

READ THIS

1. Do not remove gas-mask.
2. Step into bleach tray.
3. Place contents of pockets in small bag.
4. Remove outer clothing and place in large bag.
5. Remove boots and give to assistant

Act Quickly and Obey Orders.

For the undressing-room:

READ THIS

1. Do not remove gas-mask.
2. Undress quickly and place clothes in bag.
3. When undressed go to assistant.

In the event of a large number of casualties arriving for treatment it would be helpful to exhibit a notice in the dressing-room giving instructions that no one must leave the centre before being issued with a new gas-mask; it will be remembered that these are not issued until the workers are satisfied that all other formalities have been carried out.

One of the greatest difficulties that we have experienced in training several teams of workers is the irrigation of the eyes: if blepharospasm is present it will be almost essential for the medical officer to take charge of the douching. In order to be in any way effective irrigation must be copious, and we are of the opinion, therefore, that three douche-cans should be an absolute minimum in any shower-room; on this basis two cans can be in use at any time, with a third in reserve to be used while the others are being refilled. It should be pointed out that if the employment of sodium bicarbonate solution involves any delay in filling or refilling the douche-cans warm water should be substituted; if douche-cans are unavailable or if any difficulty is experienced in their use by members of the personnel a large teapot will serve excellently and will have the added advantage of greater capacity. It will be noticed that in this procedure irrigation of the eyes is carried out in the shower-room. In spite of the fact that irrigation

should be begun at the earliest possible moment after contamination we are of the opinion that this should not be done by workers in the undressing-room; these workers will be wearing respirators and rubber gloves, and we feel that under these conditions it would be almost impossible to irrigate contaminated eyes effectively, and that an attempt to do so would only cause delay and possibly spread contamination. It might be argued that it is neither necessary nor even advisable to wash the eyes of every patient, and that it would perhaps be an advantage to restrict irrigation to those with obvious contamination of the eyes or who give a history of suspected contamination. All casualties, however, should be instructed to seek medical advice if ocular symptoms develop in the course of the next twenty-four hours.

The treatment of liquid-contaminated hair presents a difficult problem. Undoubtedly the most satisfactory method would be to cut off the affected hair; such a practice, however, particularly in the case of women casualties, might be strenuously opposed, so that a considerable delay might occur while persuading the casualty to allow the hair to be cut. It is for this reason that we have proposed the application of anti-gas ointment to the contaminated patch, while at the same time issuing instructions to the personnel to cut off the hair if this can be done quickly and with the consent of the patient.

We have not attempted to discuss here the difficult question of the cleansing of those who are also wounded. With a personnel trained in first aid most minor cases could almost certainly be taken by following this procedure. Stretcher cases obviously present special problems, though in a sense the treatment is simplified, since in these cases the marking of all clothing for subsequent identification is of very secondary importance.

Conclusion

We would like to point out that we are presenting an account of the above procedure solely because of the lack of detailed guidance that has been offered with respect to the many difficult problems arising during the working of a public cleansing centre. The only claim that we make regarding the procedure is that it has been tested at many practice exercises, and the cleansing of unwounded patients has been carried out with, we feel, the minimum of delay.

We would like to thank Dr. G. C. Williams, the medical officer of health, and the staff of the public health department of the City of Oxford for the help they have unfailingly given us in the organization of this cleansing centre; and also the personnel of the centre for their ready attendance at many practice exercises. Our thanks are also due to Dr. R. B. Fisher for many helpful suggestions.

GALLANTRY IN CIVIL DEFENCE

In a *Supplement* to the *London Gazette* dated September 12 the award of the M.B.E. (Civil Division) to Dr. JOHN JOSEPH MCCARTHY, medical officer, mobile unit, Islington, is announced. The announcement reads as follows: "Bombs demolished houses, gas and water mains were fractured, and people were trapped in the wreckage. Dr. McCarthy worked with the rescue party and repeatedly entered a gas-laden tunnel to attend to casualties and administer oxygen to a trapped man."

The name of Dr. GRACE ELIZABETH MCCONKEY, medical officer in charge, first-aid post, Liverpool, has been brought to notice for brave conduct in civil defence.

The names of Dr. GEOFFREY GORHAM HOLMES, medical officer, mobile first-aid unit, Bishop's Stortford, and Dr. GAVIN HAMILTON LIVINGSTONE, surgeon, Oxford, have been brought to notice for brave conduct when aircraft crashed and caught fire.

STATE OF PUBLIC SHELTERS IN LARGE CITIES

SUMMARY OF RESULTS OF SPECIAL INVESTIGATION

The shelter situation in London, in particular the improvements which have been effected since last winter, was the subject of an article in the last issue (p. 414). Below are summarized the results of an investigation on behalf of the *British Medical Journal* which has extended to seven principal cities of Great Britain. Once again we have to acknowledge the very great courtesy and help afforded by the officials of the various authorities concerned and by representatives of voluntary agencies. All the information set down has been obtained at first hand by personal visits to different types of shelters in the various towns.

In the large cities of Great Britain the shelter problem is much the same as in London, except that when raiding occurs it is likely to be more concentrated and therefore more devastating in its immediate effects upon the community and the public services, so that a larger proportion of the population seek shelter. In Liverpool, for example, it is estimated that 75% go to shelter every night, and 95% if there is an "alert." Another feature of badly raided cities which does not present itself in London is the nightly trek out of the city into the country. Outlying parish halls and such places have been sometimes opened up for these refugees, but many sleep in buses, others go to barns and other farm buildings, and not a few sleep in hedges and fields, with deleterious results to health.

The Position in Bristol

Bristol has 1,150 shelters, including communal and surface, but not Andersons. The city is divided into five sections for A.R.P. purposes, each division with its own organization, which is co-ordinated by central control. There are eleven medical aid posts, with nurses in attendance and doctors at call. Doctors must, however, be summoned by a responsible official, but in addition they visit shelters for routine health inspection. There are first-aid points in every dormitory shelter, which can be opened by nurse or doctor. One or two dormitory shelters have their own canteen, but the authorities discourage the making of shelters into "clubs." Dormitory shelters are sprayed and cleaned out every day. Very little infestation has been noted. The number of children who go regularly to the shelters—about 1,200 even in the middle of summer—gives rise to some disquiet.

One of the Bristol shelters is a tunnel, in which thousands of people congregated under very bad conditions at the beginning of last winter. The tunnel has now been lined with corrugated iron and turned into quite a good shelter, with a first-class medical aid post, built by the shelter marshal, a former Navy man. Nurses with V.A.D. training visit during the day the homes of the frequenters of small shelters. Bristol insists on bedding being removed from shelters every day.

Some very good concrete surface shelters were found in Bristol, but they were unused, although superior to some basements for which the public showed a preference. Some of the basement shelters seemed cold and gloomy. One, however, under a factory was well aired and warm. Cura stoves are being fitted in the trench shelters.

Shelters at Cardiff

There are groups of ten to twenty shelters, each shelter being something over 30 ft. long, with roofs, walls, and floors of solid monolithic construction, and with a layer of concrete skin on the foundations, the value of which is stated to be that should a bomb fall in the vicinity, while the building might "bounce," it would immediately return to its original position. Each of the two hundred or so buildings is to contain 48 bunks in two tiers, with reasonable space between each, and a plywood screen at the bunk head to prevent droplet infection. The sanitary

annexes are in reinforced brick. Both water-closets and chemical closets are provided for each building, but the chemical closets remain closed unless there is interference with drainage and water supply. The buildings, all of the same pattern, are well ventilated by extractor fans, the bar type of electrical heater is fixed to the walls, and water is on tap. Each group has a medical aid post. At shelters situated from two to five miles from the people's homes it is not possible to insist on the removal of the bedding each day, but airing lines are provided on the adjacent land. At each group there is a paid shelter warden, assisted by a number of voluntary workers, and a superintendent is in charge of the whole service. A debatable matter is the use to which such ambitious building can be put when the war is over. No doubt it can be used for temporary accommodation while the city's rehousing scheme is in progress.

Of the shelters in Cardiff itself the most interesting is the grim but apparently impregnable shelter in the castle wall. The Middle Ages seem back again with the St. John orderlies and nurses on duty all night in the castle gatehouse. Deep basement shelters cannot be provided in Cardiff owing to the nature of the soil and the nearness to sea level, which might result in flooding. No disease is reported from the shelters, and, generally speaking, the health of the city is no worse than in normal years, though there is a certain amount of scabies. Here as in Bristol the curious preference of the public for overcrowded basements under buildings, although good-type concrete shelters were available, to some extent thwarted the authorities.

Dispersal Policy in Birmingham

The shelters in Birmingham consist of large and small basements, trench shelters in bigish groups, a few surface shelters in which no one sleeps, and domestic communal shelters. During the winter the big basement shelters were overcrowded. The general policy of the authorities here is to discourage the aggregation of people in large shelters, but owing to shortage of materials a check has been put upon the number of communal shelters which the city can provide. Birmingham had a partially completed programme of domestic and domestic communal shelters when the Ministry of Health stepped in, and the programme when it is carried through will not be anything like the one originally planned. One of the largest shelters has been closed because it was found impossible to improve its condition. There is only one shelter in Birmingham with more than 500 bunks. Medical aid posts have been installed in some shelters, but in one or two instances have been closed down owing to lack of use.

Chemical closets generally have been installed in the Birmingham shelters. It was stated that the need for water-closets had not been experienced, and that these had the disadvantage of readily becoming fouled and of not being properly cleaned. A point was made of adequate lighting in lavatories as a means of preventing misuse. For artificial heating Cura stoves have been tried but have not proved successful, and preference is given to insulated wire heaters. Fans have been put in basement shelters where ventilation is unsatisfactory. The Birmingham shelters have not been bunked to capacity, which leaves more room for people to move about. A good feature of the steel bunks is the arrangement to ensure a hygienic distance between each sleeper. A criticism which must be made relates to the lighting. In the early days the shelters were lighted fairly adequately, but the people desired the lights to be lowered during sleeping hours, and 15-watt lamps were put in, resulting in far too dim an illumination. In many of the shelters also the only alternative lighting system, should the mains be put out of action, is by candles.

A large amount of the minor medical work in the shelters is carried out by the lay members of the Friends Ambulance Unit, but when it seems necessary they get people to go to their own doctor or the hospital, probably sooner than they would go otherwise. Scabies was reported to be very heavy during spring and summer, just how heavy is not known; but reports from various quarters, including school medical officers and factory surgeons, confirm it. It is attributed to the habit of people of sleeping in their clothes in the home as well as at the shelter. An increase in head-lice infestation has been reported, with odd cases in the shelters.

Manchester's Achievement

One of the most interesting shelters in the country is to be found at Manchester. It has been paved, the walls and ceiling lime-washed, the spaces bayed and bunked, with drinking-fountains, washhand basins, and water-closets to each bay. It has a medical aid post and a canteen. The people who use this shelter are for the most part very poor. The doctor in charge said that at first he and the nurses met with a good deal of hostility, but gradually people became more friendly, and their standards of hygiene are also improving.

Manchester has 380 deep basement shelters, affording accommodation for 75,000 people, and there are innumerable trench and surface shelters as well as a number of private ones. One shelter has been cream-washed, concealed lighting has been put in to very good effect, it has been air-conditioned, and is warmed with Cura stoves in the winter months. Bunks are wooden, with canvas mattresses. There is a medical aid post and a very attractive canteen.

The incidence of infectious diseases in Manchester is said to be lower than ever before. Some 20,000 children have had diphtheria immunization since last February. There has been an increase in scabies, but this began before the shelters were bunked; it has not been traced to shelter life, and is an expected accompaniment of war conditions.

Special Problems in Liverpool

The policy in Liverpool is one of general dispersal, but it is recognized that this is impracticable until the small shelters are made fit for habitation. The authorities here, as elsewhere, have to reckon with the desire of the people for company and for the "feeling" of security which belongs to a basement or a large shelter. Liverpool has also a serious problem, which does not seem to have arisen to the same extent elsewhere, in the extraordinary amount of damage done by children to its brick and concrete shelters. A whole range has had to be pulled down owing to this damage, and photographs make it difficult to believe that the damage has not been done by bombs. It is another illustration of how evacuation and shelter problems interlock.

The shelters are regularly inspected and dirty or lousy bedding is removed. The biggest trouble is reported to have been from fleas, the consequence of demolition work during dry weather. But health conditions generally have been good. One of the largest shelters in Liverpool is in two portions, one fitted with ticketed bunks and the other with unticketed seats on which people can recline. There are heater fans thermostatically controlled, which can also be switched on and off by wardens. The washing places have hot and cold water, and hot-water boilers have been installed. There is an excellent medical aid post, where it was noted that the sink was fitted with surgeon's taps.

The domestic communal shelters are being improved, bunked, adequately lighted, and are having a special type of concrete box heater put in. The shelters are kept locked and the key left with a responsible householder. Some concrete trench shelters are very small but have a high factor of safety. In these narrow shelters the people could never be allowed to forget that an air raid was proceeding, as they might do in larger shelters where there was plenty of movement. A large basement shelter, which was being reconditioned and will be attractive when complete, was also visited. Liverpool is fortunate in its officials, who are doing all they can to bring their shelters to a high degree of excellence.

The Glasgow Shelters

Glasgow suffers to some extent from lack of unified control. The general policy here again is dispersal. Over 15,000 shelters (including Andersons) for single families or other small groups have been put up, and there is actually shelter accommodation of one sort or another for one million persons, nearly equal to the entire population of the city. One type of shelter is peculiar to Glasgow—namely, the strutted close (or entrance to tenement), which has been found to stand even if the rest of the building collapses. Unless raids become much more frequent the Glasgow people will not be encouraged by their authorities to sleep in shelters. Definite cases of tuberculosis

(which is on the increase in Glasgow) have arisen from shelter life, and bronchitis and pneumonia in children have been attributed to shelter chill. No actual epidemics have been experienced, but trouble has arisen, here as elsewhere, from scabies.

In a large basement shelter some concrete seats were seen. Nurses sleep in this building, and when the shelters are opened, which is not until an "alert" is sounded, go to various points in the city where there are aid posts. In another very popular shelter, open all day, and with a paid warden always on duty, there were well-placed bunks and a first-aid room. Here there were chemical closets, but an endeavour is being made to get water-closets sanctioned.

In one large range of trench shelters in this area, which are occupied every night, the people sleeping on seats, large masses of cotton-wool-like fungi were noticed on the wooden walls, and the shelter seemed to be extremely damp and untidy. There were other concrete shelters near by where conditions were much better, but the people here again were erratic in their preference. In these shelters, by the way, drinking-water (chlorinated) was stored in urn-like containers, refilled once a week. Glasgow is one of the authorities with a definite "Anderson shelter policy." The Andersons are erected by the city engineers and properly drained so that they are always usable. The use of domestic communal shelters erected in gardens and yards is also being encouraged. These are lighted and fitted with Cura stoves, bunked and seated, and "let" to families or groups of families, who look after them and have their own key. They are approximately square in shape and quite roomy.

Model Medical Aid Post at Newcastle

In Newcastle-upon-Tyne there are two deep shelters, some twenty-two basements, and two surface shelters used as dormitories. Bunks have been installed in Anderson shelters, and a supply of Morrisons, several hundred a week, is proceeding. Some of the Andersons are usable, but others are said not to be, and there have been complaints of liability to flooding.

Two Newcastle shelters were visited. One was a basement under a factory. It was reinforced by concrete and had a concrete floor. It contained three sick bays, the bunks of which were ordinary ships' bunks, very comfortable, and there was all the necessary sick-room equipment. In shelters holding fifty people the sick were provided for in screened-off bunks, and in the larger shelters with 250 there were special sick bays.

Newcastle's most interesting shelter was laid down early in 1939. It has a concrete floor and bunking capacity. It is very dry, and temperature conditions are good. It has a hot-water supply, and washing-basins, fountains, and water-closets are grouped along the culvert, which is wide and high. A large seated area could be adapted for recreational purposes and a canteen. A system of alternative lighting by hurricane lamps has been installed.

Special attention was drawn here to the medical aid post in course of erection. "Hospital" would be a better description. It was claimed to be unlike anything else in the country. It includes a waiting room, a consulting room (with wash basin), and two wards, each to take six hospital beds and twelve two-tier ships' bunks. There are two water-closets, one for each ward, and two isolation cubicles with their own lavatory. There is plenty of cupboard room and a well-fitted kitchen, with hot-water geyser, sink, and draining board. Three nurses are to be attached to this post, two on duty every night, with a doctor visiting by schedule. One small room can be used as an infant feeding clinic or additional doctor's room. Newcastle has a woman warden service which is proving very satisfactory. These wardens, who are paid, work on eight-hour shifts, which enables them to get sufficient rest and attend to their homes. They are women of the "comfortable" motherly type.

Of the large provincial cities it may be said that, although the state of affairs with regard to shelters is unequal, and everywhere there is something that might be better as well as much that is very good, some of them have quite a lot to teach the London authorities. Some general comments are made in a leading article on page 443.

THE CHANGING PHARMACOPOEIA

A fourth Addendum to the *British Pharmacopoeia, 1932*—the third to be published during the war—becomes official from October 1. It contains twenty-nine new monographs and emendations of many others; a list was given in the *British Medical Journal* of September 6 (p. 351). The object of the British Pharmacopoeia Commission has been to recognize new preparations which war experience has brought to light and also to make whatever changes are possible in the interests of economy without creating unnecessary difficulties for the medical profession, pharmacists, or manufacturers. Standards have been provided for preparations to appear in the War Emergency Formulary, a compilation on which a Ministry of Health committee has been sitting since the beginning of the present year and which is at the point of completion. This committee has taken as the basis of its work the memorandum "Economy in the Use of Drugs in Wartime," prepared by the Therapeutic Requirements Committee of the Medical Research Council. Prof. J. A. Gunn, chairman of the Commission, is a member of both these committees, and Dr. C. H. Hampshire, secretary of the Commission, is secretary also of the Therapeutic Requirements Committee and a member of the committee of the Ministry of Health.

There will also be found in the new Addendum descriptions of and standards for certain chemicals formerly supplied only as proprietary preparations, several of them imported from Germany. Examples are suramin, which replaces "Bayer 205," used in the treatment of trypanosomiasis, and pamaquin, which replaces the proprietary "plasmoguin," used in the treatment of malaria. Sulphanilamide is an obvious introduction, but patent rights preclude other members of this group, such as sulphapyridine. The inclusion of digoxin, a proprietary preparation still covered by patents, indicates a relaxation of the practice excluding articles in respect of which a monopoly exists. Some changes are made owing to absence of ordinary sources of supply—for example, Indian squill in place of Mediterranean squill; alterations in the values on test of halibut-liver oil to admit oils from the Pacific coast; and the inclusion of a synthetic optically inactive menthol in view of the lack of the imported natural material from Japan and the synthetic material from Germany.

Changes in Pharmaceutical Procedure

Important changes in pharmaceutical procedure are made known in an appendix containing a revision of the methods of sterilization of solutions and suspensions intended for parenteral injection. Tyndallization, or sterilization by discontinuous heating, has been found unreliable in dealing with infective spores. The method now adopted is heating at 98–100° C. in presence of a bactericide. Bactericides specified are chlorocresol in the proportion of 0.2% or phenylmercuric nitrate 0.002%. A method of filtration is specified, but it is laid down that any solution prepared by filtration must be submitted to and comply with the tests for sterility. One of the most important of the new injections included is injection of procaine and adrenaline of 2% strength. Directions are given for sterilizing by chlorocresol, sodium metabisulphite being added as a stabilizer. No doses are given, the dosage being left to the discretion of the prescriber. Two other well-known injections now included are of sodium morrhuate and of quinine and urethane, and here again careful directions are given for sterilization by addition of chlorocresol. Injection of calcium gluconate is another new inclusion, sterilized by heating in an autoclave. A note is added that the injection must be completely free from solid particles.

Injection of nikethamide is also included as the equivalent of coramine; here sterilization may be by heating in an autoclave or by filtration. Another new preparation is solution of sodium hydroxide, introduced because of the difficulty of obtaining potassium compound. Morphine sulphate finds a place as the salt now most commonly used for hypodermic injection, morphine tartrate having fallen almost completely out of use. Sterilization of the solution for parenteral injection is by heating with a bactericide or by filtration.

Some Additions to the "B.P."

Some of the other additions may be briefly mentioned. They include mandelic and nicotinic acids, the latter indicating that the Commission is following the work on vitamins closely. Benzyl benzoate, much required in view of the increase in scabies, is inserted; also bismuth subgallate, formerly known as "dermatol," used as an antiseptic dusting powder. Ephedrine hydrochloride was already in the *Pharmacopoeia*, but the alkaloid itself is now included for the purpose of making oily preparations, sprays, and the like. Light liquid paraffin, suitable for sprays, is another new inclusion. These introductions may foreshadow the inclusion of spray solutions in the next complete volume. The War Emergency Formulary will include sprays, and it was desired by the compilers of the Addendum to furnish a standard material. Proflavine sulphate has been brought in because of the widely expressed preference for this substance as against acriflavine. It has the disadvantage of low solubility, and possibly at a later stage further improvement may be effected by the adoption of some other acridine derivative. Hydrochloride of proflavine is a much more soluble salt, but the sulphate has been known for so long that it was felt difficult to make a change. Magnesium trisilicate is now defined and standardized.

Changes for the Sake of Economy

Other new inclusions are sodium metabisulphite, chiefly used as an anti-oxidant in the preparation of solutions containing adrenaline; exsiccated sodium sulphate, the use of which it is considered desirable to encourage in preference to magnesium sulphate in wartime; and sodium lactate as a substitute for glycerin in making a kaolin poultice.

Glycerin wherever it is considered unnecessary has been eliminated. The emendations here are permissive, not obligatory; glycerin may be omitted from the compound tinctures of cardamom and of rhubarb and of ipecacuanha. Glycerin of tannic acid may now contain no glycerin; the tannic acid is dissolved in distilled water and the solution thickened with tragacanth. Syrup of wild cherry or virginian prune is made according to a modified formula with tragacanth and sweetened with saccharin. Further changes are made in mercurial ointments. A dilute ointment of mercury containing 10% of the element is now defined in addition to the ointment containing 30%.

Finally, potable water is recognized in place of distilled in making a number of preparations. This is a measure of economy because it saves cost of transport if distilled water is demanded. Moreover, storage of distilled water may give rise to difficulties in dispensing. Preparations affected by this change are aromatic waters, camphor water, chloroform water, and a large number of infusions. In view of the chlorination of water supplies and the hardness of certain natural waters, this permission will doubtless be exercised with discretion by the dispenser in order to avoid incompatibilities.

The British Pharmacopoeia Commission is to be congratulated on producing an Addendum which while meeting the war situation in various ways causes no obvious therapeutic disadvantage. It is the more praiseworthy because the work has been done notwithstanding the destruction of the Commission's offices by enemy action.

FEEDING THE CHILDREN

It is evident that a small number of well-run canteens will not solve the problem of feeding the country's children as a whole, and figures so far received by the Children's Nutrition Council¹ show that in many areas less than 5% are catered for, while perhaps only 15 or 20% of the local authorities are providing meals for one-tenth of their children. School milk schemes, on the other hand, are proceeding well in spite of occasional difficulties in obtaining deliveries at the schools. But, although consumption figures have risen higher than the best pre-war averages, there is still room for improvement. It is possible, for instance, that not more than one-third of the authorities are able to show that over 60% of their scholars have the daily third of a pint. Several areas have reported shortages of milk towards the middle and end of July. The problem of supplying milk during the holidays has been met successfully by Glasgow, where sixty-six special milk bars were opened and 40,000 children attended. Various holiday schemes have been drawn up in other areas, but in many districts the response was poor.

The National Milk Scheme, whereby expectant and nursing mothers and children under 5 are supplied free or at cheap rates, has now been operating for slightly over a year, and by last May the number of those benefiting was 2,600,000. By the end of July 73% of those entitled to take advantage of the scheme were doing so. Free milk is available where parents have a weekly income of 40s.; the qualifying scale for one parent is 27s. 6d., and 6s. is added to the scale for each non-earning dependant. At the end of July 29% of all those registered under the scheme were receiving free milk.

Milk Powder

It has been announced that dried milk powder will supplement supplies of liquid milk. This is to be dried skimmed milk imported mainly from the United States and Canada and from New Zealand, and is to be experimentally released for sale in the North-East on October 1. The available condensed milk and milk powder should equal 150 million gallons of liquid milk, bringing the total supply to an average of 100 million gallons a month, the supply in the worst months being between 70 and 80 million gallons. During the winter an adult couple should receive four pints of liquid milk a week, together with a further three pints made up from condensed milk or powder. A family of six with two under 5 and two under 17 should get twenty-five pints of liquid milk a week, exclusive of what is obtained at school. Those benefiting under the National Milk Scheme will receive their pint a day, and children up to 17 will have priority for half a pint per day in their homes. According to present decisions there is to be no strict rationing of milk, and vendors will be able to dispose of any surplus as they wish.

Advance publicity for the dried milk scheme is necessary in order that consumers shall know its properties and use. Skimmed milk is without the fat of milk and without vitamins A and D, but it should supply a valuable addition to animal protein. The Children's Nutrition Council suggests that the four chief vitamins and iron might be added to the powder. The dried milk will be issued with a warning that it should not be used for infant feeding, and it will be employed mainly for cooking. Experiments show that it does not precipitate in tea, but that it needs careful mixing when reconstituting it in liquid form. The price has not yet been fixed. The Ministry of Food believes that the novelty of the milk will protect it against a sudden demand, but the Children's Nutrition Council is doubtful whether the policy of issuing it through the retail trade without rationing is wise, especially now that the public has been warned of a possible milk shortage.

¹ War-time Nutrition Bulletin, No. 12, September, 1941.

Local News

ENGLAND AND WALES

Chadwick Public Lectures

On Tuesday, October 7, at 2.30 p.m., the first lecture in the autumn programme of the twenty-ninth annual series of Chadwick Public Lectures will be given at the Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W., by Mr. V. Zachary Cope on "The Influence of War on Surgery," with Sir William J. Collins, chairman of the Chadwick Trustees, in the chair. Other lectures, all at 2.30 p.m., have been arranged as follows: October 28, at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., Mr. J. C. Dawes (Ministry of Health), "The Cleansing of Towns and Cities"; November 11, at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., Bossmom Gift Lecture by Mr. F. R. Hiorns, "Hygiene Technique in Building, or the Economic, Psychological, and Health Aspects of Surface Treatment"; November 27, at Westminster Hospital Medical School, 17, Horseferry Road, S.W., Dr. S. Ernest Dore, "Advances in Dermatology during the Past Forty Years"; December 9, at the Royal Society of Tropical Medicine and Hygiene, Mrs. Blaise Gillie, "Post-war Housing in the Light of Wartime Experience."

Cancer Research in Yorkshire

The Yorkshire Council of the British Empire Cancer Campaign, which owed much of its original stimulus to the late Lord Moyrhan, is continuing its work, although limited by war exigencies. The fifteenth annual report embodies an account of the work of the Department of Experimental Pathology and Cancer Research of the University of Leeds, and of the Field Laboratory of the University of Sheffield. The Field Laboratory has been improved during the year, and a new tissue culture laboratory equipped.

At Leeds Prof. R. D. Passey describes experiments following upon an American report of the experimental production of bladder papillomata by the administration of commercial β -naphthylamine, one of the amino-compounds used in the aniline dye industry. The experiment at Leeds began in August, 1937, when four dogs received 100 mg. daily of this specially purified compound. After an initial period of haematuria the dogs remained well for a year, when one male dog died from a generalized lesion resembling Hodgkin's disease, but without bladder tumours. The female has now died (after three and a half years' treatment) with extensive multiple papillomatosis of the bladder with the microscopical characteristics of malignant new growth. The two surviving dogs are in good health. This so far as it goes confirms the American work that bladder tumours are induced by purified amino-compounds. So far in America the condition has been induced in bitches only, and at Leeds also it was in the bitch that it appeared. The possible antagonism between one malignant tumour and the appearance of another in the same animal has also been investigated at Leeds, but the experiments carried out so far suggest that no such antagonism exists.

At Sheffield Prof. H. N. Green and his co-workers have been engaged in studying the complementary action of viruses and chemical carcinogens in the production of malignant mammalian tumours. Thirty-two rabbits bearing Shope papillomata were divided into three groups. One month after the appearance of the papillomata the first two groups received injections of thorotrast and methylcholanthrene respectively into the base of the warts. In the third group, which acted as control, some of the animals received injections into the warts of lead peroxide, others of sesame oil, and the remainder were not injected. Fifteen months after the inoculation with virus seven animals treated with the carcinogenic agents survived, but none of these, or of the control animals, had developed a malignant tumour, though all had either growing or stationary papillomata. This is an unusual result, as malignancy generally supervenes in Shope papillomata grown in domestic rabbits, even without interference to the warts, in a much shorter period. It is thought possible that the carcinogen modifies both virus and host cells and that the modification of either of these alone is ineffective; also that the combined application of a chemical carcinogen and material

which should contain the hypothetical modified virus might result in a shortening of the latent period of tumour development. An attempt has been made to test this last hypothesis, but the experiments so far give no support to it.

Correspondence

Abortus Fever and Sulphapyridine

SIR.—I have read with great interest Dr. J. Whittingdale's letter (August 9, p. 210) describing a case of undulant fever (*Brucella abortus* infection) treated with sulphapyridine and Dr. J. H. F. Pankhurst's letter (August 30, p. 318) criticizing Dr. Whittingdale for concluding from the results in his case that "*Brucella abortus* infection responds to sulphapyridine." After reading these two letters it occurred to me that a few comments based on my series of 522 cases, of which 63 were treated with sulphonamide compounds, might be useful. Dr. Pankhurst's criticism is based upon the capricious behaviour of "a disease which is notorious for its intermissions and relapses." I agree with him that such a caution is very necessary, and I have repeatedly drawn attention to this point. Thus in an article in *the Lancet* I remarked: "The rapid return of the temperature to normal followed by recovery will often tempt the doctor to ascribe this happy result to the particular treatment which immediately preceded this occurrence; but all experienced observers are agreed that such a sudden termination is common in untreated cases and should therefore be interpreted with great caution"; and again: "Cases in which afebrile and sometimes symptom-free intervals of several months or years were followed by recurrence of the typical disease without any evidence of reinfection present a difficult problem, but various considerations suggest that the *Br. abortus* may lie dormant (e.g., in the spleen or lymph glands) for long periods." My experience since writing the above has only served to confirm these views, and Table I gives a few instances in my series of striking intermissions of the fever in cases of this disease.

TABLE 1.—Intermissions of Fever in Cases of Undulant Fever

Case No.	Intermissions
	1st intermission days
217	2nd 3
	3rd 38
	4th 15
	5th 12
	6th 27
217	1st 94
	2nd 111
372	1st 28
	2nd 22
393	1st 4 weeks
	2nd 1 week
489	1st 12 months
	2nd 59 days
493	1st 4
	2nd 6
504	1st 4
	2nd 4
	3rd 4
	4th 4

It will be clear from these few examples that the effect of any treatment must be extremely difficult to determine in such a capricious disease, as Dr. Pankhurst aptly calls it. What criteria can we use? Obviously the return of the temperature to normal following the administration of sulphonamide compounds is insufficient in itself, as not only might apyrexia have occurred without such intervention but it may merely be a temporary intermission. The complete disappearance of symptoms is a better criterion, as most intermissions are not, in my experience, found to be completely symptomless; but this criterion is certainly not an absolute one. Again, the disappearance of specific agglutinins from the blood serum is a useful guide, but this usually takes many months or even a year or more. For practical purposes I think it is better to avoid any decision as to "cure" and to divide the cases into those in which the drug

¹ Dalrymple-Champney, Sir W., *Lancet*, 1935, 2, 1449.

² MacArthur, W. P., and Womersley, J. B., *British Medical Journal*, 1930, 1, 875.

³ Karo, D., and Laver, C. R., *Lancet*, 1937, 2, 77.

⁴ O'Reilly, T. J., *ibid.*, 1933, 2, 450.

appears to have conferred definite benefit upon the patient, those in which the benefit is doubtful, and finally those in which no benefit can be detected. The category into which any case shall be put is then determined from experience, taking into account the probable course of the disease if it had remained untreated (admittedly a difficult point to determine), the duration and intensity of the treatment, the change in the agglutinin titre, and the duration of apyrexia after treatment. On these lines I have ventured to classify, as shown in the following table, the 63 cases in my series in which sulphonamide compounds were given, including the 12 cases in which the information available was insufficient to determine the efficacy of the treatment.

TABLE II.—Results of Treatment of Undulant Fever with Sulphonamide Compounds

Drug	No. of Cases Treated	Result			
		Definite Benefit	Doubtful Benefit	No Benefit	Insufficient Information
Prontosil rubrum ..	17	4	2	6	5
Prontosil album (streptocide, sulphonamide-P, sulphanilamide)	26	12	5	5	4
Proseptasine (M & B 125, 46 R.P.) ..	2	0	0	1	1
Soluseptasine ..	1	1	0	0	0
Sulphapyridine (M & B 693, daganan) ..	14	4	4	4	2
Prontosil soluble (Bayer 102, rubiazol injectable) +					
Prontosil album ..	2	2	0	0	0
Prontosil album +					
Br. abortus vaccine	1	1	0	0	0

In the first column of Table II I have given the different synonyms of each compound used (for the sake of brevity I have not included the chemical names), and I would like to call attention to the confusion caused by the loose employment of these names in the descriptions of cases, a source of error from which my records are certainly not altogether free, but which I have tried to eliminate so far as possible by inquiries in cases in which I suspected misdescription. The commonest confusion is probably between prontosil rubrum and prontosil album, but others certainly occur.

As regards the proper use of these drugs in undulant fever, while fully agreeing with Dr. Pankhurst as to the dangers attending the indiscriminate and prolonged use of sulphonamide compounds, especially in children, the administration of these drugs in small quantities for a very short time, as in some of the cases in my series, cannot be expected to control the infection or to yield any information on which the value of these drugs in undulant fever can be assessed.

Finally, may I take this opportunity of appealing once more to practitioners to send me particulars of any cases of this disease which occur in their practice, for inclusion in the records which I have kept since 1928 for the Ministry of Health and the Agricultural Research Council. These records are, of course, confidential, and are used only for statistical purposes.—I am, etc.,

W. DALRYMPLE-CHAMPNEYS.

Ministry of Health, Whitehall, S.W.1, Sept. 6.

Speed in Wartime Surgery

SIR,—I have read with much interest the two articles on the clinical observations on air-raid casualties by Drs. R. T. Grant and E. B. Reeve (August 30, p. 293, and September 6, p. 329). Their conclusions, particularly with regard to shock, are of much importance, and I hope that their researches will be extended.

They have, however, described two cases which, from a surgical point of view, seem to me to call for comment. (1) A man who had a double amputation performed through the left thigh and through the right knee-joint. This was done by two surgeons working together, and it is stated that the operation "lasted only forty minutes"; about a pint and a half of blood was lost. (2) A man with a penetrating wound of the abdomen had one perforation of the descending colon, three perforations of the jejunum, and a tear in the mesentery; these were sutured, the operation lasting one hour.

Surgeons operating in France after the first year of the last war could have done the first operation without appreciable loss of

blood in well under five minutes. The second operation would not have taken much more than half an hour. In peacetime, surgery, very rightly, should be done with meticulous care and without undue haste, but wartime surgery is a very different proposition. In such cases as the two described speed is essential; every minute saved may increase the chances of recovery in a badly shocked patient. Those surgeons who are doing war surgery for the first time should remember and try to emulate the dexterity and speed of our ancestors, who had to do their amputations like lightning.—I am, etc.,

Cardiff, Sept. 17.

J. BERRY HAYCRAFT, F.R.C.S.

Voluntary Hospitals

SIR,—The difficulty which Sir Frederick Menzies finds in ascertaining what are those good points in the voluntary hospital system which are lacking in the municipal hospital system will be easily appreciated by those who, like myself, have worked under both. The differences in the two systems may be easily sensed but hard to define. Perhaps the following remarks may serve to emphasize a cherished feature of the voluntary hospital system—one which the medical profession is in danger of losing.

A resident house officer in a voluntary hospital is encouraged in the view that he himself is primarily responsible for his patients. Back of him are a number of senior men—registrars, consultants, etc.—whose function it is to help, advise, and instruct him. If at times his burden becomes unduly heavy their skill and experience are at his disposal to help him carry it. The mental attitude thus engendered serves to keep his keenness at its maximum.

But when he takes up work in a municipal hospital he finds that this state of affairs no longer obtains. His patients are now his in name only. The responsibility for them rests with the superintendent, whose assistant he is. The senior members of the staff, willing though they may be, are not there to be his counsellors. Their primary function is likewise to assist the medical superintendent. The medical officer may even on occasion find to his surprise that certain arrangements he has made with regard to his patient have, without his knowledge, been modified or even countermanded. He becomes conscious of that vague sense of unease which a doctor feels when he is treating someone else's patient.

The effect of this atmosphere is as subtle as it is inevitable. The medical officer finds that his sense of responsibility to himself and to his patient is being gradually replaced by a sense of responsibility to a superior officer to whom he has to surrender much of his initiative. He finds that the stimulus which once came from inside him now comes from outside; and he does his work well not because he wants to but because he must.

Thus the voluntary hospital system contains much of the essence of democracy because it procures for its medical staff the maximum of assistance combined with the minimum of interference and the minimum of coercion.—I am, etc.,

Plymouth, Sept. 8.

M. R. THOMAS, M.D., M.R.C.P.

SIR,—What is the essential difference between the voluntary and municipal hospital systems? Is it something subtle and difficult to define, or is it something readily apparent? That is the question which has been asked by Sir Frederick Menzies (September 6, p. 353). It has been the subject of debate from pre-war time, in fact ever since the rapid growth of the municipal hospital has challenged the voluntary. Sir Frederick Menzies's question will, no doubt, provoke considerable discussion, as was intended. It is indeed time that the relative merits of the two systems were discussed in the open by the profession, for post-war changes will inevitably project a scheme for the unification or co-operation of the two hospital systems.

Briefly here are my observations and conclusions for what they are worth. I have spent the first four years of my post-graduate time in voluntary hospitals of high standing, and I have been resident assistant surgeon in a teaching hospital; since then I have worked in several municipal hospitals in a senior position. I have also been in general practice, so at least I have had first-hand experience.

Although the two hospital systems had different beginnings, the primary function of each is to treat sick poor in the best possible way. The voluntary hospital has a second function—to train and teach the medical personnel. The municipal hospital has no such purpose, nor does it attempt to have or encourage

such a purpose. Here lies the crux of the whole matter, for it has many repercussions. The old-established voluntary hospital system of arranging medical personnel so that the most junior medical man on the staff is responsible to another more experienced, and he, in turn, to a senior man can hardly be bettered. Such an arrangement of personnel achieves the best possible co-operation in the patients' interests, and in addition each junior member benefits from the knowledge and experience of his seniors. This system promotes free communication of enthusiasm and ideas. Such an attitude to medicine is both productive and progressive. Very different is the position of the M.O. in the municipal hospital. He is usually allocated to look after certain wards among other duties, and over these he may have complete charge. Here he can learn only from his own mistakes and experiences, the supervision, if available, being as a rule inadequate. The limitations of this method of learning depend a great deal on the ability of the doctor, but at the best it is unsatisfactory both to him and to his patients. It leads to a process which might be described as "drifting along," in which intellectual arrogance based on a small knowledge not infrequently shows itself. In addition, lack of co-operation in the accessory departments is often a prominent feature. No enthusiasm can possibly arise in such a system, or if it did it would be quickly strangled. It is this lack of willingness to learn and co-operate that renders the municipal hospital sterile. There is, of course, the question of selection of medical personnel. In view of the fact that the posts in voluntary hospitals are essentially apprenticeships, where the best facilities of learning are offered and immediate monetary gain is small, the man attracted as a rule is one whose main aim is to become a better doctor. The better pay, greater comforts, and possibility of permanency associated with the municipal hospital posts tend on the whole to draw a different type of man.

This is but a sketchy outline of the most important influences which in my opinion produce the difference in "atmosphere" between the two hospital systems. There are, of course, many other lesser factors. To mention a few—the off-duty system in the municipal hospital and the mixed nature of duties tend to cause lack of continuity in treatment and therefore indifference or lack of interest. The position of the medical superintendent requires consideration, but a discussion of it is beyond the scope of this already overlong communication. Suffice it to say that it would be an advantage to have a medical committee at which the senior member of each department would sit and some of the consultant staff.

This letter does not seem complete without my briefly putting forward a few suggestions for remedying some of the defects I have criticized in the municipal hospital system. These are:

1. The appointment of highly qualified men who have been trained in voluntary hospitals to the senior posts in the medical, surgical, and gynaecological departments; and that high salaries should be attached to these posts.
2. A team system of arranging medical personnel.
3. Monthly clinical meetings, to which outside doctors serving the district would be invited, to discuss clinical cases of interest; for the encouragement of original papers by members of the staff, and to provide lectures by specialists from other hospitals. Such societies would organize a suitable reference library and provide the important current journals.
4. If possible, arrangements for students to do three-months internships, either in vacation or as part of their clinical training.
5. A scheme for sending senior members of the staff to see other clinics at work in this country and abroad.
6. The avoidance of red tapeism so far as is compatible with the control of the municipal authority, to allow freedom of thought and action in each department. This may seem vague, but it would be impossible to dilate without greatly extending the length of the letter.
7. The provision of first-class laboratory facilities with an enthusiastic pathologist and staff, for this is the hub around which the essential and academic activities of a hospital centre.
8. A full complement of consultant staff.

This résumé may sound Utopian in some respects, but I have had experience within recent times of most of the suggestions made. I arranged, with the co-operation of the medical superintendent, to have six students reside in the hospital during a vacation. A scheme of work in clinics was arranged for them embracing all departments, particularly stressing clinical pathology. The results were most encouraging, justified by enthusiastic students and by the senior members of the resident

staff, who felt much the better for it. There is no doubt that teaching and the critical faculty of the student are the best stimulus for maintaining high clinical standards. This would also put to use the enormous amount of clinical material which has been wasted up to the present time in big municipal hospitals.

The picture I have painted of the municipal hospital may seem black. I am aware there are some in which real efforts are made to prevent the M.O.'s duties becoming just a "job of work," but this is far from being general. I myself believe that the municipal hospitals have a great future, and I am anxious to see them in such a position. It is a new hospital system and still in a transitional stage, but if they are to produce that elusive "atmosphere" enjoyed by the voluntary hospitals, and if they are to become a productive and progressive unit, then they must to some extent introduce the older-established regime in respect to medical personnel.

In conclusion I wish to point out that I have made no attempt to compare the defects and merits of both hospital systems. My object has been to show some of the reasons why the atmosphere in the municipal hospital is different from that in the voluntary, which is the question Sir Frederick Menzies has asked, and some suggestions are made for remedying it.—I am, etc.,

SEPT. 10.

D. LANG STEVENSON.

SIR.—In answer to Sir Frederick Menzies's question, "What are the particular virtues of the voluntary hospital system which are conspicuous by their absence in the municipal hospital system?" (September 6, p. 353), the short reply must be: power to reform themselves in the voluntary hospitals. If and when the municipal hospitals need reform it must come from outside or from above and from persons or institutions in the state of relative freedom enjoyed in the voluntary system.

Let me define a voluntary hospital in theory as a living organism in the hospital world, deriving its sustenance from the disinterested efforts of contributors, staffs, and management. It can organize and reform itself from within, which it does by the democratic method of committees of contributors, staff, and governors. Authoritarian systems live on a stock of vitality inherited or plundered from free systems and must perish from lack of inspiration unless continually nourished by the free systems.

Let the voluntary hospitals beware that they do not tamely surrender their lives, or they may find their corpses awaiting resurrection in years to come from the churches, the monasteries, and the village meeting.—I am, etc.,

Edgbaston, Sept. 16.

FAUSET WELSH.

Planning for Mental Health

SIR.—Since perusing the abstract (p. 276) and leader (p. 269) in your issue of August 23, I have studied the report of the B.M.A. Committee on Mental Health, and I feel that some of the facts and figures quoted therein deserve more attention from practitioners and the general public than they have hitherto received.

One of the witnesses examined by the committee considered that 60% of the normal population of this country is psycho-neurotic. Millais Culpin and Smith,¹ in an investigation of 1,000 persons actually at work in different occupations, found symptoms which interfered with their output to a greater or less extent in from 40% to 60%. As might be reasonably expected, the physically ill would show a higher proportion of mental unfitness than those who are pursuing their daily vocations. Four American physicians investigating 1,200 routine admissions to a general hospital found psychic factors in 79%, and expressed the opinion that psychotherapy would play a critical part in their recovery.² British observers are commonly regarded as less sensational, but there are some who have made even more startling deductions. Thus, Davies and Wilson³ found 84% of 205 patients with peptic ulcer suffering from psychological tension; and Wittkower⁴ no fewer than 37 out of 40 cases of ulcerative colitis, or 92.5%, presenting definite mental symptoms, which he grouped under the heads of obsessional, hysteric, schizothymic, and depressive. Many other somatic diseases are referred to by the committee as being associated with mental symptoms, and it is, of course, common knowledge at all psychiatric clinics that the reverse of the *mens sana in corpore sano* is undoubtedly true.

The above are among the highest percentages quoted by the committee, but, after sifting a very great deal of variable evidence,

it reaches the conclusion "that in any group of sick persons something like 30% will be found to be suffering from conditions about which it is helpful to have psychiatric advice, and a considerable proportion will be found to be in need of treatment [by a psychotherapist]." In a subsequent paragraph it emphasizes that neither doctors nor patients realize to what a great extent psychiatric treatment may relieve many unhappy and inefficient members of the community. As a natural corollary to these opinions the committee makes this further recommendation: "In view of the large number of patients among the general medical sick, apart from cases of obvious mental disease, who would benefit from psychiatric advice and treatment, every hospital, whether voluntary or municipal, general or special, which has one hundred or more beds, should include on its staff a physician in psychological medicine (or more than one in larger hospitals) whose duties should include regular visits."

Dr. Henry Harris, in his recent letter (September 13, p. 386), divides humanity into those who are chronically neurotic, psychotic, or defective, and those (the vast majority of us) who, at some time or another, have had or will have nervous complaints or temporary maladjustments. After describing what he means by the latter group, he adds, "All these are minor problems when they first arise, but the physician who fails to make a distinction between those who are permanently ill and those mentally perplexed may fail to treat the latter. Problems which might easily be solved or prevented by one or two interviews may graduate into chronic and permanent illness." He asks why there should be such discrepancies in the evidence received by the committee on the incidence of psychopathic disease, but the committee has already summed the matter up in a very few words: "The number of patients sent to hospitals is a measure not of the incidence of mental disease but of the extent to which it is recognized by general practitioners."

How far practitioners differ in their attitude towards the psychoneuroses encountered among their patients, whether complicated by physical disease or not, can be seen by further reference to the report of the committee. The Tavistock Clinic was able to treat 279 patients out of the 1,914 who applied for treatment three years ago. The doctors who sent those couple of thousand patients to the clinic stated that they would have sent four times as many if facilities for treatment had been available. On the other hand, there are physicians who maintain that they have never referred a single patient to a psychotherapist or to a psychiatric clinic. In fairness it must be admitted that many are unable to avail themselves of the services of a specialist, since there is no clinic in their neighbourhood. The map opposite page 16 of the committee's report shows vast areas of the United Kingdom devoid of such resources. Others prefer to treat their patients, *secundum artem*, with bromide bottle or sedative pill, and if they genuinely believe that is the best treatment for the psychoneurotic their views are worthy of all the respect due to tradition and practice over many centuries.

But there is still another group to whom you refer in your editorial, Mr. Editor—those who regard us with a good deal of suspicion and prejudice! They must form a large group, if you consider that they are able to discourage a potential psychotherapist from embarking on a psychiatric career. Can nothing be done to convert them from their intransigent attitude towards a form of treatment which strives only to reach the same goal as the practitioner—the welfare of his patient? The committee has devised a practical and workable scheme for the rehabilitation of the mentally unfit: but to obtain its full measure of success it will require not merely a large number of trained psychotherapists, but also the support and co-operation of the entire medical profession, and in particular the general practitioner.—I am, etc.,

C. LODGE PATCH,
Lieut.-Colonel, I.M.S. (ret.).

Shrewsbury, Sept. 17.

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- ² *Amer. J. Psychiat.*, 1939, 95, 1319.
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- ⁴ *British Medical Journal*, 1938, 2, 1356.

Future of Medical Education

SIR.—As a biologist I should like to be allowed to comment on the two very interesting articles on the future of medical education (September 6, pp. 323 and 327). It is very encouraging to read that such an eminent authority as Prof. J. A. Ryle thinks so

highly of the value of biology as the foundation of the medical student's work. We biologists have, of course, always been of this opinion, but I believe that in the past this view has not been so strongly held by some medical men.

From my experience as a teacher and as an examiner for the First M.B., I am convinced that Prof. Ryle is right when he states that the student should not enter on his medical course till he is 17, for I have found that students younger than that make little progress until they are more mature. These young students, even if they have matriculated, would do far better continuing at school and completing their general education, concentrating especially on those subjects which they are likely to drop when they begin their First M.B. course. I believe that too many students begin chemistry and physics too early at school, with the result that they go over the same stuff again and again without any profit to themselves. Except in the very elementary form of general science, these subjects can well be left until later, and the time might be more profitably devoted to arts subjects, so that when the student begins his pre-medical work he has a background of general knowledge and can express himself simply and clearly in English. This time might also be partly spent in the study of foreign languages such as French and German, which are much easier to learn at that age than later. If students were to concentrate on these cultural subjects at school, we might avoid what is now a common experience of many examiners, who find that the powers of expression by medical and other students are often crude. Far too few have any idea of the proper use of our language.

Biology may well be taught during the school period, but I am of the opinion that the schools might be well advised to leave the First M.B. teaching to the universities and medical schools, where facilities for such teaching are better and the course can be covered in a year. School biology should be of a much more general type, less anatomical and with the emphasis on the modes of life and habits of animals and plants. This can be done especially well in schools, particularly by those in the country, where there are greater opportunities for field work and the training thereby of the powers of observation. In other words, the work is more of the type that used to be called "natural history." It is at this stage that the student can obtain the sound knowledge of oecology such as is desired by Mr. Donald McDonald, leaving the comparative anatomy and more detailed biology to the First M.B. course. I do not think that Mr. McDonald's suggestion that the comparative anatomy should be studied simultaneously with human anatomy is either practicable or desirable. Surely the generalized comparative anatomy is the introduction to the pure human anatomy, as the elementary physiology taught in the biology course is the foundation of the later human physiology.

Mr. McDonald's proposal to include such things as human heredity in the First M.B. course would overload it, especially as the student would not at that stage be in the position to realize its importance and significance. Most medical schools and universities have biologists on their staffs: why could they not be used to give a few lectures on some of the more advanced applications of biology to students who have gone some way on their clinical work?—I am, etc.,

C. C. HENTSCHILL, M.Sc.,
Senior Lecturer in Zoology

Chelsea Polytechnic, Sept. 15

Communal Feeding in Schools

SIR.—Apparently Dr. Letitia Fairfield (September 6, p. 359) is very angry with me, but I hope she won't allow her wrath to obscure her judgment or close her mind to realities.

Despite her letter I still think compulsory and universal school dinners the best means available and the most economical for ensuring satisfactory nutrition in our school children. There is no doubt that they can be provided more cheaply than a similar meal at home and at a cost within the means of most parents, so why Dr. Fairfield thinks they should appreciably increase the taxpayer's burden I don't know, for necessitous cases form only a small percentage of the whole, and teaching cookery is already a charge on the cost of education. Certainly family allowances which she seems to favour, will cost the taxpayer far more, and then he will have no guarantee that the money will be spent on the children. From my own experience I can say that the children in most need of it are least likely to get it.

It is nonsense to pretend that the success of the public school system depends on the social background of its pupils and makes all the difference between the actual and feared results of communal feeding. If the public schools are closed after the war it will be because of financial stringency and not because of psychological or other defects. As to their dysgenic effects on the nation, of course the cost of educating children at public schools must limit their production. However, if the nation wants more children it will have to pay for them, and not only for those who go to public schools. But a high birth rate does not seem the remedy for widespread unemployment and frequent wars, and until these are cured by other means parents will be prudent in their production of babies.

Dr. D. W. Winnicott (p. 358) admits that "voluntary communal feeding of children can be successful, not only physically but also in regard to emotional development." Why he thinks the results should be worse if made compulsory and permanent is not easy to see. Perhaps it is one of those "things in heaven and earth not dreamt of in my philosophy." But let me assure him that I am not indifferent to "complications arising out of feelings, fantasies, and superstitions," though I beg leave to doubt that any serious complications of this nature need be feared from school dinners. I have seen no sign of them at our own school dinners. In fact, our backward and "difficult" children have shown marked improvement mentally as well as physically after a course of school dinners. A little mental as well as physical buffeting is good for children by helping to prepare them for the much greater stress and strain they will have to face when earning their own living.

Undoubtedly a small percentage of the children evacuated have suffered serious emotional upset from evacuation to strange homes and strange people, but they form a surprisingly small part of the total. In any case, emotional disturbance arising from evacuation cannot be compared with any slight upset which might arise from compulsory attendance at school dinners, though why this should cause any more mental trauma than compulsory attendance at school for lessons is not clear. Furthermore, exceptional children could be excused, but they should not be allowed to stand in the way of a provision which would benefit the majority.

To sum up: 11% of our school children are obviously undernourished. How many are suffering from deficient diets we don't know, but Sir John Orr's National Survey published in 1936 suggests that roughly half the population subsist on diets which are deficient in some or all important constituents. Compulsory school dinners appear to be the only satisfactory solution of the nutrition problem in sight. No homes need be burnt down to provide them, and maternal relief is more likely than maternal depression.

But fancy all this ado and dark foreboding over an hour longer in school and a meal less at home. It makes one wonder, how much of it is prompted by genuine anxiety for the welfare of the mothers and their children.—I am, etc..

Gosport, Sept. 5.

G. W. FLEMING.

A Simple Technique of Intravenous Infusion

SIR.—The following modified method of fixing a cannula in a vein for the purpose of infusion or transfusion has been found successful, and it seems worth while making a brief note of the technique, as the call for intravenous infusion is such a frequent happening in these days.

After cleaning and anaesthetizing the skin, a small oblique incision is made over the vein instead of the usual transverse one. Exposure of the vein is effected by the beak of a haemostat in the usual way. A careful dissection of the vein from its surrounding fascia is unnecessary. A curved cutting needle is threaded with a strand of silkworm gut and is now passed through one skin edge, beneath the vein and out through the outer skin edge. The ends of the suture are caught in a haemostat and traction is exerted in order to obstruct the venous flow. With a pair of sharp-pointed scissors a small longitudinal nick is made opposite the silkworm suture in the anterior vein wall and the cannula quickly inserted. The suture is tied round the vein and cannula. The suture now fulfils three functions: it occludes the vein, it keeps the cannula in position, and it closes the skin incision.

After conclusion of the infusion the suture is cut, the cannula quickly withdrawn, and a new skin suture inserted to close the wound, which is covered with a sterile dressing and bandage. As a prophylactic measure against sepsis sulphamilamide powder should be rubbed into the wound before tying the suture. The longitudinal cut in the vein will heal, and, as the vein is not ligatured, the circulation has a good chance to become re-established and the vein could be used again at a later date.

It will be seen from this brief description that this technique economizes in movements, time, and material, a single strand of silkworm gut being the only suture necessary. The whole procedure takes little more than a minute to perform. It is in these respects that this method has certain advantages over those mentioned in textbooks.

I wish to thank Mr. D. Lang Stevenson, F.R.C.S., for his help in trying out this method.—I am, etc.,

Romford, Essex, Sept. 4.

E. FRANKEL.

"Perfect Sight without Glasses"

SIR.—As you rightly point out in your annotation on this subject (September 13, p. 383), the whole treatment of defective sight by exercises is based on fallacy. The answer to Dr. J. Parness's inquiry (p. 389) is, therefore, as follows: No degree of ametropia is cured by the exercises of Bates or any of his brethren, and those who seek this treatment hoping to give up glasses which they genuinely need will be disappointed.

However, in this country the majority of the population buy their glasses from "practitioners" who have no medical knowledge, and it follows that there are thousands of us who are wearing glasses unnecessarily. If one such should fall into the hands of a Bates practitioner, a "cure" will result, but it should not be necessary to go to a second unqualified practitioner to be told that the glasses provided by the first were unnecessary from the start.

If the Bates treatment is given to a person who genuinely needs glasses, then at the worst he is a sadder, wiser, and poorer man. But where it is given to patients whose headache or defective vision is due to general causes—perhaps renal or intracranial—then the delay caused by the treatment may well have a disastrous result. If only for this reason it seems a pity that Dr. Huxley should have given it a free advertisement.—I am, etc.,

London, W.1, Sept. 15

SEYMOUR PHILPS, F.R.C.S.

SIR.—Benjamin's book is, of course, complete nonsense, but it appeals to the belief in magic latent in so many apparently modern rational people. As only those with no useful work to do in the world have time to devote to this particular magic, not much is lost to society if such persons do leave off their reading-glasses. If myopic they will still see to read, and so can discuss their magic "cure" in complete honesty of belief.

The world's workers will continue to use glasses when necessary to get on with their job with the least possible strain. Glasses do not, of course, cure hypermetropia, myopia, or astigmatism. They simply relieve the strain involved in trying to concentrate on close work with eyes which are out of focus.

The only people to whom Benjamin's otherwise comic book could do any harm, if its advice is followed, are those suffering from glaucoma, iritis, and corneal ulcers, in which cases failure to recognize and treat the disease properly leads inevitably to serious loss of vision or blindness. In this the book is on a par with many other systems of quack cures—e.g., a fairly well-known system of "curing" cataract without operation. This system labels all its clients as cases of cataract, and "treats" chronic glaucoma, retinal haemorrhages, etc., with complete impartiality by means of enormously strong convex glasses, by the aid of which the victim is encouraged to read for so many hours a day. As a further aid the lenses are tinted a most convincing green. How, then, can they fail to "cure"? I imagine that this system does much more positive harm than Benjamin's book.

I have known numbers of patients who have tried to follow Benjamin's precepts, but have yet to encounter a single "cure." They all relapse and go back to their glasses. I lent the book some years ago to a man with slowly progressive cataract. He

dreaded the thought of operation, and for two years he faithfully carried out the whole rigmarole of exercises, dieting, etc., advised by Benjamin. He lost a lot of surplus fat, but his cataracts progressed as steadily as the waves climbed the shore on which King Canute sat of old, till finally he had to be led about by his wife. Now he is in the Home Guard; alas! not thanks to Benjamin's magic, but to "orthodox medical science," in accordance with which he got 6/6 vision (with glasses) after the crude method of surgical extraction of first one and then the other cataract. His temper, which had steadily worsened under Benjamin's treatment, has also improved, until now his wife says he is quite human again. For one of his temperament Benjamin supplied quite a useful occupation until it was time to operate.

Like all its predecessors, Benjamin's book will fade out in time, to be replaced by other "latest discoveries" in magic cures. An infallible rejuvenator of sclerosed arteries began life as a lotion guaranteed to grow a thick thatch on the balding scalp.

We affect to despise the ignorant belief of the African native in his witch doctor, and yet how many people read and believe their favourite astrologer in one or other of the Sunday papers?—I am, etc.,

Bournemouth, Sept. 14.

DAVID HARDIE.

The Spread of Poliomyelitis

SIR,—In an annotation in your issue of August 30 (p. 311) you refer to the findings of Burnet and Jackson that after oral infection in *Macacus irus* "the mesenteric lymph nodes almost always contain the virus in such large amounts . . ." In this connexion the work of Burrows (*Arch. intern. Med.*, 1931, 48, 33) is of interest. Burrows investigated the pathology of poliomyelitis in 50 fatal cases, concluding that the nervous involvement was only a rare complication in a widespread infectious disease, and that the name "infantile paralysis" was misleading, since it described what was only an occasional complication. He suggested that the name "acute lymphatic hyperplasia" would accord better with the pathological findings.

In experiments by Yoffey and Sullivan (*J. exp. Med.*, 1939, 69, 133) attention was drawn to the part played by lymph nodes in the diffusion of vaccinia virus in rabbits. Virus from a primary nasopharyngeal focus of infection reaches the regional lymph nodes and multiplies there (cf. McMaster and Kidd, *J. exp. Med.*, 1937, 66, 73). But it does not remain confined to these nodes, for we were able to show that a constant stream of virus leaves in the efferent lymph and enters the blood. Furthermore, the mechanism by which virus leaves the node so readily appears to be very simple. The virus becomes fixed by the lymphocytes, and it is these lymphocytes, normally leaving the node in large numbers, which convey virus to the blood stream. Once in the blood, virus-containing lymphocytes would appear to be able to leave the blood capillaries in any part of the body, including the central nervous system.

If this mode of spread held good for the virus of poliomyelitis also, it would afford a simple and attractive explanation of the way in which virus could reach the central nervous system from infected mesenteric lymph nodes. However, in actual experiments with *Macaca mulatta* we (Yoffey and Drinker, *J. exp. Med.*, 1939, 70, 83) were unable to find poliomyelitis virus in cervical lymph after nasal instillation of virus which did ultimately reach the central nervous system and give rise to paralysis. Furthermore, the disease could not be produced by injecting the virus into lymph nodes. It was felt that a virus which was very specifically neurotropic would not perhaps flourish in lymph nodes, and the conclusion was drawn that "the strain of virus employed does not spread by way of the lymphatic vessels and nodes." Burnet and Jackson's finding of virus in mesenteric lymph nodes so frequently and in such large amounts suggests that this conclusion may not be true for other possibly less specifically neurotropic strains of virus, and that our experiments may be well worth while repeating with such strains.—I am, etc.,

J. M. YOFFEY.

Department of Anatomy, University of Bristol, Sept. 17.

Ship Surgeons and Doctors on Military Transports

SIR.—A copy of the *Journal* of June 14 came my way recently at a certain port of call, and I can thoroughly endorse the views expressed by Dr. James Prendergast on page 904 regarding the

position of ship surgeons and their relations with the medical personnel on H.M. transports. Speaking with experience, in both connexions during the war of 1914-18, as well as this, it grieves me that the R.A.M.C. especially still plays the old game of putting square pegs in round holes, and there is still now in 1941 the same occasional friction that was so noticeable twenty-five years or so ago. King's Regulations, so far as troopships are concerned require revision. For instance, the title S.M.O. makes an invidious distinction and, as so frequently happens, the position is given to a junior officer whose only claim to seniority lies in the fact that his subordinates joined up, it may well be, only a matter of a week or two after he did. In my last ship, for example, the senior medical officer of the two appointed to that vessel was a lad of 26 who had had no previous experience to speak of either at sea or on shore, whereas his junior had had seven years' experience, partly as a ship surgeon, but mostly as a resident medical officer of a fairly large municipal hospital, to his credit, but had not been gazetted till a fortnight after the other. I will say this for the junior, that he was loyal to himself, and that his young senior was wise enough to rely in great measure upon his more proficient colleague. But it does not always work out so by any means. They were busy enough when there were troops on board, but were completely at a loose end when, as so often happened, the ship was empty. This was simply waste of material. On one recent voyage from North India to the Levant, when this S.M.O. was left behind because of illness and the junior automatically became S.M.O. and there were also seven or eight I.M.S. officers, including a major, it was I, the crew's doctor, who was called upon to make an exhaustive analysis of the ship's drinking-water. Before complying I notified the ship's commander that a complaint had been made and obtained his ready assent. Incidentally, the O.C. Troops knew nothing of the affair until it was over and done with. That, however, was not my pigeon.

During the last war on one voyage when I was temporarily in the R.A.M.C. I had charge of some 1,500 prisoners of war. I was called upon for six weeks to act as ship surgeon as well. On another occasion, when a free lance, I was ship surgeon on a transport ferrying American troops across the Atlantic; I had the whole ship to look after what time the U.S.A. doctors were all down and out. True it was only for three days, but I had my hands full.

Finally I may say that in a pretty lengthy experience I have never had the faintest difficulty with officers of the R.N. or the R.A.F., and that it is the ship surgeon's own fault if he permits himself to be overridden, especially by the macrocephalic type one encounters from time to time. When there is real danger, little differences vanish.—I am, etc.,

ATHELSTONE NOBBS, M.D.

Aug. 15.

Air-raid Noises in Psychotherapy

SIR.—The classical allusion in my letter of August 16 (p. 243) has evidently put Dr. J. H. Mellotte off the point of my criticism and led him (September 6, p. 354) into a very fallacious mode of reasoning. I have no doubt that, as he claims, the intentions of the authors of the criticized article, Majors McLaughlin and Millar, were excellent and that their aim was to conserve available man-power. But good intentions, it should be obvious, are not enough to excuse a particular form of therapy. Otherwise they would justify osteopathy, nature cures, Christian Science, and every other type of treatment that professed the same aims.

To put forward, as Majors McLaughlin and Millar did, "oversensitiveness" to noises as an explanation of a psychological disorder, and "conditioning" by gramophone records as the appropriate treatment, is surely impressive as a conception far short of the scientific attitude. It is equivalent to "explaining" claustrophobia as an oversensitiveness to closed spaces and treating the patient by conditioning him to progressively smaller rooms. The marks of regression are visible upon the whole procedure, but it may be that Dr. Mellotte will be able to lick it up with his use of "parergastic" as a serious contribution to psychotherapy. "Parergastic"! What a horror of a word, and words that could validly be applied to his line of argument, in Anglo-Saxon, not in Meyerian terminology.—I am, etc.,

FREDERICK DUFF.

London, W.1, Sept. 12.

Obituary

DAVID R. ROWLANDS, M.D., F.R.C.S.Ed.

Consulting Physician, Birmingham and Midland Skin Hospital

We regret to announce the sudden death on August 28 at his home at West Kirby of Dr. David R. Rowlands. A distinguished skin specialist, he had been associated with the Birmingham and Midland Skin Hospital for forty years.

David Richard Rowlands, born at Oswestry in 1871, was the son of a veterinary surgeon. He began his studies in 1891 at Edinburgh University, where he had a brilliant record as a student, being thrice a medallist during his course. He graduated M.B., Ch.B. with honours in 1896 and later became demonstrator of anatomy, gaining his F.R.C.S.Ed. in 1899. On completing his studies, Dr. Rowlands went to Swansea Hospital as house-surgeon and later as house-physician. When he left the hospital he prepared his thesis for the M.D., his subject being ectopic gestation. On setting up in Five Ways, Birmingham, he met with instant success as a general practitioner, and in 1901 he joined the staff of the Birmingham and Midland Skin Hospital as clinical assistant. Later he became senior honorary physician and held that post until 1936, when he reached the age limit. He was then appointed consulting physician, and a few months later the board of management marked his long association with the hospital by presenting him with a silver salver and his portrait in oils. The portrait now hangs permanently in the board room. Dr. Rowlands made valuable contributions to the methods of combating occupational dermatitis and was associated with the provision and development of many special facilities at the hospital for combating skin diseases. He insisted on the need for an enlarged hospital; and it was a fitting tribute to his many years of service that in 1935 the in-patient hospital in Edgbaston was opened, followed by a remodelling of the original hospital for the use of out-patients.

About ten years ago he went to live at Oswestry (retaining his Birmingham practice), and latterly he removed to West Kirby, where patients still sought him, and he was unable to enjoy a full retirement. He was a Fellow of the Royal Society of Medicine, a member of the British Medical Association for forty-one years, and of the Midland Medical Society; and after his many lectures to the St. John Ambulance Association was appointed an honorary life member.

Dr. WILLIAM ROBERTSON, who retired from the post of medical officer of health for Edinburgh in 1930, died on September 7. A native of Leith, he studied medicine at Glasgow University and the Anderson College, graduating M.B., C.M. in 1887 and proceeding to the M.D. in 1891. He obtained the D.P.H. of the Royal Faculty of Physicians and Surgeons of Glasgow in 1893, and the F.R.C.P.Ed. in 1923. Before his appointment as head of the health administration of Edinburgh in 1923 he had been M.O.H. at Perth and at Paisley; he was appointed M.O.H. for Leith in 1904, and continued in office there after the amalgamation of the port with Edinburgh. At Paisley he organized the water department with much success, and at Leith he was energetic in combating outbreaks of small-pox and of plague, for which he received public thanks from the Scottish Board of Health. In Edinburgh, where he had lectured for some years on public health at the Royal Colleges of Physicians and Surgeons, he was responsible for the very popular health exhibitions in Waverley Market, and thus brought before the eyes of thousands of citizens the value of personal and public hygiene and the range of civic effort in the department which he administered. Dr. Robertson was the author of *Sanitary Law and Practice* for students reading for the D.P.H., and of handbooks on meat and food inspection and on practical first aid.

News reaches this country of the death of Dr. ALEXANDER WILLIAM FORRESTER, late medical officer of health for Bulawayo. A student of the Royal College of Surgeons in Ireland and the Carmichael College, Dublin, he took the Scottish triple qualifica-

tion in 1893 and the D.P.H. later. He went out to Rhodesia in 1897, and had been there long enough to know everyone in the Colony. He served throughout the last war as medical officer of a Rhodesian native regiment with the rank of major, and received the French Croix de Guerre with palms and was mentioned in dispatches. After the end of the war he was Government medical officer and M.O.H. for Bulawayo, retiring in 1930. At the beginning of this war Dr. Forrester offered his services to the Colony, and despite his age—a few months short of 70—he was appointed medical officer to No. 2 Training Centre. He had been a member of the British Medical Association since 1904, was joint honorary secretary of the Rhodesian Branch, 1922-6, and honorary secretary of the Bulawayo Division 1922-5. One of his friends writes: "In common with thousands of other Rhodesians I have lost a real comrade by the death of Major A. W. Forrester. He was too much a lover of humanity in general to be an outstanding 'parade-ground soldier,' but as a kind, sympathetic, and understanding medical officer he excelled, and his friendly smile and the merry twinkle in his eye were in themselves a tonic to his patients when he appeared in the wards. He was universally loved by all who knew him, young and old, European and native, patients and colleagues. He was certainly 'the youngest old man' in Rhodesia, for apart from his years he was by no means an old man, and if anybody in Rhodesia was entitled to be called 'everybody's friend' it was Major Forrester. His death leaves a vacancy in the whole of Rhodesia which will probably never be filled. Major Forrester, his wife (who predeceased him by only a few weeks), and their only son—Harding Forrester, the Rhodesian novelist—were a particularly devoted family, popular everywhere."

We regret to announce the death of Dr. CHARLES E. P. FORSYTH, who practised in recent years as a physician at Newport, Monmouthshire, after his return from India. He studied medicine at Aberdeen University, graduating M.B., Ch.B. in 1899, and took the M.R.C.P.Lond. in 1903 and the D.P.H. of Liverpool in 1909. Dr. Forsyth's early appointments were those of assistant medical officer in the Fever Hospital Service of the Metropolitan Asylums Board, house-physician and senior resident officer at the Bradford Royal Infirmary, and pathologist in the research laboratories of the Liverpool Hospital for Consumption. He joined the British Medical Association immediately after graduating and took an active part in the local work of the Association during his time in India. He served as honorary secretary of the Assam Valley Division 1923-5, and had been honorary secretary and president of the Assam Branch, representing it at the Annual Meetings of 1924 at Bradford and 1925 at Bath. At Newport Dr. Forsyth was appointed honorary physician and physician in charge of out-patients to the Royal Gwent Hospital and consulting physician to the Newport Mental Hospital, and held the post of medical referee to a number of assurance companies. He was the author of several papers in the *Indian Medical Gazette* and in the *Proceedings of the Assam Branch of the B.M.A.*

The following well-known medical men have died abroad: Dr. WILLIS COHOON CAMPBELL, professor of orthopaedic surgery, University of Tennessee College of Medicine, and author of several works on orthopaedics, aged 60; Dr. FRANK CLINCH HAMMOND, who was appointed in 1925 editor of the *Atlantic Medical Journal*, predecessor of the *Pennsylvania Medical Journal*, aged 66; and Dr. THOMAS A. WOODRUFF, past-president of the Chicago Ophthalmological Society and author of *Common Diseases of the Eye*, aged 75.

There is evidence to show that the consumption of flour is rising, but it is possible that the extra quantities are being used for cakes and biscuits, which are greatly in demand in industrial areas, rather than for bread itself. A bulletin issued by the Children's Nutrition Council advocates that in any case the additional flour consumed should be of the wheatmeal variety, and also that biscuits, slab cakes, and confectionery should be reduced to a small number of simple varieties and rationed on the "group" basis, with priority for war workers and heavy manual labourers (and perhaps also for persons between 12 and 18). A start has already been made in reducing the varieties of chocolate and sugar confectionery.

The Services

HONORARY PHYSICIAN TO THE KING

Majör-General P. S. Tomlinson, C.B., D.S.O., late R.A.M.C., has been appointed Honorary Physician to the King in succession to Major-General R. W. D. Leslie, C.B., O.B.E., late R.A.M.C., who has retired.

R.N.V.R. OFFICERS' DECORATION

The King has awarded the Royal Naval Volunteer Reserve Officers' Decoration to Surgeon Commanders Thomas Weir Drummond, Harold Oliver Martin, and Hugh Edwin Hall, R.N.V.R.

AIR FORCE AWARD

The George Medal has been awarded to Group Captain J. A. Gray, D.F.C., and to Acting Squadron Leader Joseph Aidan MacCarthy, M.B. The announcement in the *London Gazette* of September 9 reads as follows:

"One night in May, 1941, the pilot of an aircraft attempted to land with the undercarriage retracted. The aircraft crashed into the main bomb dump and then burst into flames. Group Captain Gray and Squadron Leader MacCarthy immediately went to the scene of the accident. Although there was some delay in getting the fire tender to the spot, owing to wire entanglements at the bomb dump, Group Captain Gray and Squadron Leader MacCarthy entered the burning aircraft and between them succeeded in extricating two members of the crew who were trapped. By the time the first man had been extricated the fire had spread from the starboard tanks to the cabin and on to the port tanks. Ammunition, incendiaries, and flares were burning in the wreckage, whilst numerous explosions erupted from the tanks. In spite of this an attempt was made to rescue the pilot, who was still trapped at the bottom of the fuselage. He was dragged clear, but his harness still held him to the burning aircraft. Before he could be released another petrol tank burst and flames spread to such an extent that any further attempts to rescue him became impossible. Group Captain Gray and Squadron Leader MacCarthy were assisted by two other officers, who both displayed great courage in their efforts. Group Captain Gray received severe burns on his head and his uniform was destroyed, but he continued his efforts until overcome by the fumes. Squadron Leader MacCarthy suffered minor facial injuries caused by burns but, despite this and the strain to which he had been exposed, he would not retire to his quarters until he was satisfied that everything possible had been done for the comfort of the injured. Both Group Captain Gray and Squadron Leader MacCarthy displayed great bravery in the most appalling circumstances."

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Surgeon Commander ROBERT WALLACE NESBITT, R.N., lost his life on active service this month. He was the son of the late Mr. Alexander Nesbitt of Dalkey, Co. Dublin, and was educated at the University of Dublin, where he qualified L.M., L.Ch. in 1918. Five years later he took the degrees of M.B., B.Ch., B.A.O. of the University, and in 1928 obtained the F.R.C.P.I. He entered the Royal Navy as surgeon lieutenant in 1921, was promoted to surgeon lieutenant-commander in 1924, and to surgeon commander six years later. He had been a member of the British Medical Association since 1928.

ROYAL ARMY MEDICAL CORPS

The name of War Substantive Captain SAMUEL BERNARD GREENBERG is included as "Died" in an Army Council casualty list published on September 18. He was educated in South Africa and took the degrees of M.B., B.Ch. of the University of the Witwatersrand, Johannesburg, in 1930. He was house-surgeon and house-physician at Johannesburg General Hospital, and in 1931 became assistant medical officer at the Springs Mines in the Transvaal. He came to this country in 1935, and in the following year settled in practice in Bath. Soon after the war began he was granted an emergency commission as lieutenant in the R.A.M.C. and was promoted to captain last year. He had been a member of the British Medical Association since 1929.

Lieut. RICHARD MENNIE, who died on September 13, was the only son of Mr. James Mennie, J.P., and Mrs. Mennie of Golspie, Sutherlandshire. He was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1927, proceeding M.D. five years later. He had held appointments at the Liverpool Heart Hospital and Chester City Hospital and for a time was in practice at Bradford and later at Liverpool. He was granted an emergency commission as lieutenant in the R.A.M.C. about a year ago.

Prisoners of War

Temporary Major David Livingstone Charters.
Captain James Edward Scott Carmichael.
Captain John Emmerson Gray.
War Substantive Captain Thomas Ion Victor Ferguson.
War Substantive Captain Francis Laurence Gerard Malone.

SOUTH AFRICAN MEDICAL CORPS

Dr. WILLIAM NEIL CAMPBELL, who has died while on active service with the South African Medical Corps in the Middle East, received his medical education at the University of Edinburgh, where he was a member of the rugby XV, and graduated M.B., Ch.B. in 1927, proceeding M.D. in 1939. He was elected a Member of the Royal College of Physicians of Edinburgh in 1935. Dr. Campbell acted as house-physician at Edinburgh Royal Infirmary in 1927-8, before returning to Durban, where he became honorary physician to the King Edward Hospital in 1937. He had been a member of the British Medical Association since 1927.

DEATHS IN THE SERVICES

Major-General JOHN MACFARLANE SLOAN, C.B., C.M.G., D.S.O., late R.A.M.C., died at Ifield on September 10, aged 69. He was born on July 22, 1872, the son of Samuel Sloan, M.D., and was educated at the University of Glasgow, where he graduated M.B., Ch.B. in 1898. Entering the R.A.M.C. as lieutenant in 1899, he became major in 1910, received a brevet as lieutenant-colonel in 1915, and was promoted to colonel in 1923 and major-general in 1926, retiring in 1929. He served as adjutant to the Territorial Army from 1908 to 1911. He served throughout the South African War of 1899-1902, when he took part in the defence of Ladysmith, in operations in Natal, the Transvaal, and the Orange Free State, was mentioned in dispatches in 1902, and received the Queen's medal with four clasps and the King's medal with two clasps, and the D.S.O. In the war of 1914-18 he served as A.D.M.S. of Indian Expeditionary Force D in 1916-17, and as D.D.M.S. of the Third Indian Army Corps in Iraq in 1917-19, was mentioned in dispatches six times, and received the C.M.G. In 1927 he was made a C.B. He leaves a widow. At the funeral at Crawley on September 13 the Director-General, Army Medical Services, was represented by Brigadier M. J. Williamson.

Universities and Colleges

UNIVERSITY OF DURHAM

Frederick John Nattrass, M.D., F.R.C.P., has been appointed to the Chair of Medicine tenable at the Medical School, King's College, Newcastle-upon-Tyne, from October 1.

UNIVERSITY OF LEEDS

The following candidates have been approved at the examinations indicated:

M.D.—L. A. Westwood.

FINAL M.B., Ch.B.—Part II: A. M. Bowler, S. Keidan, Brian Klempman, E. O. Lawton, J. Lees, D. Levi, J. Lyons, Kathleen M. Packett, C. Reichman, B. Sidman, G. H. Templeman, Jean M. Terry Thomas, D. Velinsky, L. Walsh, J. L. C. Ward, A. Wertheimer.

The West Riding Panel Practitioners' Prize has been awarded to D. L. Richardson.

The medical officer of health for Bury, in submitting his annual report for the year 1940, points out that the estimated population of the borough for that year was four or five thousand less than it had been since 1919, and that this fact would tend to raise such figures as the birth and death rates, and tuberculosis and cancer death rates. In spite of this the tuberculosis death rate was the lowest ever recorded in the borough, being 0.42 per 1,000 population; the cancer death rate, in contrast, was 2.3 per 1,000, the highest so far recorded. Only one maternal death was recorded during the year, the rate being 1.32 per 1,000 total births, a low figure when compared with the general death rate of 17.54 per 1,000 population. This good result may be attributed to the excellent attendance at the ante-natal clinics. At the time of writing the report 3,061 children had been immunized against diphtheria, and as a result only 13 cases were notified in 1940, and there was only one death.

No. 36

INFECTIOUS DISEASES AND VITAL STATISTICS

EPIDEMIOLOGICAL NOTES

Discussion of the Table

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended September 6.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths registered under 2 years, are for: (a) The 126 great towns in England and Wales (London included), (b) London (administrative county), (c) The 13 principal towns in Scotland, (d) The 10 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	125	7	23	1	7	107	9	39	2	1
Deaths	..	1	1	..	..	..	1	..	..	..
Diphtheria	820	48	234	21	24	929	38	350	30	34
Deaths	17	..	..	..	..	36	..	9	..	2
Dysentery	66	6	49	..	..	57	4	57	..	..
Deaths	..	..	..	..	..	..	..	..	..	..
Encephalitis lethargica, acute	3	..	..	..	..	2	..	1	..	..
Deaths	..	..	..	..	..	..	..	..	..	..
Enteric (typhoid) fever*	46	15	8	7	8	126	4	18	3	..
Deaths	2	..	..	..	..	..	..	..	..	..
Erysipelas	..	..	42	4	6	..	16	42	6	4
Deaths	..	..	..	..	..	..	1	..	..	..
Infective enteritis or diarrhoea under 2 years	41	4	19	27	5	46	7	13	10	9
Deaths	..	..	..	..	..	..	..	..	..	..
Measles	944	30	12	46	2	5,949	140	362	..	26
Deaths	..	..	..	..	..	8	..	1	..	..
Ophthalmia neonatorum	71	5	12	..	..	93	4	16	..	..
Deaths	..	..	..	..	..	..	..	..	..	..
Paratyphoid A and B	182	8	10	..	..	..	..	..	..	..
Deaths	..	..	..	..	..	..	..	..	..	..
Pneumonia, influenza†	407	12	34	1	4	371	30	3	..	4
Deaths (from influenza)	3	14	2	1	6	11	..	1	..	1
Pneumonia, primary	..	144	12	..	..	..	20	117	4	6
Deaths	..	..	5	..	..	..	..	7	..	..
Polio-encephalitis, acute	3	..	..	..	..	4	..	..	..	..
Deaths	..	..	..	..	..	..	..	..	..	..
Poliomyelitis, acute	29	1	6	2	1	42	2	3	..	1
Deaths	..	..	..	..	..	..	..	..	..	..
Puerperal fever	1	1	17	4	..	2	2	13	1	..
Deaths	..	..	..	..	..	..	..	..	..	..
Puerperal pyrexia	116	8	19	..	2	148	11	20	..	..
Deaths	..	..	..	..	..	..	..	..	..	..
Relapsing fever	1	..	..	..	..	1	..	..	..	..
Deaths	..	..	..	..	..	..	..	..	..	..
Scarlet fever	956	34	184	39	10	1,449	54	163	29	32
Deaths	1	..	..	..	..	1	..	..	..	..
Small-pox	..	..	..	..	..	..	..	..	..	..
Deaths	..	..	..	..	..	..	..	..	..	..
Typhus fever	..	..	..	..	..	..	..	..	..	..
Deaths	..	..	..	..	..	..	..	..	..	..
Whooping-cough	3,029	238	185	40	2	1,055	12	78	..	28
Deaths	18	2	3	3	1	2	..	11	1	1
Deaths (0-1 year)	300	28	57	48	20	315	41	52	22	16
Infant mortality rate (per 1,000 live births)	..	..	..	..	..	..	..	..	..	..
Deaths (excluding stillbirths)	3,680	481	527	205	115	4,576	801	504	157	115
Annual death rate per 1,000 persons living	..	..	11.5	13.6	5	..	..	10.2	10.5	10.1
Live births	4,846	432	811	379	225	5,476	801	797	259	219
Annual rate per 1,000 persons living	..	..	16.5	25.2	5	..	..	16.1	17.3	19.2
Stillbirths	150	6	32	..	..	207	20	28	..	..
Rate per 1,000 total births (including stillborn)	..	..	38	..	..	..	..	34	..	..

* Includes paratyphoid A and B for Eire and Northern Ireland.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Cases of pneumonia not otherwise notifiable.

§ Owing to evacuation schemes and other movements of population birth and death rates for Northern Ireland are no longer available.

A further fall in the notifications of measles in England and Wales occurred during the week. The decrease of 168 cases, compared with the total of the previous week, is the smallest decline in the incidence of this disease during the past ten weeks. The number of cases of whooping-cough in England and Wales was 144 fewer than in the preceding week, but a relatively large rise was recorded in Scotland. The city of Glasgow contributed 159 of the 185 notifications. The incidence of diphtheria showed a slight increase in both countries for the fourth consecutive week.

A further 15 cases were reported from the outbreak of dysentery in Bristol C.B., and this area accounted for approximately one-quarter of the cases in the country.

During the week reviewed 128 cases of cerebrospinal fever were notified in England and Wales, an increase of 30% on the total of the preceding week. The increase was due to the general rise in the incidence of the disease experienced by the northern counties and Wales.

Typhoid and Paratyphoid

The outbreak of paratyphoid fever in Bristol C.B. contributed a further 48 cases during the week, making a total of 170 cases during the three weeks August 17 to September 6. The cities of Liverpool, 20 cases, and Birmingham, 8 cases, were the only other areas in the country with a relatively large number of cases of paratyphoid. A third of the total cases of typhoid in England and Wales was recorded in London, 15.

Poliomyelitis

After poliomyelitis had fallen from 30 to 23 cases a week during the preceding four weeks a relatively large increase of 6 cases was recorded. The notifications of poliomyelitis (29) were widely distributed, involving twenty counties. The largest number reported from any registration area in England and Wales was 2. These areas were: Berkshire, Maidenhead M.B.; Buckinghamshire, Aylesbury M.B.; Dorset, Wimborne and Cranborne R.D.; Lincolnshire, Lincoln C.B. Three of the 6 cases reported in Scotland were notified in Glasgow. Both of the cases in Eire were recorded in the rural district of Ruthdown, Co. Wicklow.

Medical News

A meeting of the Society of Public Analysts and Other Analytical Chemists will be held at the Chemical Society's Rooms, Burlington House, Piccadilly, W., on Wednesday, October 1, at 3.45 p.m., when papers will be presented on "The Determination of Traces of Mustard Gas in Contaminated Foodstuffs and Other Commodities" by H. C. Lockwood, Ph.D., and "A Rapid Method for the Determination of Terpinyl Acetate and Other Esters" by Miss H. M. Perry, M.Sc., and T. F. West, Ph.D. Several chemists interested in war gas detection will exhibit pieces of apparatus which may be of use in micro-analysis.

At the Central Middlesex County Hospital, Acton Lane, N.W.10, on Thursday, October 9, at 3 p.m., Dr. W. Paget will give a demonstration (lantern slides) of some cases observed in the pathological department of the hospital, 1939-41.

The issue of the *Edinburgh Medical Journal* for September (Oliver and Boyd, 4s.) is a special education number. It opens with a short paper on the future of postgraduate teaching by Dr. James K. Slater, and the last twenty-eight pages are devoted to medical education in Scotland, with particulars of the medical curriculum at the Universities of Edinburgh, Glasgow, Aberdeen, and St. Andrews, and the qualifications given by the Scottish Colleges.

Lady Louis Mountbatten, now visiting the United States of America as official representative of the British Red Cross, has conveyed to Mr. Norman Davis, chairman of the American Red Cross, the thanks of this country for medical supplies and clothing, amounting to over \$25,000,000 in value, sent to Britain.

Dr. Freda B. Pratt of Oxford has changed her name by deed poll to Dr. Freda B. Bannister.

It was announced by the B.B.C. on September 22 that the Prime Minister has asked Sir Charles Wilson, M.D., President of the Royal College of Physicians of London, to join the British Mission to Moscow in order to report to him on any medical help that should be given to Russia.

An American Red Cross Mission is now in Russia for the purpose of assessing that country's medical and other relief needs. The American Red Cross has already sent to Russia a shipment of medical and surgical materials, including insulin and gas gangrene serum. Additional emergency supplies are being prepared for shipment. The chairman of the Mission is Mr. Allen Wardwell of New York, who was a commissioner of the American Red Cross in Russia during the last war. Other members of the Mission are Mr. James D. Nicholson, Dr. George K. Strode (Assistant Director of the International Health Division of the Rockefeller Foundation), and Mr. Robert K. Scovell.

At the end of a Polish-Czechoslovak medical conference held recently in Edinburgh a resolution was unanimously adopted calling on physicians of the two countries to carry on in friendly collaboration. At a dinner given to the guests of the congress, Prof. Koskowski, vice-chairman of the committee, thanked the Scottish authorities for their hospitality and co-operation, and expressed gratitude to the Royal College of Surgeons of Edinburgh for the readiness with which it had helped the committee in getting accommodation. The Czechoslovak Minister of Social Welfare emphasized the medical and social importance of the congress. The scientific proceedings included the presentation of reports on questions from various fields of medicine, with special reference to professional work in wartime.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.
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QUERIES AND ANSWERS

Income Tax

Assessment and Allowances

"SENEX" completed a return for 1940-1 claiming relief in respect of bank charges, building society interest, etc., and showing £136 professional earnings. The inspector of taxes says he accepts this figure and that "it will be necessary to submit an assessment" in that amount. Nothing has been said about the claim to relief.

Presumably the official writing the letter was dealing only with the question of the assessment of the earnings, and he will arrange for the assessment to be made accordingly. No doubt the return will be passed on to some junior official to deal with the relief claimed, but if "Senex" does not hear shortly on that aspect of the matter he might inquire what is being done about it.

Remuneration as Assistant

A. E. held a hospital appointment up to January 14, 1940; he then took an assistantship at £400 per annum, which he held until he took another similar employment as from July 14, 1940, at £500 per annum. (Car allowance and value of board and lodging are excluded as not being liable to tax.) What is his liability to assessment for 1940-1 and 1941-2?

Continuity of employment applies to the two assistant appointments, but not to that at the hospital. 1940-1.—This is the second year of the employment assessed, and the remuneration is chargeable on the current year's basis—i.e., on 86/365 of £400

(=£94) plus 279/365 of £500 (=£382), net total £476. The assessment of £475 can therefore be accepted. 1941-2.—This, being the third year of the employment, is chargeable on the basis of the previous year, unless the person assessed claims the current year's basis. The liability is therefore £475, and notice of objection to the assessment of £500 should be given. As regards expenses, renewals of books and instruments can be claimed, but not commissions paid for obtaining appointments.

LETTERS, NOTES, ETC.

Very Hyphenated

A correspondent who attended the recent annual congress of the Ophthalmological Society at Cambridge brings back one example of a term used by a speaker there in a discussion on nystagmus which seems worth preserving. It was "Laryngo-pharyngo-palato-oculo-diaphragmatic myoclonus."

The Evacuation Scheme

"PRO SINE QUID" writes: During the past two years many changes of billets have taken place and large numbers of children have trickled back to their homes. Others have transferred from one doctor to another in the same area not once, but as often as they change their billets. In some cases children have moved miles away, and the doctor with whom they originally registered is still called in although they are miles outside his area. The doctor receives no notification of changes in his list, and he is not infrequently called in to attend later arrivals and confronted with a blank card for children who have been living in his area for a year or more, whose guardians or foster-parents have not troubled to register with a doctor until they become ill. The result of all this is that I for one have not the slightest idea of my commitments nor of any changes which have taken place in my list. With petrol allowance nearly halved so that I cannot take any new patients, and with the increased cost of purchase-taxed drugs still rising, I should like to know how I stand. Please note that I am saying nothing about the question of remuneration, which so far as I am concerned appears to have ceased more than a year ago.

Rose-hip Jam

The following method has been suggested by the Children's Nutrition Council for using wild rose hips (a rich source of vitamin C) as a jam or purée. Pick the fruit after the first frost, and choose deeply red, ripe, but slightly soft berries, which should be cut from the stalks with a sharp knife or scissors and processed immediately, care being taken that they do not come into contact with metal, unless stainless. Take whole hips, snip off the stalks and withered buds, and wash quickly. Place in a clean enamel and covered with boiling water (using 1½ pints to 2 lb. of fruit), and boil for a quarter of an hour only. Rub through a fine sieve of hair or stainless metal, using a wooden spoon. Mix 2 lb. of the purée with 1 lb. of sugar and stir well. Dissolve and bring to the simmer. Boil for ten minutes and fill small earthenware containers. Allow the jam to cool and cover the tops with a half-inch layer of fine sugar. Cover with cellophane or the like, and keep in a cool place. The vitamin content will be retained for three or four months. According to a bulletin issued by the Children's Nutrition Council, the purée should contain about 160 to 600 milligrammes of vitamin C per 100 grammes, and the jam about 130 to 230 milligrammes. Thus there should be at least three 50-milligramme doses of ascorbic acid in slightly over three ounces of jam; half an ounce eaten daily with bread would provide a useful supplement to the vitamins obtained in a normal diet. It is interesting to note that rose hips are a traditional food of European peasants.

"Perfect Sight without Glasses"

Dr. D. OCKMAN (Kearsley, Lancs) writes: The annotation on the subject of perfect sight without glasses (September 13, p. 321) is very interesting. It is well known that the vocal apparatus can be trained to extend the range of a voice in both directions, and I should have thought that it would not be impossible to train the optical apparatus to behave with increased physiological power. The chief difficulty, as I see it, would be to find patients with the credulity, patience, and will-power required for the discipline involved. It is so much easier to put on a pair of glasses, just as it is so much easier to take atophan than to give up port and punch.

Medical Certification

A correspondent has received the following ingenuous note from one of his patients: "Dear Dr. S.—Will you kindly give me a prescription for glucose? My wife wants some for pregnancy, but I can't get it without a prescription from a doctor. Yours sincerely, —."

HEAD INJURIES IN MOTOR-CYCLISTS

THE IMPORTANCE OF THE CRASH HELMET

BY

HUGH CAIRNS, D.M., F.R.C.S.

Temporary Colonel, R.A.M.C.; Nuffield Professor of Surgery, Oxford; Consulting Neurosurgeon to the Army at Home

During the first twenty-one months of war the number of motor-cyclists and pillion passengers killed on the road was 2,279—21% more than during the corresponding months of peacetime (1,884 killed between September, 1937, and May, 1939). The frequency of head injuries was high (Table I), and in a number of cases the fatal outcome might have been avoided if adequate protection for the head had been worn. But, as will be observed, the issue is not clear-cut, since multiple injuries other than head injuries undoubtedly contributed to death, though to what extent cannot be defined.

The second section of this paper deals with such material as it has been possible to collect relating to non-fatal head injuries to motor-cyclists; the third briefly indicates some of the causes of accidents, and offers suggestions for prevention and for protection to the heads of riders by the general use of crash helmets of a type described. In conclusion, 7 cases, seen by me, are reported of non-fatal injuries to riders wearing crash helmets, and evidence is adduced to show that in most of them graver injuries would have been sustained without such protection.

Fatal Injuries

Through the kindness of the Royal Society for the Prevention of Accidents and of the Registrar-General it has been possible to procure the particulars and the certified cause of death in a series of 149 fatal accidents occurring among motor-cyclists (excluding pillion passengers) in the last four months of 1940. Table I shows that in 102 of 111, or 92%, of the cases in which the cause of death is

becomes clear that, when the head injury dominated the clinical picture, other injuries often were not mentioned in the death certificate. Thus in one case there were, in addition to the head injury, fractures of humerus, fibula, and fingers; in another, fracture of one clavicle; in another, compound fracture of the femur; in two cases, bad burns owing to a petrol fire when two motor-cyclists met in head-on collision. In addition, in one other case, in which the patient was certified as dying from shock following multiple injuries, Dr. Robb-Smith found at necropsy the following injuries: fractures of the anterior and middle cranial fossae, slight subdural haemorrhage, multiple areas of cerebral contusion, fractures of the mandible, maxilla, nasal bones, compound fracture of the right tibia and fibula, and slight laceration and fat embolism of the lungs. In probably two-thirds or more of the 149 fatalities there were multiple injuries of a major character, though head injury was a factor in most of the 149.

To assert that head injury is the sole cause of death in motor-cycle accidents would be misleading, but there can be little doubt that many patients in this series would have lived if their heads had been adequately protected. It is the combination of injuries, each in itself probably not fatal, that so often produces death, as in the following case.

Case I: Fatal Injury

A man aged 22 (Serial No. 131) collided in the black-out with a lorry which had pulled out to overtake a car. He was not wearing a crash helmet. He had concussion and a compound depressed fracture of the right frontal region, a fracture-dislocation of the right ankle, and laceration of the adductor muscles of both thighs. This case has already been described in detail elsewhere (Russell, 1941, Case 2), and it is only necessary to give the main points here.

He was unconscious for three-quarters of an hour after the injury. He showed a fairly severe degree of shock, but following a transfusion he improved. He then complained of pain in the right ankle and became very restless; for this it was necessary to give nembutal and later morphine. Twenty hours after the injury he became unconscious again, and remained so until death. Forty-five hours after injury he began to have convulsive seizures, and twelve hours later he died. His pulse rate was never below 140.

Necropsy (Drs. Robb-Smith and Dorothy Russell) showed, in addition to the injuries already described, a long right fronto-parietal fracture extending on to the roof of the right orbit and involving the sphenoidal and ethmoidal sinuses, which contained blood. There was also a fracture of the roof of the left orbit. The right frontal lobe showed superficial laceration of its dorsal surface over an area 5 by 2.5 cm., and the overlying dura was torn. In the brain, beneath the laceration, there was a wedge of softening and diffuse haemorrhage up to 2.5 cm. deep, and the anterior half of the right frontal lobe showed slight oedema. There were also a few punctiform haemorrhages

TABLE I.—*Certified Cause of Death in 149 Cases of Accidents to Motor-cyclists (149 Cases)*

Head injuries*	102
Head injury alone	85
" " and other unspecified injuries	11
" " fracture of lower limb	2
" " spinal injury	1
" " facial injury	1
" " meningitis	2
Multiple unspecified injuries	35
Other injuries	9
Fractured jaw and pneumonia	1
Fracture-dislocation of cervical spine, etc.	1
Thoracic injury, with haemorrhage, etc.	1
Thoracic and abdominal injury, with haemorrhage	1
Abdominal injury, with haemorrhage	1
Fractures of limbs	2
Multiple fractures of limbs and crushed thorax	1

In 3 of the above cases gas gangrene was given as a cause of death. In 3 of the cases death occurred under anaesthesia for operation on the injuries.

* The term "head injury" is used to cover the following terms on the death certificate: Fractured skull, concussion of brain, laceration of brain, intra-cranial or cerebral haemorrhage following injury, oedema of brain due to injury, cerebral compression.

specified a head injury occurred. In 85 cases death was ascribed to head injury without mention of other injury, but from additional information obtained as to 10 of these cases, either from case notes or from inquest reports, it

in the convolutions of the left hemisphere. Microscopic examination revealed fat emboli in the cerebral hemispheres and choroid plexuses.

The lungs showed focal haemorrhagic zones, early inhalation pneumonia, and considerable fat embolism. The adductor muscles of the thighs were grossly torn and bruised, with haemorrhage extending up into the retroperitoneal tissues.

In this case the damage to the brain, apart from fat emboli, was almost entirely restricted to the site of impact. There was no contrecoup damage; probably neither head injury nor limb injury was in itself sufficient to cause death. The injuries as a whole caused shock, and there was blood loss from scalp bleeding. Brain damage produced restlessness, which increased the pain from the foot, and this made the patient more restless. Restlessness may have promoted fat embolism of lungs and brain.

The outlook is often far more grave when head injuries are complicated by injuries elsewhere. The pulse tends to be more rapid, pneumonic signs may set in, often as a result of fat embolism (Robb-Smith, 1941; and Rowlands and Wakeley, 1941). Such patients are in a highly critical state and may be made worse by manipulations, such as setting of their fractures. They tend to travel badly in the early stages. This may be one reason for the fairly general belief that patients with head injuries travel badly—an impression not confirmed by observation of uncomplicated head injuries.

These are some of the most difficult accident cases to treat: they require careful resuscitation, much individual attention to wounds, and continuous supervision so that the right time may be chosen for setting the limbs, operating on the head wounds, and so forth. And the patient should be moved as little as possible. It is not surprising that three of the patients in the series were reported as dying under anaesthesia.

If in Case I a crash helmet had been worn the patient's head injury would probably have been less severe and he might not have died. With equal right it could be argued that if his lower limbs had been protected from injury he would not have died. Protection of the lower limbs is obviously more difficult than protection of the head, but the problem deserves further study.

The rarity of thoracic and abdominal injuries in fatal motor-cycle accidents is to be noted (Table I). Spinal injury also appears to be rare, but is easily overlooked in an unconscious patient and also, if not specifically sought, at necropsy.

Non-fatal Injuries

It is difficult to get a comprehensive picture of the non-fatal accidents in motor-cyclists or to estimate their frequency. They are evidently fairly common, for in a series of 556 blunt head injuries of known cause admitted over a period of fourteen months to a hospital for head injuries, some in the acute stage but many more in the chronic stage, 122, or approximately 22%, were in motor-cyclists. Of the 122 patients 22 had fractures or other major injuries in parts other than the head. These included fractures in various long bones, with a slight predominance in the lower-limb bones, fractures of the mandible, dislocation of the shoulder, and one case of injury to the spinal cord. This material has the disadvantage of being selected, since the hospital is primarily devoted to head injuries. The proportion of cases showing multiple injuries is therefore probably lower than in an unselected series. There are no examples of brachial plexus injury—known to be a serious and not infrequent result of motor-cycle accidents—possibly for the reason that in accidents affecting the brachial plexus the supraclavicular region receives the force of the blow and the head escapes damage.

The site of violence to the head, as indicated by scalp lacerations or by fractures, shows a predominance of frontal injuries (Table II), but no part of the cranium is exempt. There are several cases of fractures of the occipital bone, at times extending into the foramen magnum. The common

TABLE II.—Site of the Blow in Motor-cyclists' Head Injuries (93 Cases)

Frontal	..	..	..	52	Parietal	..	..	..	17
Temporal	..	..	..	12	Occipital	..	..	..	12

injury, however, is a frontal blow, with laceration of the forehead and multiple fractures, linear or depressed, in the underlying bone. Fracture lines often extend to the roof of the orbit and to the frontal and ethmoidal sinuses, and, in the other direction, backwards along the vertex towards the parietal region. There is superficial laceration of the frontal lobes, and usually the dura is torn. Sometimes there is cerebrospinal rhinorrhoea. There is considerable haemorrhage in both orbits, and sometimes damage to an eyeball or to an optic nerve. The olfactory pathways also are not infrequently interrupted.

Causes and Prevention

Speeding, especially at corners, poor visibility in black-out or fog, skidding, overtaking, convoy duty, sudden gusts of wind from side-streets—these are some of the causes of accident. The fatal accidents have been carefully analysed by the Royal Society for the Prevention of Accidents, and the reader is referred to their *Road Accident Bulletins*, Nos. 10 and 12. No doubt the conclusions drawn from this analysis would be equally applicable to non-fatal accidents.

The most important and effective method of preventing head and other injuries is careful driving. There

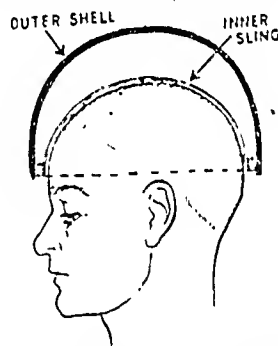


FIG. 1.—Diagram of a crash helmet.

seems to be particular need to impress this obvious fact upon motor-cyclists, since they, more than users of other types of motor vehicle, appear to be exhilarated by their speed and therefore reckless in attaining it. And, unlike occupants of a motor-car, they are not protected by their machine. When motor-cycle accidents occur at high speeds no amount of protection of the head or other parts will prevent gross and often fatal injuries. It is not sufficiently realized that a slight increase in speed may produce a very great increase in the amount of damage.

It is the purpose of this paper to advocate for all motor-cyclists, civilians and fighting Forces alike,* the use of a crash helmet of the type worn by racing motor-cyclists. It consists (Fig. 1) of an outer shell of some firm substance, shaped rather like an inverted pudding-bowl and quite smooth on its outer surface. This is supported by a lining consisting of a series of web slings fitting snugly on the rider's head and attached by its base to the base of the outer shell. The helmet is also retained in place by a chin

* The requirements of troops under fire are not considered in this paper.

strap. Between the outer shell and the lining there is a gap which may with advantage contain some energy-absorbing material.

Report of Cases of Non-fatal Injury

So far I have seen only seven cases of motor-cyclists injured while wearing a crash helmet.* In all of them the effects of the head injury had been unusually mild.

Case II

A rifleman aged 23 (Serial No. 1003) had had a slight head injury, with fifteen minutes' amnesia, two months before his accident during night exercises on June 6, 1941. Riding at 30 m.p.h. he ran into the back of a stationary vehicle. He was

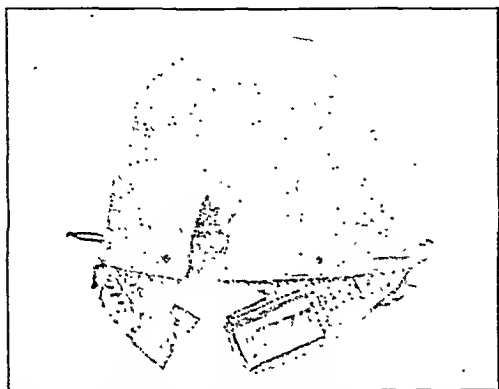


FIG. 2.—Case II. Damage to the outer shell and inner sling of the crash helmet in the right frontal region.

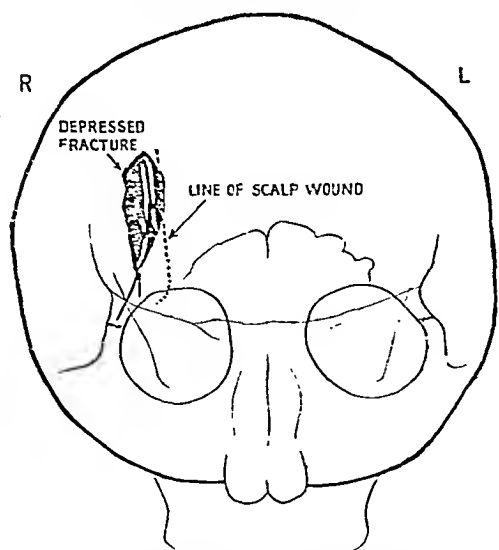


FIG. 3.—Case II. Tracing of radiograph of depressed fracture beneath the site of damage to the crash helmet.

rendered unconscious and sustained a lacerated wound on the right side of his forehead, also a simple transverse fracture of the right tibia and fibula just below their mid-points. His crash helmet was broken in the right frontal region, where part of the outer shell was detached, and beneath this gap the base of the inner sling was broken (Fig. 2). From the upper end of the gap

in the outer shell two fissures extended into the rest of the shell, each for a distance of about 2 cm. The gap in the helmet corresponded to the site of scalp laceration. Beneath the scalp wound, but slightly lateral to it, there was a double line of fracture, slightly depressed at one edge (Fig. 3), which extended into the external angular process of the frontal bone.

The duration of his retrograde amnesia was at first uncertain, but two months after the accident he had recovered memory of past events up to within four minutes of the accident. His first memory was of a time forty hours after the accident. During this period of amnesia he had a generalized convulsion, was twice given 1·4 grain of morphine for restlessness, and also had his scalp wound excised and sutured under pentothal anaesthesia.

He was transferred to a military hospital for head injuries on June 12. At that time he was conscious, lucid, and quiet, but he was a little drowsy and showed some defect of memory and concentration and very slight nominal dysphasia. Speech was otherwise normal. He was a left-handed man. He had some stiffness of the neck and very slight papilloedema. There was slight left lower facial weakness. The other cranial nerve functions and motor, sensory, and reflex functions were normal. He was complaining of considerable frontal headache. Lumbar puncture on the eighth day showed a clear colourless fluid under a resting pressure of 90 mm. H₂O, containing 0·045% of protein, and 2 lymphocytes and a few red blood cells per c.mm.

Within a few days he became normally alert, his verbal memory became normal, and his papilloedema subsided. His headache persisted unusually long, but finally disappeared after three weeks. The fractured tibia and fibula were treated by manipulation and plaster, and good union was obtained. Return to full duty was delayed by the leg fracture.

This man evidently received a severe blow on the right frontal aspect of his crash helmet, with the production of a scalp wound immediately beneath. Damage to the skull was limited to a fracture beneath the lateral edge of the scalp wound. The appearances suggested that the helmet had struck a slightly concave object which had punched a fairly clean hole in the helmet and had driven the piece of outer shell inwards. Without the crash helmet there is little doubt that a deep penetrating injury would have been produced and that the fracture, like so many of the fractures in unprotected motor-cyclists, would have spread, to involve the frontal and ethmoid sinuses and the roof of the orbit, with considerable displacement of the frontal bone and the eyeball and also laceration of the frontal lobes—an injury, in fact, like that of Case I. As it was, the brain damage was evidently inconsiderable: to judge from the lumbar puncture there was little or no intracranial bleeding, and the evidence of brain damage was limited to slight and fleeting impairment of verbal and other memories. The fact that post-traumatic amnesia lasted forty hours is certainly not a reliable indication of the extent of brain damage, since he received 1·2 grain morphine and intravenous pentothal during that period.

Case III

A lieutenant aged 23 (Serial No. 582) had a motor-cycle accident while on convoy duty on April 16, 1941. He was overtaking a van, probably at 40 to 50 m.p.h., when it suddenly pulled out to the right and he crashed into it. He had head injuries, a wound five inches long into the left knee-joint, and a transverse fracture of the left patella without displacement, also bruising of the right elbow and left wrist. His crash helmet showed severe injuries on the right side (Fig. 4): the paint was removed in a patchy fashion over a wide area—an indication of the extent of the violence; and there was a T-shaped fracture, with one limb running vertically downwards to the free edge of the helmet above and behind the right ear, and the other passing forwards at right angles to the first almost to the middle line in the frontal region. From the junction of the T, also, a faint crack extended backwards for 2 cm. One of the loops of the inner sling of the helmet was completely torn from its attachments.

* Since this paper was written a further 8 cases have been seen. In all except one there was considerable damage to the crash helmet. All the patients were mildly concussed; one of them had a moderately severe frontal fracture. All made a complete recovery.

On the scalp there was a superficial laceration 1.5 cm. long in the right parietal region, which lay about 1.5 cm. below the junction of the fracture lines in the crash helmet when this was comfortably worn in the usual position. The laceration was evidently produced by indentation of the helmet at the posterior end of its horizontal fracture line. The fact that the two lines did not correspond when the helmet was worn in the usual position gives some idea of the extent to which the helmet was deformed and crushed on to the head at the time of the impact, once the inner sling had broken (Fig. 5). In the skull there

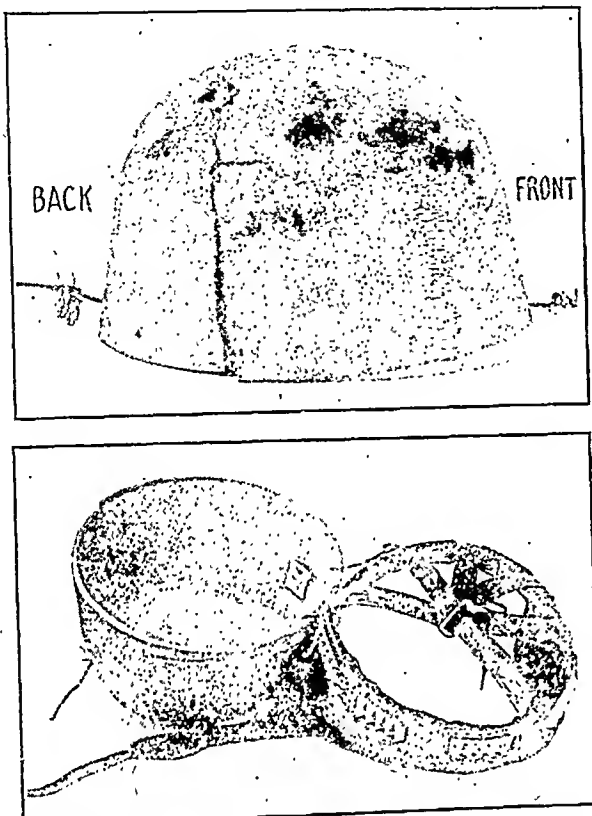


FIG. 4.—Case III. Top: Fracture lines and areas of loss of paint on right side of crash helmet. Bottom: The same helmet showing loss through tearing of one of the loops of the inner sling.

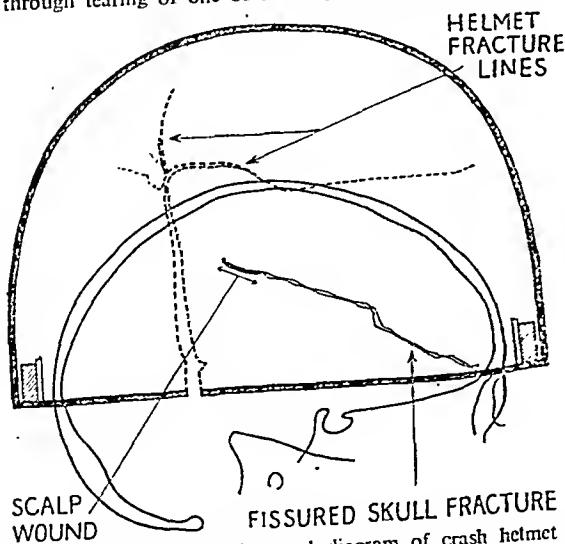


FIG. 5.—Case III. Superimposed diagram of crash helmet and skull, showing lines of fracture in outer shell of helmet, scalp wound, and fissured fracture.

was a fissured fracture about 14 cm. long running forwards and downwards from immediately in front of the site of the scalp laceration almost to the outer angle of the frontal sinus.

The patient was rendered unconscious by the accident. His retrograde amnesia was no more than 1 to 2 seconds, and his

first memory after the accident was about two hours later, at which time he was well orientated and showed no neurological signs. For the first few days he could not concentrate and was irritable. For ten days following the accident he had a constant, generalized, dull, throbbing headache, which disappeared a few hours after lumbar puncture (faintly yellow cerebrospinal fluid under a pressure of 140 mm. H₂O, and containing 35 mg. of protein per 100 c.cm. and occasional red cells).

His knee wound was treated with sulphanilamide, excision and suture, and fixation in plaster. He walked six weeks after the accident and recovered normal function of his left lower limb six weeks later, at which time he was perfectly well in other ways.

This case illustrates well the value of the crash helmet. A severe blow on the head was partly expended on breaking the crash helmet. It did, however, produce a fracture of the skull beneath one of the fractures of the crash helmet, also a scalp wound. In spite of the fracture of the skull the brain injury was of a minor character, producing a brief period of amnesia and several days of headache, from both of which symptoms rapid and complete recovery ensued. The areas of the helmet denuded of paint (Fig. 4) indicate that the effect of the blow (or series of blows) was widespread, an obvious advantage to the brain and possibly resulting from the smooth round surface of the helmet.

The superimposed diagram of crash helmet and skull radiograph (Fig. 5) shows that the horizontal fracture in the crash helmet is not parallel with that of the skull. It indicates also the degree to which the crash helmet must have been crushed down on to the head by the blow, since it may be presumed that at the time when the skull was actually fractured the junction of the fracture lines in the crash helmet lay approximately over the scalp laceration.

Case IV

A private aged 26 (Serial No. 914) had an accident on July 27, 1941, when he ran into a car coming out of a side turning. He had no memory of the accident or of the five minutes preceding it, but it is probable that he was travelling at about 25 m.p.h. He had no memory for fifteen minutes after the accident, but his memory of subsequent events was clear.

His motor-cycle was very little damaged. He sustained a small shallow triradiate scalp wound over the right Rolandic region, about 2.5 cm. from the middle line, superficial lacerations above and below the outer part of his right eye (he was wearing goggles, which were very slightly bent but not broken), a subconjunctival haemorrhage on the outer part of the right eyeball, bruising below the left knee, but no fracture of long bones or of skull. From the radiographs it appeared possible that slight separation of the lambdoid suture had occurred, but there was no tenderness of the overlying scalp.

His crash helmet showed no sign of injury in the region of the small scalp wound, but in the left occipital region there was a fissured fracture 7 cm. long extending vertically upwards from an area of the free edge from which the paint had been removed. The helmet was otherwise undamaged. There was no bruising of the scalp beneath the site of this split, and the discrepancy between the site of the right frontal scalp injury and of the left occipital helmet fracture is not explained.

On admission to hospital three-quarters of an hour after the accident the patient was fully conscious and orientated and quite alert. Temperature was 98.4°; pulse rate 80; and mental examination and examination of the central nervous system showed nothing abnormal. The scalp wound was closed with two interrupted stitches. The patient had headache for the first day, but thereafter he was free from symptoms. He got up on the sixth day and was discharged to duty on August 14, 1941.

Case V

A gunner aged 27 (Serial No. 996), on March 29, 1941, was on his motor-cycle riding slowly in bottom gear from a country lane into a main road. He remembered no more, but was told afterwards that a car ran into him from behind. His crash helmet was not broken, but showed an irregular area of abrasion,

13 by 7 cm., in the left frontal region, and at the postero-medial edge of this area a shallow dent in which the material of the outer shell was softened. In the area of abrasions the varnish was removed and there were numerous curved linear lacerations in the paint running downwards and forwards in parallel lines, and deepest at the antero-lateral margin of the area (Fig. 6). One of the web slings was also torn.

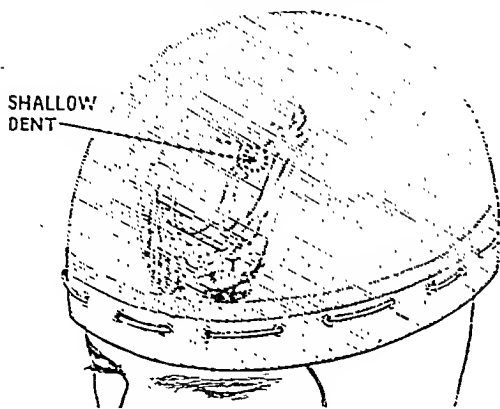


FIG. 6.—Case V.—The effects of a tangential blow on the outer shell of crash helmet.

The patient had no abrasions on the scalp or fracture of the skull. The scalp beneath the site of helmet injury was marked by an area of tenderness which persisted for a few days. As indicated above, there was retrograde amnesia for a few seconds. Post-traumatic amnesia lasted twenty-four to thirty-six hours. He was kept in bed for nineteen days with at first fairly continuous left fronto-parietal headache. Then after only two days out of bed he was returned to his unit, where headaches recurred and he was sent back to hospital. During the next seven weeks he was in two different hospitals and one convalescent depot. At the end of this treatment his headaches were better and he returned to his unit for six days, during which period he had an attack of dizziness. He was returned to hospital, where, after lumbar puncture, he developed intense headache and vomiting. He became depressed and anxious about his own health and that of his wife, who was living in a bombed area and was five months pregnant. He was admitted to a military hospital for head injuries on June 26, 1941.

Inquiries showed that his upbringing had left much to be desired. In peacetime he had had considerable difficulty in getting employment. He enjoyed his life in the Army, but did not mix well with his comrades. He had a horror of bloodshed. Examination showed no abnormality in the central nervous system and only a moderate degree of intelligence. He appeared anxious to succeed at his work, but he was an unstable type of man. He was discharged from hospital on August 18, 1941.

The post-convulsional syndrome so well illustrated by this case is a problem entirely different from that with which we are primarily concerned. The case is reported in detail to emphasize the fact that crash helmets cannot be expected to prevent such a syndrome, onset of which does not depend on the severity of the initial head injury, especially in patients of poor mental stamina.

The position of the abrasions on the helmet (Fig. 6) suggests that this patient received a tangential blow, striking first the front part of the helmet to the left of the middle line and proceeding downwards and outwards to the left. This tangential type of injury is on the whole the least harmful type of blow to receive. Dirt-track riders and other experts try to throw themselves clear of the machine at the last moment before the accident. They prefer to volplane to earth and, in so doing, to escape with grazing injuries which are relatively harmless. The longer the body takes to come to rest the less is the force of impact. When

the head comes into contact with the ground it is obviously better that the outer shell of the helmet should be abraded than the scalp and skull.

Case VI

A major aged 29 had a head-on collision with Case VII while on exercises on March 27, 1941. Neither man has any memory of the accident, but probably this patient was travelling at 35 to 40 m.p.h. and Case VII at slightly over 40 m.p.h. Case VII's bicycle was a total wreck, and the front wheel and forks, handlebars, and lamps of Case VI's bicycle were destroyed beyond repair. Both patients were wearing crash helmets.

In this patient the injuries were a small wound in the occipital region one inch in front of the external occipital protuberance, two upper incisor teeth knocked out, a fracture of the upper jaw, cut lower lip, and a compound comminuted fracture of the right patella, and he was unconscious. His crash helmet showed a slight dent in the right fronto-lateral region, and its varnish had been scraped from two areas—one just below the dent and the other in the occipital region. These marks of violence were slight, and it is therefore doubtful whether his head received any severe blow. Radiographs of the skull showed no fracture. His retrograde amnesia was ten to fifteen minutes. His first subsequent memory was three or four days after the accident. During the latter part of this period he awakened readily and responded promptly to questions; he fell asleep easily, was confused and disorientated, and kept asking the same question again and again. For nearly three weeks after the accident he found, when he tried to discuss the affairs of his unit, that his memory was a little hazy. When seen four weeks after the accident he showed no abnormal neurological signs and his intellectual functions and mood were normal. He had suffered twice in earlier years from periods of depression.

Until six weeks after the accident he had recurrent frontal headaches, with occasional pain in the right occipital region and back of the neck. For a further four weeks he remained bedridden on account of his fractured patella. This was treated first by sulphamilamide dressing and plaster, then by secondary suture, and later by excision of the comminuted patella. The final result was a useful limb, with slight limitation of movement at the knee, and return to duty.

It is difficult to estimate the value of the crash helmet in this case. The marks of violence on it were slight, and much of the force to the head and neck appears to have been taken on the face. However, there was a period of unconsciousness or confusion lasting three or four days, and this suggests a fairly severe head injury from violent rotation of the head, or a milder head injury complicated by fat emboli to the brain. There was nothing remarkable about the completeness of the subsequent recovery of intellectual function, though its promptness was unusual.

The position of the superficial scalp cut must be noted. It was a transverse cut an inch long across the middle line one inch in front of the external occipital protuberance. It was within the area protected by the crash helmet. A similar scalp laceration was found in Case IV.

Case VII

A lieutenant aged 23 met Case VI head-on at a bend in the road. He was wearing a crash helmet. He had no bruises on the head or face, and x-ray examination showed no fracture of the skull. He had a compound supracondylar fracture of the right femur and a fracture of the right tibia into the knee-joint, also abrasions on the left lower limb and back. His crash helmet was smeared with blood, but there were no marks of violence on its outer surface; however, the loops of webbing on the interior were in places partly torn from their attachments. He had no memory for a period extending from about ten minutes before to between fifteen and thirty minutes after the accident. On regaining consciousness he was worried because he did not know where he was or how he had hurt himself. He lost consciousness again in the ambulance, but regained it in hospital later in the day, and thereafter was lucid. He had no headache, but was for a time a little nervous at night. He had always been highly strung. When seen four weeks after

the accident he showed no neurological signs or impairment of intellectual function.

His broken leg was treated first by extension in a Thomas splint and then by fixation in plaster. He was discharged from hospital on August 13, 1941, with a useful limb.

This patient, like Cases VI and VIII, was detained in hospital for a long time because of his leg injury, and he could have returned to duty much earlier if it had been only his head injury which required treatment.

Case VIII

A second lieutenant aged 23 (Serial No. 997) had an accident on June 12, 1941, when he had a head-on collision with an oncoming car. The front wheel of his motor-cycle was buckled and the handle-bars were bent. He sustained a head injury, a double compound fracture of the middle of the shaft of the right femur, a simple butterfly fracture of the right tibia in the lower third, and lacerations of the right knee and right hand. His crash helmet had a little blood on its outer surface, but was otherwise undamaged. There was no sign of injury to the scalp and radiographs of the skull were negative. His retro-grade amnesia was one second or less, his post-traumatic amnesia no more than a few minutes. He states that he was lucid after that, but the hospital notes say that he was irrational for the first few days following injury. During that time he complained of headache, though subsequently he denied ever having had any.

When seen eleven days after the accident he was lucid and co-operative and showed no neurological signs or impairment of intellectual function, notwithstanding slight infection of the thigh wound and nocturnal fever. His lower-limb fractures presented a difficult problem of treatment. Extension for the femur was obtained by a Steinmann's pin through the upper end of the tibia, and the tibial fracture was fixed by open operation.

The head injury was obviously very slight in this case, and there is no evidence that the crash helmet in any way decreased its severity.

Discussion

It is difficult to collect conclusive evidence in favour of crash helmets. No hospital capable of studying this problem receives unselected cases, and it is impossible to judge from any figures available the seriousness of motor-cyclists' head injuries. Some motor-cyclists die on the road. Others are admitted to the nearest hospital and may die within the next two or three days, or, if they recover, may eventually find their way to a central hospital or back to work. Mild cases may never go to hospital at all. Little help can be obtained from central records, since the relevant information is scattered in several different Government Departments.

Though the seven cases reported here cannot be regarded as representative, they constitute, when considered individually, an encouraging experience with crash helmets. In all of them there was concussion. In four cases the damage done to the helmet was considerable: in three (Cases II, III, and IV) the helmet was fractured, and in another (Case V) it bore the marks of a severe tangential blow. In two cases (Cases VI and VII) the damage to the helmet was slight. In Case VIII there was no evidence of damage to the helmet, and it is not impossible that the mild concussion resulted from violence transmitted to the cranium through the spinal column. In the other six cases, however, there is clear evidence of a blow on the head.

In Case II a portion of the helmet appears to have been punched out, and beneath the gap there was a scalp wound and a slightly depressed fracture (Figs. 2 and 3). In Case III the force of the blow was applied over a wide area of the helmet covering the right parieto-frontal region, with the production of an extensive T-shaped fracture in the outer

shell (Fig. 4); in addition to a fissured fracture of the skull there was a small scalp wound, from the position of which it was possible to judge to what degree the outer shell of the helmet had been jammed down on to the head at the time of injury (Fig. 5). This extreme displacement of the outer shell could only have occurred when the inner lining of the helmet had given way as a result of one of the slings being torn from its moorings, as shown in Fig. 4. The case illustrates the importance of a strong inner lining.

The crash helmet used in these cases did not invariably prevent fracture of the skull, but it is probable that it did prevent the fracture from spreading as far as it otherwise would have done. In frontal injuries when there is no crash helmet the fracture usually extends back along the roof of the orbit and into the accessory nasal sinuses, whereas in the frontal injury of Case II the fracture was limited to the area of damage of the crash helmet.

The brain damage in all cases was remarkably slight, as judged by the absence of neurological signs and by the promptness and completeness of the recovery of intellectual functions. To be sure, head injuries of similar mildness do occur in motor-cyclists who have not worn crash helmets, but in accidents of the type of Cases II, III, and V the initial neurological disturbance is usually much greater and the recovery slower, though not necessarily less complete.

Theoretically there are certain disadvantages in the crash helmet. It increases the diameter of the head and so the leverage, thus enhancing the possibility of broken neck or rotational acceleration within the cranium. But if the helmet is adequately designed to deaden the blow, then the leverage of the blow is also deadened. Further experience is required to settle these points, and doubtless there is still considerable work to be done in improving the means of diverting the energy of the blow from the brain. It is to be hoped that surgeons will report their observations of head injuries in which crash helmets have been worn.

The frequency of fractures of the lower limb in this series calls for some comment. Five out of the seven patients had severe fractures of the lower limb, four affecting the right lower limb and one on the left side. This series is too small to permit conclusions to be drawn, but Mr. J. C. Scott has kindly supplied me with figures from the Wingfield-Morris Orthopaedic Hospital which suggest that there is a greater tendency to lower-limb fractures, especially compound fractures, in motor-cycle accidents than in other types of accident (Table III). In 10 fatal cases

TABLE III.—*The Relative Frequency of Fractures of the Lower Limb, due to Motor-cycle Accidents, at the Wingfield-Morris Orthopaedic Hospital during Twelve Months from June 1, 1940*

	Upper Extremity	Lower Extremity
Motor-cycle accidents ..	17 (2 compound, 15 simple)	40 (14 compound, 26 simple)
Other causes	196 (26 compound, 170 simple)	220 (24 compound, 196 simple)

of my series in which full details of the injuries were available. 5 had fractures of the lower limb and 2 had fractures of the upper limb. If by the general use of crash helmets the number of fatalities in motor-cycle accidents is reduced it may be expected that the number of severe fractures of the lower limb requiring prolonged treatment will increase. Their prevention deserves further study.

Summary

In a series of over one hundred fatal accidents to motor-cyclists 92% suffered from head injury and approximately 66% had multiple injuries of a major character.

When non-lethal head injury is combined with other major but non-lethal injuries death may readily occur from cerebral fat embolism and other causes. Alleviation of the head injury by means of a suitable crash helmet may be expected to save life in some cases of this type.

The most effective method of preventing head injuries in motor-cyclists is careful driving. In addition the use of a crash helmet is advocated.

Seven accidents to motor-cyclists wearing crash helmets are reported. In all of them the head injury was mild, though in four there had been considerable damage to the crash helmet.

The incidence of fractures of the lower limb is greater in motor-cycle accidents than in other types of accident, and the number requiring prolonged treatment may be expected to increase when fatalities are averted by the use of a suitable crash helmet.

I am deeply indebted to Dr. H. Holbourn, D.Phil., for his help during the preparation of this paper, to the various people and organizations mentioned in the text, to the medical officers of a military hospital for head injuries under whose care most of these cases were, and to the Medical Research Council, who provided a grant in aid of the clinical note-taking. I wish also to thank Lieut.-Col. J. A. A. Pickard, D.S.O., for enabling me to study the records of the Royal Society for the Prevention of Accidents.

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A CASE OF CONGENITAL BILATERAL RENAL HYPOPLASIA WITH A SHORT REVIEW OF THE LITERATURE

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Numerous cases of unilateral renal hypoplasia compatible with adult life have been described, but no case of bilateral renal hypoplasia in which the subject survived to adult age seems to have been reported. Indeed, very little mention of the condition has been made by observers in the past. Herbst and Apfelbach (1935), referring to this subject, state:

"Hypoplasia of the kidney was known to Blasius in 1677. Ballowitz (1895) assembled 20 cases. Risel (1903) 36 cases. Since that time many cases have been added to the literature, some of which are definitely hypoplastic, whereas others should be classified as acquired atrophy or one of the other forms of congenital anomaly." . . . According to Papin, hypoplastic kidneys are more frequently found in men than in women, and the right side is more often affected. It has been found in all ages, from the foetus to advanced life. In the living it is always unilateral, since if bilateral it could not sustain life. It may lie in a normal position or may be ectopic. The renal pelvis is usually small and frequently cone-shaped with small calices, some of which may be rudimentary in type."

Marion (1939) stated that congenital hypoplasia of the kidneys can be found on both sides, but he does not dilate further on the condition, merely stating that he had never seen a case.

Eisendrath (1935) has recorded 17 cases of unilateral hypoplasia, and Johnson and Wayman (1936) 8 cases. Eisendrath makes the following points in the diagnosis of the condition:

1. Intravenous pyelography may indicate the extent of the renal parenchyma.

2. Retrograde pyelography may show: (a) a triangular or ampullary pelvis, with minor calices arising direct from the pelvis proper without intermediary major calices; (b) the presence of only one or two calices arising from a very small pelvis.

3. Cystoscopy is of little value. A rudimentary or occluded ureter may be found.

4. The presence of a small kidney shadow.

In describing the developmental anomalies of the kidneys, of which hypoplasia is one, it is necessary to distinguish carefully between the various conditions which have been described. Mayers (1940), in a classification of renal anomalies, recognizes the following developmental abnormalities:

Congenital Hyperplasia.—Increase in size or number of cellular units—for instance, long kidney, large kidney.

Congenital Hypoplasia.—A macroscopically recognizable kidney—for example, infantile kidney.

Congenital Aplasia.—Hypoplasia to a degree which is not recognizable macroscopically, but of which there is histological evidence.

Congenital Agenesis.—Complete absence of development, therefore no evidence of renal tissue. This may be either bilateral or unilateral (congenital solitary kidney).

A definition of the pathological picture of congenital hypoplasia is given by Johnson and Wayman (1936) as "an abnormally small kidney with fewer glomeruli than normal. These glomeruli are less closely packed together and are often larger than normal."

In connexion with aplasia and agenesis a rigid distinction between these two conditions has not always been made in the literature. Hinman (1940) states that congenital bilateral absence of the kidneys has been recorded 135 times since 1663. He goes on to say that proved bilateral agenesis—i.e., true non-formation rather than secondary atrophy—is even less frequent, for only recently has microscopic examination been carried out to ascertain the presence or absence of atrophied remnants of the metanephros. The majority of these cases of renal agenesis were associated with gross malformations of the other organs.

With regard to the frequency of these conditions, Soloway (1939) states that unilateral renal agenesis is found once in about a thousand necropsies, while bilateral renal agenesis occurs once in about six thousand necropsies. As indicated above, unilateral renal hypoplasia is relatively common, while bilateral renal hypoplasia is, unlike bilateral renal agenesis, almost unknown. The aetiology of these conditions is not known. Hinman (1940) believes that they are all due to developmental arrest, and that the ultimate stage reached (whether agenesis, aplasia, or hypoplasia) is one only of degree. He also admits the rare possibility of an inherent defect in the germ plasm. The following is a report of our case.

Case History

The patient, a man aged 22, a compositor in civil life, had joined the Army on September 23, 1940. He had always enjoyed good health until his present illness. His mother and father, aged 45 and 50 respectively, are alive and well and have never had any serious illness. There is no family history of any renal disease. The mother is said to have received sanatorium treatment many years ago. There is one sister, aged 20, who had infantile paralysis at 2 years of age, which resulted in weakness in the right leg. There is no history of miscarriages or stillbirths in the family. Both grandfathers of the patient are dead, the cause of death not being known. Both grandmothers are alive and well. The patient has never had rheumatic or scarlet fever; the tonsils were removed during childhood, but there is no record of any renal complications. The patient has never previously suffered from any urinary disturbance such as oliguria or frequency.

On October 8, 1940, he had a shivering attack and headache. His nose felt "stuffy" and the throat dry. No actual cold developed, but there was a slight dry cough. After a few days he produced some white sputum. The shivering disappeared, and about five days later he started vomiting, the attack lasting four days. He had no appetite, and on October 18 was slightly jaundiced. The vision became blurred on one occasion. On October 21 he reported sick and was admitted to an E.M.S. hospital.

On examination he looked ill, he was very drowsy, the tongue was dry, and the conjunctivae were slightly jaundiced. The temperature was normal and the pulse 52. There were no abnormal signs in the heart or lungs. The blood pressure was 130/85. The blood urea was 356 mg. per 100 c.cm., the red cells numbered 3,610,000 per c.mm., and the haemoglobin was 70%. The urine contained albumin ++, but no casts or red cells were seen.

The patient was transferred to our hospital on October 23 with a diagnosis of uraemia, and he remained there until his discharge on April 27, 1941. On admission the tongue was furred but moist, and he was somewhat drowsy, but his general condition was good. The cardiovascular system showed no abnormality and the blood pressure was 130/80. The optic disks were normal, with large physiological cups and a tigroid fundus background. The urine, specific gravity 1020, contained albumin ++, sugar nil, red blood cells +, pus cells +, a few crystals of uric acid, and no organisms. The blood urea on October 28 was 300 mg. per 100 c.cm. The van den Bergh reaction was within normal limits.

SUBSEQUENT PROGRESS

The patient was kept in bed on a low-protein diet. The output of urine was at first small, but after two to three weeks it increased considerably in volume. By December 2 he felt his normal self again, having made steady progress. The blood urea had fallen progressively, and was 200 mg. per 100 c.cm. on December 2. He was then passing large quantities of pale urine of low specific gravity, containing from 0.15 to 0.20 grammes of albumin per 100 c.cm., estimated by Esbach's method. At this point he was allowed up, and he felt very well. The diet had meanwhile been slightly increased in protein. The blood pressure was 124/86. The blood urea on one occasion was 117 mg. per 100 c.cm., but it would not drop any lower. The urine contained granular casts on occasion. On November 9 intravenous pyelography was carried out, but there was no excretion of dye up to forty minutes.

On December 25 the blood urea was still high, and in a further effort to lower it he was confined to bed for two months. During this period the blood urea never fell below 101 mg. per 100 c.cm., and mostly fluctuated between 130 and 160 mg. In view of the failure of this treatment and his continued good health he was allowed up, and a month later was sent on leave. Immediately after his return to hospital, on April 10, 1941, the blood urea was 130 mg. per 100 c.cm. He continued to keep reasonably well, although he was easily fatigued and not fit for more than light work. There was still moderate albuminuria, and his condition had changed but little during the past four months. He was discharged from the Army, and on April 27 he left hospital to take up his civilian occupation. The blood pressure was then 130/82, and at no time was there any evidence of cardiovascular hypertrophy.

While in hospital the following additional laboratory findings were obtained:

Urea clearance: 9% average maximum normal on November 5, 1940; 4.8% average maximum normal on February 26, 1941.
Plasma CO₂, 29 volumes per 100 c.cm. on November 5, 1940.
Plasma proteins, 6.6%.
Blood cholesterol, 194 mg. per 100 c.cm.
Serum calcium, 8.4 mg. per 100 c.cm.
Serum phosphorus, 4.9 mg. per 100 c.cm.
Blood phosphatase, 15 units per 100 c.cm. on March 20, 1941.

X-ray Findings.—As mentioned above, intravenous pyelography on November 9 revealed no excretion of dye up to forty minutes. When repeated on January 20, 1941, it gave the same result. Retrograde pyelography of the left renal tract on February 15 and of the right side on March 20 clearly showed the renal shadows, and both were abnormally small. It is regretted that owing to paper shortage it has not been possible to reproduce

the original films. The accompanying diagrams, however, indicate the state of affairs. The normal kidney lies between the level of the upper border of the twelfth thoracic vertebra and the third lumbar vertebra, the right kidney being slightly lower than the left (Fig. 1). In the films the right kidney shadow

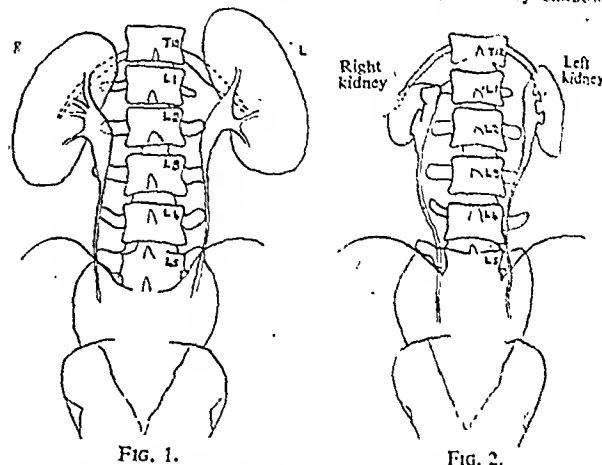


FIG. 1.

FIG. 2.

FIG. 1.—Outline diagram from a radiograph taken after retrograde pyelography in a normal healthy young adult.

FIG. 2.—Outline diagram from a radiograph taken after retrograde pyelography in our patient, showing features referred to in the text.

extends from the middle of the first to the lower border of the second lumbar vertebra, and the left kidney shadow extends from the lower border of the twelfth thoracic vertebra to the lower border of the second lumbar vertebra (Fig. 2). The kidneys are therefore normal in relative position, but each is only about half the normal size. The right renal calices are only two in number, and are flattened and deformed. The right renal pelvis is small. The left renal calices are three in number, but are flattened and deformed also. The left renal pelvis is fairly normal in appearance. The course and appearance of the ureters are within normal limits.

Cystoscopy showed that the bladder and the ureteric orifices were normal, as were the external genitalia, and there was no evidence of any other congenital anomalies.

Discussion

Although we were not in a position to carry out a post-mortem examination the following points enabled us to make a diagnosis of bilateral congenital hypoplasia of the kidneys:

1. The sudden onset of uraemia in a young adult without a previous history of renal disease is a feature of the case. Such a history is also characteristic in polycystic kidney, which is the only other bilateral congenital renal insufficiency known. This lends considerable support to the conclusion that the lesion is congenital.

2. The x-ray findings conform to the conditions laid down by Eisendrath (1935), quoted above, in the following particulars: (a) The kidney shadows are small. (b) There is a decrease in the size of the renal pelvis, with only two major calices on the right side. Flattening and deformity of the calices are present on both sides.

3. The absence of cardiovascular hypertrophy favours a congenital rather than an acquired lesion. According to Oppenheimer (1934) hypertension is found in only 57% of cases of polycystic kidneys. In chronic interstitial nephritis, with the so-called secondary contracted kidneys, it is exceedingly rare not to find hypertension.

The alternative diagnosis of chronic interstitial nephritis may be ruled out in view of the absence of any history of previous nephritis, the presence of definite x-ray evidence of deformed renal calices and pelvis, and the absence of any cardiovascular hypertrophy.

It has been stated by Herbst and Apfelbach (1935) that bilateral hypoplastic kidneys are incompatible with life.

The question whether this is so or not depends entirely on the number of functional glomeruli present in the hypoplastic kidneys. The normal kidney has an enormous reserve, and kidneys which possess at least a minimum number of functional glomeruli will certainly be compatible with life, just as the grossly damaged kidneys of polycystic disease or of Bright's disease may be able to support life for a number of years.

Among the other remarkable features of this case is the maintenance of reasonably good health with grossly inefficient kidneys. This suggests that a tolerance has been established to a high non-protein nitrogen in the blood over a number of years. It may here be remarked that this is good evidence that hypertension is more unfavourable to the patient with Bright's disease than is the glomerulotubular damage. Other points to be noted are the absence of any sign of renal infection and the relatively unchanged blood chemistry, apart from the blood urea. The latter findings also support the conclusion that the condition in this case is a congenital one.

Summary

A review of the literature on congenital developmental anomalies of the kidneys is given, with particular reference to hypoplasia, aplasia, and agenesis.

A case of congenital bilateral renal hypoplasia is described; this is believed to be the first one recorded in the literature.

Certain unusual aspects of the case, and the differential diagnosis, are discussed. Comparison is made with congenital polycystic kidneys, to which the condition bears considerable clinical resemblance. It is recorded that bilateral congenital hypoplasia of the kidneys is compatible with a reasonably healthy adult life.

We are much indebted to Dr. W. D. Nicol for permission to publish this report.

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A REVIEW OF DYSPESIA IN THE ARMY

BY

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The present paper is a report on the dyspepsia in a military hospital during the year 1940. This hospital is situated in an area in which all types of troops are represented. During 1940, 8,702 medical cases were seen either as in-patients or out-patients: of these, 1,270 (14.6%) were diagnosed as disorders of the stomach or duodenum. I have collected the notes of 804 cases which were under my care, either in the gastric unit or as out-patients, during the first fifteen months of the war (October, 1939, to December, 1940). There were 420 out-patients and 384 in-patients, this latter figure referring only to cases admitted since April, 1940, when a gastric unit of fifty beds was formed. This unit was instituted so that uniformity in diagnosis and disposal could be achieved; and although the problems of administration, of dieting, and of investigations were simplified, there were great disadvantages in having these patients in a single ward together. Of the 804 cases 91 were Canadian, 6 New Zealand, and 707 (31 officers, 143 N.C.O.s, and 533 other ranks) British. There were only a few patients from the Dominions, because they operated their own hospitals.

The diagnosis may be summarized as follows. Dyspepsia of all types, 804 cases: gastro-duodenal dyspepsia, 742 (92.3%); peptic ulceration, 424 (52.7%).

During the early months of the war dyspepsia of all types was most commonly found in Reservists, but it has now been observed to be equally prevalent among men called up in the "Army classes." The numbers naturally varied with the class of troops in the area at the time. However, dyspepsia does seem to be rare in Regulars. Although occupation was recorded in over half the cases it was of no great value because of the difficulty of classifying the results. In the majority the duration of symptoms was between two and five years. In only 10% did symptoms originate during service in the Army, and of these 80 patients 13 were neurotic in character. It is noteworthy that of the 91 Canadian patients 47 developed symptoms only after arrival in this country.

In order to make a diagnosis it is of the utmost importance that an accurate and detailed history taken in chronological sequence should be compiled. Of the special investigations radiographs were most valuable. The fractional test meal was of only partial value, as it was found that with patients who had experienced difficulty in swallowing the tube abnormal curves were recorded. The most extraordinary curves were obtained when an air-raid warning had been sounded during the test.

Table showing Details of Results

	British			Totals
	Radiograph +	Radiograph -	No Radiograph	
Ulcers:				
Duodenal ulcer ..	218	9	55	282
Gastric ulcer ..	48	3	19	70
Pyloric ulcer ..	36			36
Jejunal ulcer ..	6			6
Gastro-duodenal dyspepsia:				
Pylorospasm ..	47			47
Irritable stomach ..	27			27
Hyperchlorhydria ..		32		32
Achlorhydria ..		14		14
Gastritis and duodenitis ..	15	82	35	132
Carcinoma pylori ..	1			1
Duodenal diverticulum ..	1			1
Reflex dyspepsia:				
Neurotic dyspepsia ..		11	29	40
Pulmonary Tb. ..	5			5
Ap. appendix ..	9			9
Colonic dyspepsia ..	5			5
Cholecystitis ..	3			3

Dominion Cases

Ulcers:				
Duodenal ulcer ..	30			30
Gastric ulcer ..	3			3
Gastro-duodenal dyspepsia:				
Cardiospasm ..	1			1
Pylorospasm ..	3			3
Hyperchlorhydria ..	14			14
Achlorhydria ..	3			3
Gastritis or duodenitis ..		15		15
Transferred (no diagnosis*)				22

* These cases were transferred to E.M.S. hospitals before a definite diagnosis was made. The majority had the hyperchlorhydria type of dyspepsia.

Peptic Ulcer

In the British series there were 391 (55%) patients with definite evidence of peptic ulceration—a high figure, but one which would have been higher if it had been possible to make allowances for "missed ulcer" cases.

Age.—The ages at which symptoms were first noticed by the patients are recorded in the accompanying graph. It will be seen that the highest incidence for duodenal ulcer is between 20 and 30, and that the same is true of gastric ulcer, although the curve is flatter.

Past History.—In the patients with past histories were found 35 who had had acute haemorrhage, 26 of them by haematemesis. Nine with melaena was probably an underestimate, as although a story of "black stool" was common it was found very difficult to separate a pharmacological from a pathological cause, and only "proved cases" were

recorded in this period only 13 developed symptoms after the war began. They were not a conspicuous group.

Surgical Cases

Surgical cases are not included in the series, but 18 gastroduodenal operations were performed during 1940. These included 13 for perforated ulcer, 3 partial gastrectomies, 1 gastro-enterostomy, and the closing of 1 gastro-enterostomy.

Disposal

Disposal still remains a major problem, for cases of general dyspepsia are often passed into the Army during a quiescent period; in the majority of cases, however, it is not long before the inevitable recurrence of symptoms begins, and as there can be no adequate provision of a gastric diet in the units the condition progresses. In the case of men with proved ulcers it is accepted that they are unfit for military service. In the case of officers it is often justifiable to retain them for home duty, when they can "live out" and get themselves a suitable diet. The practice of "living out" on a diet is also occasionally justifiable with an N.C.O. or other useful man.

In the remaining large group who have no ulcers the problem remains. Those with long-standing dyspepsia can be "boarded" out of the Army, but those with short histories generally find their way into Category C. Here they do practically no work of any value, and spend their time being "fully investigated" at each station to which they are posted. Many of these genuine dyspeptics are capable of useful civilian work, and in my opinion any of them who do not earn their keep in the Army should be "boarded" out of it, regardless of whether their symptoms are psychological or pathological in origin. Dyspepsia lends itself to malingering, but this in my experience is rare, although there is a certain amount of exaggeration of symptoms.

Summary

A review is given of the dyspeptic cases admitted to a military hospital during 1940 and of the notes of 804 patients seen between October, 1939, and December, 1940.

Peptic ulceration was present in 52.7% of all cases, and was spread equally between Reservists and the Army classes, but was rare in Regulars.

Duration of symptoms of dyspepsia was between two and five years, only 10% of patients developing symptoms while in the Army.

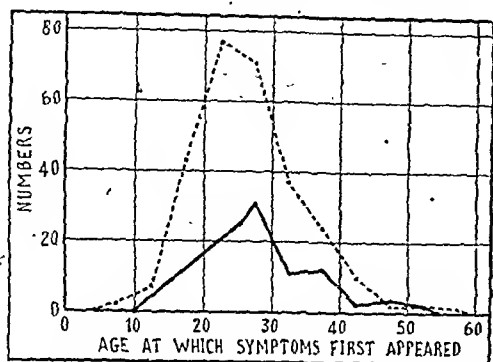
Of Canadian patients 50% developed symptoms after arriving in this country.

Of British cases 55% had peptic ulceration, the highest age incidence being between 20 and 30; 35 had had acute haemorrhage; 34 had perforated, and 29 had had a laparotomy performed.

Attention is drawn to the unreliability of the timing of the onset of pain as a diagnostic factor, and to the frequency of vomiting.

Neurotic dyspepsia was not particularly common.

Disposal is discussed.



Graph showing age of onset of symptoms. The broken line denotes duodenal ulcer; the continuous line, gastric ulcer.

included. Eighteen other cases were admitted to the hospital with acute haemorrhage. Thirty-four patients had had a perforated peptic ulcer in the past. Twenty-nine others had undergone a short-circuiting operation. Those patients who had had a gastro-enterostomy performed, and in whom symptoms returned, did not have relief for more than two years, although in only six did a jejunal ulcer develop. Twenty-nine cases had had appendectomy for the relief of duodenal symptoms, but again relief was only for some two years.

Symptoms.—The timing of the onset of pain was unreliable as a diagnostic factor; for although in the case of gastric ulcer the pain usually came on within an hour of taking food, many patients with duodenal ulcer showed the same timing. In fact, the pain from a duodenal ulcer might come on at any period from one to three hours after food. Vomiting was almost universal, and in most cases of either gastric or duodenal ulcer gave partial or complete relief. Vomiting was far commoner in soldiers than in civilians.

Signs.—No data were available for actual weights, but the cases showed no evidence of serious undernutrition. Dental sepsis or the lack of teeth was not appreciable. Epigastric rigidity and tenderness, although usual, were not universal.

Gastro-duodenal Dyspepsia

"Pylorospasm" and "irritable stomach," purely radiological diagnoses, have been used here for want of more definite terms. The group included a certain number of missed ulcer cases, some cases of neurotic dyspepsias, and probably some of dyspepsia reflex from other organs, but in no instance was there definite evidence of the exciting cause. In the large group of gastritis or duodenitis vomiting was a very common symptom, and was out of proportion to the severity of the rest of the symptoms. In this group, also, there was slight loss of weight without evidence of serious wasting.

Reflex Dyspepsia

The reflex dyspepsia cases represent only those admitted to the gastric ward with a diagnosis of gastro-duodenal dyspepsia. The majority of cases of straightforward reflex dyspepsia never reached the gastric ward, but were treated in other wards as chest or abdominal cases, according to the primary diagnosis. Of the neurotic dyspepsia patients

C. V. Craster and H. Simon (*J. med. Soc. New Jersey*, 1941, 38, 362) state that in 1940 in the City of Newark, N.J., out of 1,577 reported cases of pneumonia 1,123 (71%) were treated by chemotherapy alone. In 1,033 patients treated by sulphapyridine alone the fatality rate was 7.4%, in 86 cases treated by sulphathiazole alone the fatality was 7%. In 13 cases treated by serum alone the mortality was 7.7%, in 126 cases treated with sulphapyridine plus serum the fatality was 11.1%, and in 203 cases which received neither serum nor chemotherapy the mortality was 29.4%.

CRUSH INJURY WITH RENAL FAILURE AND RECOVERY

BY

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This paper gives an account of a case of crush injury with acute renal failure in which recovery occurred, although the injured limb had eventually to be amputated. An important part of the treatment was the use of sodium bicarbonate to restore the alkali reserve during the period of renal failure. The main clinical and biochemical data are summarized in the table and the chart.

Case History

As the result of a bomb explosion a man 58 years old lay for twelve hours with his left thigh crushed under fallen masonry. He remained fully conscious throughout this period and was able to converse with rescue workers. By the time he was released two superficial lacerations of the left hand and left eyebrow were giving him some pain, but his mind was still clear and the crushed limb painless.

On admission to the emergency hospital some twenty hours after the explosion the man's general condition was fair, without signs of shock. The apparent site of crushing extended from the level of the left great trochanter not more than four inches downwards, but there was no abrasion or demonstrable haematoma. The injured limb was anaesthetic and completely paralysed, and there was foot-drop. Good pulsation could be

felt in all the main vessels of the limb. X-ray examination showed no injury to pelvis or femur. Simple dressings to the lacerations of the face and hand and a plaster back splint for the left foot were all that seemed necessary.

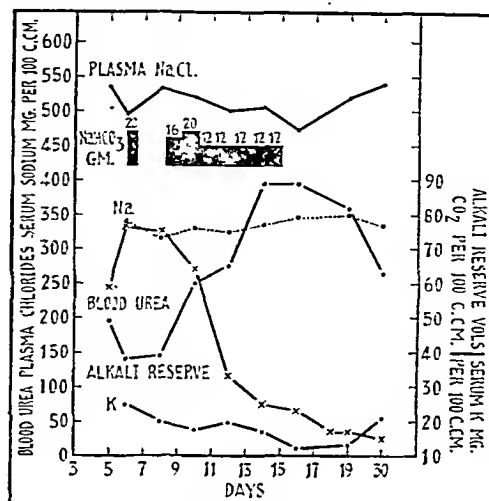


Chart of case.

During the next three days—i.e. the second, third, and fourth days of illness—there was little change in the patient's general condition, but his output of urine fell sharply, being 34 oz. in the third day and only 7 oz. in the fourth. The urine was blood-stained and had to be withdrawn by catheter on two occasions. In our experience of air-raid casualties, no matter what the site of injury, and even in the absence of any form of urinary obstruction, inability of the conscious patient to pass

Table summarizing the Main Clinical and Chemical Data

Day of Illness	General Condition, Treatment, etc.	Blood Pressure		Fluids		Urine		NaHCO ₃ given (gm.)	Blood Urea (mg. per 100 ccm.)	Urea Clearance % of normal	Plasma		Serum	
		Systolic (mm. Hg)	Diastolic (mm. Hg)	Intake (oz.)	Output (oz.)	Albumin	Blood, Casts, etc.				Chlorides (mg. NaCl per 100 ccm.)	Alkali Reserve (volts. CO ₂ per 100 ccm.)	Sodium (mg. per 100 ccm.)	Potassium (mg. per 100 ccm.)
0	Left thigh crushed for 12 hours													
1	Admitted to E.M.S. Hospital. No shock. General condition fair													
2														
3	Catheterized twice; urine blood-stained			11	34	—	Blood-stained							
4				25	7	+	"							
5	1,000 c.c.m. 2% sodium bicarbonate given by rectal drip. Hb 90% (Haldane). Drowsy. Pain and oedema in limb	150	80	54	19			20	243		49	536		
6	General condition worse. 1,000	156	80	70	78	+	Granular casts		333		38	496	338	25
7		195	95	60	68	Fl. tr.	"							
8	Sodium bicarbonate by mouth, and extra salt in diet, started	158	80	72	71	+	"	16	324		39	532	316	20.2
9	Hb 80%			74	97	Fl. tr.	No Hb; no casts	20		9.3				
10	Electrocardiogram normal			69	73									
11		100	66	70	68			12	270		60	520	331	17.6
12				95	86			12	115		65	500	326	19.3
13				97	80			12		49	89	504	333	14.8
14	Sodium bicarbonate stopped. Slightly jaundiced. Serum bilirubin 1.2 mg./100 c.c.m.			90	50			12	72					
15		135	80	90	89									
16		120	72	84	60				63	57	89	472	348	11.8
17		136	78	85	62									
18				86	70									
19				86	72				32	58	82	520	349	13
20				79	76									
21				80	74									
22									27		63	540	332	20.4
23									22		63	516	336	18.4
24														
25														
26														
27														
28														
29														
30														
103	Mid-thigh amputation	116	78											
120	Hb 94%	124	80						30	53				

urine voluntarily is not uncommon. This patient had no prostatic enlargement or urethral obstruction, and has passed urine without difficulty since the fourth day of his illness. On that day the main feature was a severe cough due to diffuse bronchitis, which cleared up after treatment with 10 grammes of sulphanilamide in the next forty-eight hours. It must be pointed out, however, that in view of the renal damage in this type of case it is generally desirable to avoid the use of sulphanilamide.

On the fifth day the injured limb was giving rise to much pain and showed deep oedema from the groin to the middle of the thigh. There were one or two vesicles in the skin below the apparent site of crushing. In other respects, however, the condition in the limb was unchanged, pulsation in the vessels being still apparently normal. This day's urinary output was 19 oz., which, together with evident dehydration, a blood urea of 234 mg. per 100 c.cm. (normal 25-40), a plasma alkali reserve of 49 volumes CO₂ per 100 c.cm. (normal 55-77), and plasma chlorides of 536 mg. per 100 c.cm. (normal 560-620), indicated severe impairment of renal function. Accordingly, 1,000 c.cm. of a 2 per cent. solution of sodium bicarbonate (equivalent to 20 grammes of NaHCO₃) was given by a rectal drip.

The next (sixth) day, however, the blood urea had risen to 333 mg., and the alkali reserve had fallen to 38 volumes CO₂, and the plasma chlorides to 496 mg. The urine contained albumin and granular casts, and the patient's general condition was obviously worse. Fluid administration by intravenous drip was therefore started, 1,000 c.cm. of normal saline, followed by 1,000 c.cm. of 5% glucose in one-fifth normal saline, being so given. In view of the low alkali reserve, and the low plasma chloride content it would have been better to continue with normal saline until the chlorides were within normal limits, and to give sodium bicarbonate by mouth. The urinary output increased to 78 and 68 oz. on the sixth and seventh days respectively, and the patient seemed materially better. On the seventh day five injections of eucortone, each of 1 c.cm., were given.

On the eighth day, however, his blood urea was 324 mg. per 100 c.cm. and his alkali reserve still only 39 volumes CO₂. The condition of the lungs contraindicated the intravenous administration of fluids; the oral administration of sodium bicarbonate was therefore started in 4-gramme doses every four hours, being later reduced to 12 grammes a day, so that a total of 96 grammes was given in the course of the next seven days (see table and chart). In addition extra salt was given in his diet. The urinary output subsequently remained steady at 70 to 80 oz. a day, and progress in the clinical condition was steadily maintained. The blood urea fell gradually to normal and the alkali reserve rose to 89 volumes CO₂ per 100 c.cm. on the fourteenth day, when the sodium bicarbonate was stopped; after remaining high for some days it later became normal. The albumin and casts disappeared from the urine on the ninth day; and the blood pressure fell from 195 mm. Hg systolic and 95 mm. Hg diastolic on the seventh day to 135/80 mm. Hg on the fifteenth day. The degree of renal recovery is indicated by the rise in the urea-clearance value (calculated from twenty-four hours' output of urine) from 9.3% of normal average on the ninth day to 57% a week later. The present urea clearance, on a two-hour test, is 53% of normal average.

The changes in the plasma chlorides and serum sodium and potassium are shown in the table and chart. The chlorides fell early to subnormal levels and only slowly recovered. The serum sodium content has been normal throughout (325-350 mg. per 100 c.cm.), except for the value on the eighth day. The serum potassium content, however, was 25 mg. per 100 c.cm. on the sixth day (normal 16-22), and then fell steadily, becoming subnormal at 11.8 mg. on the sixteenth day before being stabilized at the normal level.

Mild jaundice—direct van den Bergh reaction weakly positive, serum bilirubin 1.2 mg. per 100 c.cm.—was apparent about the fourteenth day, but slowly cleared up without special treatment. As the patient had not had any blood transfusion, this was probably related to a low degree of liver damage associated with his toxic state.

The subsequent clinical course has not been uneventful. In the succeeding two months the injured limb showed little

change, the oedema subsiding slowly, only to be followed by gross wasting. Pain in the limb was persistent and severe, both at rest and on passive movement, and only 15 degrees of flexion were obtained in the hip and knee in spite of physical treatment. Then two sloughing ulcers appeared, one over the head of the fibula and the other at the heel, and showed little sign of healing in three weeks. In addition the limb, still paralysed and painful, appeared once more to be endangering the patient's life. Accordingly, after a period when the patient was too ill to operate on, a mid-thigh amputation was successfully performed, almost fifteen weeks after the date of injury.

Pathological Report.—Of the tissues of the injured limb Dr. Joan M. Ross reports: "The sciatic nerve shows some fibrosis of the interstitial tissue with slight lymphocytic infiltration. There is slight scarring of the individual nerve bundles. The vessels show the changes usual in peripheral vascular degeneration. There is some medial degeneration with calcification in the artery and an associated atherosclerosis. The veins are normal. Sections from the vastus muscle show a multiplication of muscle nuclei and a development of young fibrous tissue among muscle fibres. The appearance is consistent with a healing crush injury." It seems probable that the degree of arterial degeneration was an important factor in determining the need for amputation.

The change in the man's outlook since his operation has been very striking and satisfactory. In contrast with the early weeks, when his general condition, the severe pain in his injured limb, and the loss of other members of his family in the raid made him depressed and miserable, he now discusses the prospect of returning home and getting about on an artificial limb, and rarely complains at all.

Summary

A case of crush injury with renal failure and recovery is described.

The administration of sodium bicarbonate to raise the dangerously low alkali reserve and the giving of sodium chloride played a decisive part in restoring renal function.

Amputation of the injured limb ultimately became necessary, and should be taken into account in similar cases in assessing prognosis.

We are indebted to Mr. Basil Hume for permission to publish this case, which has been under his care, and for his advice and criticism; and to Dr. E. G. L. Bywaters for seeing the patient.

HENRY LESTER INSTITUTE, SHANGHAI

The annual report for 1940 of the Henry Lester Institute of Medical Research, Shanghai, describes continued widespread activities, despite restrictions imposed by the war. Fifty-eight original papers were published during the year under review. Many cases of nutritional deficiency were investigated, chiefly beriberi and pellagra. During the latter part of the year a study was made of more than a hundred cases of ariboflavinosis. Various types of eye lesions were found; also mouth lesions and seborrhoeic dermatitis. The eye lesions responded most rapidly to riboflavin treatment, signs and symptoms beginning to recede within forty-eight hours. Several cases of pellagra were found to be suffering from fasciolopsis infection, while infestation with ascaris frequently, and with hookworm occasionally, was present in patients suffering from nutritional deficiency. The report states that evidence is being accumulated to test the theory that intestinal parasites may consume vitamins, especially the vitamin B groups, so that with a heavy infection and a low vitamin intake a condition of avitaminosis is produced in the host. Experiments were carried out on some four hundred children in a refugee camp to test the efficacy of soy-bean powder mixture. This substance contains soya bean powder, sugar, starch, sodium chloride, and calcium carbonate. After a period of four months it was found that children fed on this mixture showed greater growth and suffered less sickness than control children fed on ordinary diet.

THE BACTERIOLOGY OF AIR-RAID WOUNDS EXAMINED WITHIN FORTY-EIGHT HOURS OF INFLECTION

BY

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(Working for the Medical Research Council)

It was suggested by Stokes and Tytler (1918) and by Fleming and Porteous (1919) that in the war of 1914-18 pyogenic cocci, in particular *Streptococcus pyogenes*, entered wounds chiefly during their treatment in hospital. Miles *et al.* (1940) have found evidence of hospital infection of wounds during the present war.

In order to determine whether pathogenic bacteria are carried into wounds when they are inflicted it is necessary to examine the bacteriology of very early wounds. In Table I are shown the kinds of bacteria cultivated from 31 air-raid wounds examined at an Emergency Medical Service hospital during 1940. Through the kindness of the surgeons the material examined was collected at operation when the wounds were undergoing their first surgical cleansing. Pieces of the external wounds, wound tracks, and any foreign bodies were taken into sterile Petri dishes from the surgeons' forceps.

TABLE I.—Bacteria obtained from 31 Air-raid Wounds within the First Forty-eight Hours of their Inflection. (*Ps. pyocyanea* and *Proteus* were absent in all cases.)

Case No.	<i>Str. pyogenes</i>	Staphylococci		Bact. coli	Diphtheroid bacilli	Aerobic spore-bearing bacilli	Non-haemolytic streptococci	<i>Str. viridans</i>	Micrococci	<i>Cl. welchii</i>	Other Clostridia
		Coagulate +	Coagulate -								
1											
2	+		+			+				+	
3											
4			+								
5											
6											
7		+									
8											
9											
10			++					+			
11											
12											
13											
14										+	
15											
16											
17											
18											
19	+	+		++	+	++	+	+		++	
20											
21											
22			++								
23											
24			++								
25											
26											
27			++						++		
28											
29			++							++	
30											
31											
Total	2	2	13	6	3	10	3	2	6	8	1

* No bacteria obtained.

The bacterial population of an early wound is inconducible, and small swab samples often yield no bacteria. In order to test larger samples, pieces of excised tissue were either cut up with sterile scissors or ground with sterile glass fragments in a sterile glass hand-mill, and then inoculated into large tubes containing 30 c.c.m. of broth, with or without added sterile blood, serum, or liquid. (Liquid is an anticoagulant which inhibits some of the bactericidal power of normal blood—see von Haebler and Miles (1938).) The necessary manipulation inevitably increased the risk of contamination from the air; stress is therefore not to be

laid on the frequent occurrence of aerobic spore-bearing bacilli and coagulase-negative staphylococci (see Table I), although all possible precautions to prevent contamination were taken, short of working in a bacteria-free atmosphere. Fluid cultures were subsequently plated on to blood-agar plates, which were incubated aerobically and anaerobically. Fragments of the wounds and wound tracks were also smeared direct on to blood-agar plates.

The frequency with which different kinds of bacteria were found among these wounds differed from that observed among older wounds: in that pyogenic cocci were rarer while coagulase-negative staphylococci, aerobic spore-bearing bacilli, and *Clostridium welchii* were more common. Six of these early wounds yielded no bacteria. Pyogenic cocci were obtained from three, *Str. pyogenes* and coagulase-positive staphylococci together from one, and each separately from the other two. The wound which yielded both *Str. pyogenes* and coagulase-positive staphylococci was a small scalp wound on the head of a child whose tonsils were large and inflamed. A blood-agar plate culture from the wound eight hours after its infliction gave one colony of *Str. pyogenes*; a few days later Group A streptococci were abundant in both wound and throat. Unfortunately the streptococci from both sources were untypable, but from the evidence it is probable that the wound became infected from the patient's throat, possibly by way of her fingers.

Cl. welchii was found in 8 of the 31 wounds. In one case it produced enough gas and damage in a haematoma around a fractured tibia to lead to amputation. In a second case a piece of metal entered the chest wall, penetrated the abdomen, and lacerated the liver, from a piece of which, excised thirteen hours after injury, *Cl. welchii* was obtained. A pleural effusion subsequently developed in which *Cl. welchii* was present in large numbers, producing much gas. In the remaining 6 cases *Cl. welchii* gave no clinical evidence of its presence.

For comparison, Table II shows the figures for 29 limb wounds of more than five weeks' duration and 13 air-raid wounds of more than forty-eight hours' and less than three weeks' duration, all of which were treated by the closed-

TABLE II

Kind of Bacteria	31 Air-raid Wounds less than 48 Hours Old	13 Plastered Wounds between 48 Hours and 3 Weeks Old	29 Plastered Wounds more than 3 Weeks Old
<i>Str. pyogenes</i>	2	5	20
Staphylococci:			
Coagulase +	2	9	19
Coagulase -	13	5	7
Bact. coli	0	4	15
<i>Ps. pyocyanea</i>	0	1	7
<i>Proteus</i>	0	1	2
Diphtheroid bacilli	3	19	21
Aerobic spore-bearing bacilli	10	12	5
Non-haemolytic and viridans streptococci	5	3	5
Micrococci	6	0	1
<i>Cl. welchii</i>	8	1	1
Other Clostridia	1	1	5
No bacteria	6	0	0

plaster method. Bacteria were much more plentiful in the wounds of these two groups than in the earlier wounds; the cultures from them were made on blood-agar plates, aerobic and anaerobic, and in cooked meat medium.

Discussion

Most of these early wounds were small ones which healed by first intention; their subsequent bacteriology was not followed. Comparison between small wounds which heal by first intention and larger open wounds treated by the closed-plaster method is fair only because there is no

obvious reason why different kinds of bacteria should be carried into them at the time of their infliction. Failure to isolate a given kind of bacterium from a wound is not conclusive proof that no bacteria of that kind were present; on the other hand, the methods of culture employed in this investigation are reasonably sensitive, and the most probable explanation of the failure to isolate pyogenic cocci from more than three wounds seems to be that they were not present in those from which they were not obtained.

Summary

Str. pyogenes and coagulase-positive staphylococci were each obtained from two wounds out of 31 early air-raid wounds examined within forty-eight hours of their infliction. *Cl. welchii* was obtained from 8, of which 6 showed no clinical evidence of its presence. Six of the wounds yielded no bacteria of any kind.

Thanks are due to the six surgeons who kindly allowed the collection of material in their operating theatres, and to Prof. L. P. Garrod for laboratory hospitality.

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Medical Memoranda

Narcolepsy

The following is a case of narcolepsy which showed a spontaneous remission of the specific sleep component of the syndrome in eighteen months, and in which the cataplectic component improved but still remains.

CASE REPORT

The patient was a healthy married man, aged 40, who had no previous medical history, and whose personality did not present any evidence of psychopathy. In December, 1939, he was playing at cards under average circumstances when he unaccountably fell asleep. From that date until January, 1941, he became liable to diurnal naps, but, contrary to most recorded cases, he felt no prodromal desire to sleep. The attacks reached their greatest intensity about February, 1940, at which time they averaged three or four a day, each lasting from a few seconds to ten minutes. Simultaneously with the onset of this disability his sleep rhythm, formerly very regular, became disturbed, and though able to get off to sleep early, he would awake frequently, but found no difficulty in going off once again. His dreams, formerly infrequent and neutral, now became very frequent and universally unpleasant, especially those of long-past incidents. The quality of his sleep had no effect on the subsequent day's attacks. Boredom and monotony, intense artificial light as when playing cards, a huge meal, would tend to induce an attack. He never fell to the ground, and in fact was always sitting when the attack occurred, except on one occasion while standing at a lecture, when the losing of his balance woke him up. After an attack he had a feeling of well-being. There was no preknowledge of an impending attack. There were no paraesthesiae, visual or auditory phenomena, or hypnagogic hallucinations. The depth of sleep was "dead asleep," and the waking was instantaneous and unaccompanied by any features of abnormal sensation, behaviour, or thought.

Approximately one month after the above attacks had been established he began to notice cataplectic phenomena. The first of these was a blurring vision "like as if you were to squint," and referable to diplopia. Accompanying this was a sensation which was unpleasant "because it made it awkward to speak," and which was described as a "pulling" of the lower jaw between the angles and the chin. The sensation was analogous to that produced by simulating a risus sardonius. A very short period after the foregoing sensation in the jaw he would "experience a momentary shock" in "all my joints," "just as if you were startled by nearly being run over." The ocular and mandi-

bular sensations were not momentary, and would last "as long as the emotion" provoking them. The provocative emotion was in the majority of instances that of mirth. But certain states of tension, such as "standing in front of an officer" or after "making a difficult billiard shot," had also induced an attack.

The above cataplectic syndrome followed the narcoleptic syndrome in its general progress, but the manifestations of the two syndromes were completely independent, and were dissimilarly provoked and displayed with reference to time. The narcoleptic syndrome had little, if any, effect on his behaviour or personality; but on account of his cataplexy, whereas formerly he had been a man given to mirth and known for his repertoire of amusing, especially salacious, stories, he gradually had to control this tendency until it was completely inhibited. The telling of these anecdotes would invariably precipitate an attack at the climax of the joke. Matinal attacks of hypnagogic cataplexy had occurred in which he had woken up "as in a trance," "continuing with my dream but unable to move until I wilfully woke my body up." There was no history of amnesic episodes. During the period under review he gained 7 lb. and became relatively impotent. Desire remained, but he got a poor erection, and achieved an orgasm with ejaculation with great difficulty. There were no headaches or epistaxis. The patient was of average build, above average intelligence, and free from family history of similar complaints. He had a history of head injury during childhood, when he had had concussion on two occasions. There was no immediate antecedent period of physical or psychic stress. Radiographs of the skull were negative, as were serological tests. Erythrocytes numbered 6,500,000 per c.mm.

The narcoleptic syndrome had made a complete remission by December, 1940, but the cataplectic syndrome, though considerably less, has persisted to date and has not apparently improved with benzedrine.

DISCUSSION

In considering the clinical manifestations of the narcoleptic syndrome, this case may be said to show the majority of the classical features of the illness. To the psychiatrist the most interesting feature was its lack of effect on the patient's personality.

With reference to the relation between the narcoleptic syndrome and epilepsy, it has been pointed out by Daniels (1934) that the dissimilarities outweigh the similarities. Nevertheless, it appears reasonable to assume that the two patterns of neural response overlap somewhat. A much more interesting problem of overlapping is involved when we consider the problem of sleep inclination to certain phenomena of hysteria. At the onset of a fugue it is extremely frequent for the patient to be seized with an overwhelming desire to sleep, and this feeling he usually proceeds to gratify. On awakening—perhaps within an hour, or, if in the evening, some eight hours later—he remains in his disorientated state until, maybe, he comes for treatment. It is unusual for the patient to relate or to know of this fact, and in consequence I can find little reference to it in the literature. The amnesic period of the fugue usually appears to include a short period prior to the sleepiness. Under hypnosis, however, the patient relates all these circumstances. In one patient, who remained in a state of partial disorientation for many weeks, there were recurrent attacks of sleepiness under emotional stress, which all disappeared following treatment.

The neuropsychiatric ground-pattern of hysteria still awaits elucidation, and in a separate paper I have advanced evidence to show a connecting link in the case of the anxiety attack with known lesions in the region of the third ventricle. Here again in the topic under discussion is a symptom (a feature also in many hysterical fugues) which occurs in a setting the organicity of which is not open to doubt and whose site of production appears to be in the neighbourhood of the third ventricle. Finally, it appears justifiable to refer to the disturbance of nocturnal sleep rhythm and impotence, which are two cardinal features in involuntional melancholia and which occur in the syndrome here recorded.

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Major, R.A.M.C.

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Reviews

MAGIC AND SCIENCE

A History of Magic and Experimental Science. Vols. V and VI. By Lynn Thorndike, Professor of History, Columbia University. The Sixteenth Century History of Science Society Publications, New Series IV. (Vol. V, pp. 696; Vol. VI, pp. 766, 66s. 6d. net two volumes.) New York: Columbia University Press, 1941.

The fifth and sixth volumes of Prof. Lynn Thorndike's *History of Magic and Experimental Science* contain more than 1,400 pages, the index cites some 1,700 topics or names of things and more than 3,000 names of persons. These volumes are concerned with the sixteenth century. Science is defined by Prof. Thorndike as "systematical and ordered knowledge, a consistent body of truth, attained through sense perception, introspection, and reflection, aided by mechanical and mathematical instruments, independently of faith, emotion, prejudice, appetite, pleasure, and the like." Magic, on the other hand, "was a systematized and ordered marvel-believing and marvel-working, a consistent body of error, attained through sense perception, introspection, reflection, and dreaming, influenced by faith, emotion, appetite, and pleasure, marked by unwarranted associations of ideas, without adequate means of correcting error and without proper standards of measurement." A logician might doubt whether if a body of error were wholly self-consistent it could properly be described as error, but, for practical purposes, the antithesis may stand.

The field of human thought and speculation covered by Prof. Thorndike is so vast (he does not include pure mathematics, but astronomy and medicine are within his connotation of experimental science) that a book planned to include some reference to all the significant writers cannot avoid a certain dryness. Judicial astrology, for instance, treated as a game (one recalls the classical instance of Colonel Mannerling) the rules of which were much more complicated than those of chess might well be as interesting as cross-word puzzles. But unless the reader (unlike the present reviewer) knows the rules and how they were modified by different players, succinct accounts of the conclusions reached by A, B, and C seem not amusing and ingenious nonsense but just plain and dull nonsense. The same remark applies to other departments of magic.

A medical reviewer inevitably turns to the chapters describing men famous in medical history or the history of the sciences fundamental or ancillary to medicine. These volumes naturally include such illustrious names as Leonardo da Vinci, Vesalius, and Fracastoro. In reading Prof. Thorndike's accounts of these revered investigators, and comparing them with those of contemporary scientific historians who were primarily interested or trained in the subject-matter of their historical researches, one is conscious of a change of emphasis. The scientific writer emphasizes the intimations or realizations of what we have come to regard as important truths and ignores or passes lightly over imperfections or errors which link the pioneer with his contemporaries. The pure historian, more interested emotionally in the men and their *milieu* than in the object of their scientific inquiries, does just the reverse. Prof. Thorndike is much more concerned to point out the imperfections of da Vinci and the others, how much they were indebted to predecessors, how often they shared superstitious beliefs with less gifted contemporaries, than to exaltate for their highest qualities. He does not obey Steerforth's exhortation to David Copperfield—"Think of me at my best."

Prof. Thorndike in a footnote (vol. v, p. 493) comments with some asperity on the neglect of Meunier, Prof. W. C. Wright, and Prof. and Mrs. Singer to associate Fracastoro's treatise on sympathy and antipathy with his book on contagion. "Such is the way," he writes, "that we 'gloss over our Augustine' and refuse to view the past as it really was." To the scientist, the fact that Fracastoro did have an idea of *contagium vivum*, of a biological process, wholly unlike the idea of contagion present in the minds of his predecessors (to whom contagion was not a process perpetually reborn in a chain of biological events, but rather akin to the passage of a note from tuning-fork to tuning-fork) was Fracastoro's peculiar merit. It was natural to turn a blind eye to his imperfections, to forget, for instance, that he hesitated to push his theory to its logical conclusion and did not think it adequate to explain the pandemic diffusion of syphilis. This is, perhaps, only another way of saying that the two classes of writer had different objects. If we wish to know which of our predecessors had reached truths which later experience has proved to be important, men of science whose historical studies are *parerga* are better guides than professional historians. If we wish to know what the general state of knowledge and belief in a bygone age really was, the trained historian will be a better guide. If time permits we should read both. Prof. Thorndike's view of sixteenth-century culture is a cure for regarding that period as a golden age. It almost, but not quite, reconciles us to the age in which we live.

CHROMATOGRAPHY

Principles and Practice of Chromatography. By Prof. L. Zechmeister and Dr. L. Cholnoky. Translated from the second and enlarged German edition by A. L. Bacharach, M.A., F.I.C., and F. A. Robinson, M.Sc., F.I.C. With a foreword by Prof. I. M. Heilbron, F.R.S. (Pp. 362, 25s. net.) London: Chapman and Hall, Ltd. 1941.

The technique of chromatography was first devised by a Russian botanist—Tswett—of whom nothing has been heard since the last war. His work was published in various scientific journals between the years 1899 and 1912. It received recognition in this country in 1924 with some slight development, but only when the relation between vitamin A and carotenoids became apparent was the technique fully appreciated. Then followed a flood of work both in this country and on the Continent which could only have been made possible by chromatography.

In its simplest form the process is this. A test tube with perforated end is fused to a short length of narrow glass tubing, plugged at the lower end with cotton-wool, and evenly packed with some adsorbent such as dry calcium carbonate or aluminium oxide to a depth of four to five inches, leaving an inch or two of the test tube unfilled at the top. A solution of a mixture of nearly related substances is allowed to filter through it, hastened by suction, and the various substances are adsorbed at different levels of the column. The whole column is pushed out of the test tube by a rod passing through the glass tubing and cut into sections corresponding to the different layers of substances visible in it. These are eluted separately and the different components of the original solution thereby separated. The process may be designated fractional adsorption.

The first part of Zechmeister and Cholnoky's book on this subject deals with the principles involved in the process, the relation between chemical constitution and behaviour of a substance on the chromatogram. The actual method is described in great detail with many practical hints for the successful carrying out of the delicate technique.

Numerous modifications in apparatus, adsorbents, and solvents for adaptation to particular problems based on the authors' wide experience are given. The second part of the book deals with results already obtained in the separation and purification of substances of very many different types: chlorophylls, carotenoids, anthocyanins, azo-dyes, and even colourless substances such as terpenes, aromatic hydrocarbons, and sterols, many of which disclose their presence in the chromatogram by fluorescence when subjected to illumination by the quartz mercury vapour lamp. There is a bibliography of some 600 references (the contents of which are not always correctly quoted) and 74 figures, of which 24 are excellent reproductions of photographs of chromatograms, others of photographs of apparatus, others clear pen-and-ink diagrams.

The book will be received with delight by everyone using this technique and by others who have not already used it but may be stimulated to try to apply it to their own particular problems. The translators are to be congratulated in that it is difficult to realize that this is indeed a translation.

A LEPER'S LIFE

Who Walk Alone: The Life of a Leper. By Perry Burgess, President of the American Leprosy Foundation. (Pp. 318; illustrated. 12s. 6d. net.) London: J. M. Dent and Sons, Ltd. 1941.

In spite of the continuous research that leprologists all over the world are giving to the nature and control of leprosy, much still remains obscure. Great devotion in dealing with it has been shown by doctors and nurses, sometimes at the cost of their own lives. Dr. Perry Burgess, the author of *Who Walk Alone*, has been National Director of the American Committee for the Eradication of Leprosy since 1925. He conceived the idea of laying bare the soul and all the human emotions of a leper by writing the life history of a United States soldier who became infected during the Spanish-American war in the Philippines. Over thirty American soldiers developed leprosy years after their return from that campaign.

The book is a soul-stirring tale, highly dramatic, poignant, and powerful in its appeal for a closer understanding of the subject of leprosy. It is cleverly written and can be read with profit by medical men and laymen alike. One follows the life story with breathless interest to the very end and lays down the volume with a great feeling of gratitude to the author for having presented his subject in such a moving way. From the book we gather that there are 3,000,000 lepers in the world, and the most heavily affected areas are in East and South Asia, particularly China and India, Malaya, Africa, and parts of South America. The British Empire Leprosy Relief Association is the counterpart of the American committee, which is directed by Dr. Burgess.

Notes on Books

John Wright and Sons, Ltd., of Bristol now publish an eighteenth edition (making the 215th thousand) of *Warwick and Tunstall's First Aid to the Injured and Sick*, which has been a favourite ambulance handbook for forty years. Its preparation was entrusted to Major Norman Hammer, to whom first aid for air-raid casualties has been a principal interest for the past five years. Both text and figures show evidence of full revision; Part II, forming three-quarters of the book, has in fact been largely rewritten. Major Hammer explains in the preface that his aim has been to preserve the characteristic features of the work, bearing in mind that this is a handbook of *general* first aid; at the same time he tries to show how the application of

general principles should be modified, and procedures simplified, according to the special needs of wartime first aid both to casualties in the Services and to victims of air bombing. The price of the book is now 3s. 6d., and it will no doubt have a ready sale.

Dr. DONALD PATERSON has extensively revised his *Sick Children: Diagnosis and Treatment* for its fourth edition. A great improvement has been achieved by transferring a mass of detail on dried milk and proprietary foods to the appendix, so that the whole subject of infant feeding now collected into three chapters is treated in a more balanced fashion than hitherto, with a satisfactory emphasis on normal breast-feeding. The chapters on nephritis, nervous diseases, blood diseases, and the endocrines have been revised, and that on tuberculosis is completely new. All these changes have improved what was already recognized as an essentially practical guide to paediatrics of a solid and reliable standard. But there is little indication that the child has a mind as well as a body, and the relative lack of any detailed discussion of psychological disturbances of childhood is not in accord with modern developments. This edition is larger than its predecessor, and contains more illustrations and eight new plates. It is published at 15s. by Cassell and Company, Ltd.

Preparations and Appliances

DEVICE FOR WASHING CONTAMINATED EYES

Dr. J. L. BARFORD (Redhill, Surrey) writes:

I enclose a drawing of an exceedingly simple device, "cribbed" from the bottles in which petrol-lighter fluid is sold, which enables every carrier of a Service water-bottle—especially, of course, stretcher-party personnel—to have ready at hand the means for washing out eyes contaminated by liquid "mustard," etc.

It consists of an ordinary cork (c), of about the same size as that of the water bottle, through which pass (a) a short length of rubber tubing of about ordinary douche-can diameter, (b) a very small glass tube (but this can be dispensed with, a hole being merely bored through the cork). The length of rubber tube is so short that it cannot injure the eye, and the water bottle is conveniently steadied against the patient's head.

This spare cork is best kept in a small envelope of calico or such-like, with press-button fastener, tied on the outside of the water bottle. The cost is about 2d.



ELECTRIC HEATERS IN SURFACE SHELTERS

An interesting type of electrical heater is being fixed in the Liverpool communal surface shelters at the instance of the city electrical engineer. It consists of a concrete box or cover containing a heating element. The box is arranged to bolt, where possible, to the outside shelter wall and sit over an air brick, thus ensuring a fresh air supply in addition to warmth. The concrete cover provides a cheap and effective protection for the heating unit and it operates at a low temperature and can safely be touched. The loading of the heating element, which may be of any type, can be varied to suit requirements. Loadings of 200, 500, and 1,000 watts are arranged in a 12-in. box, and of 2,500 watts in a 24-in. box. The system of protected wiring employs a homogeneous tough rubber. Cement is moulded round the cable where they drop down to the heaters. This method of wiring has the advantage of simplicity, cheapness, and protection from all except malicious and wilful damage. The concrete heater box complete with element costs £1 13s. 6d. in the 12-in. and £2 15s. 6d. in the 24-inch size.

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HEAD INJURIES IN MOTOR-CYCLISTS

During the first two years of war the number of road fatalities in this island amounted to little short of 20,000. In all varieties of road users, except adult pedestrians, the statistics published by the Royal Society for the Prevention of Accidents show a steady increase in the numbers killed, and in motor-cyclists the increase last winter was 50% as compared with the previous winter. For the last four months of 1940 on an average five motor-cyclists were killed each day; the distribution between civilians on the one hand and the fighting Forces on the other was approximately equal. As to the number of motor-cyclists temporarily or permanently incapacitated by accidents which are not fatal, no figures are available, but there can be little doubt that there is a considerable drain of man-power from this cause. Before this war the Ministry of Transport returns showed approximately twenty-five motor-cyclists injured for each one killed.

The only effective way of preventing accidents is to encourage careful driving, and this is particularly necessary in motor-cyclists, for it seems that the motor-cycle gives a more exhilarating sensation of speed than any other motor vehicle, not excluding the aeroplane, and in collisions the rider is quite unprotected. Motor-cyclists are for the most part young men, a group to whom caution on the roads does not come easily. The measures so far taken to instruct people in the use of the road have doubtless done good, but they have not prevented an appalling and ever-increasing waste of life, and there is a strong case for a further inquiry on scientific lines to collect information as to the amount of incapacity which results from motor-cycle accidents, to study means of alleviation and prevention of accidents, and to revise the methods of educating motor-cyclists in road sense and the use of their machines.

In this issue of the *Journal* Prof. Hugh Cairns reports some investigations on motor-cycle accidents. He finds that head injury was present in over 90% of a large series of fatal accidents. In some cases the head injury was not severe enough to cause death, but multiple injuries were present in two-thirds of the cases, and the combination of two or more injuries each of which by itself would be non-fatal can suffice to cause death. If the head injury could be alleviated a considerable number of these cases would not be fatal. The Army has taken an important step in this direction in providing its motor-cyclists with crash helmets of the type used by dirt-track riders before the war. It is too early yet to assess accurately the value of this protection, and it may be difficult ever to obtain properly controlled statistics, but the cases reported by Cairns are encouraging. He describes seven cases and mentions a further eight in which Army motor-cyclists were wearing

crash helmets at the time of the accident. In several of these cases the violence to the head was sufficient to produce gross fracture of the crash helmet, but in all cases the damage to the skull and brain was slight. Further experience may establish the need for making the use of a crash helmet compulsory not only for soldiers on duty but also for members of the other fighting Services, soldiers on leave, and civilians. Meanwhile there is doubtless work to be done in improving the types of crash helmet in use, and this is a problem which we may be sure is engaging attention.

Cairns gives figures to show that fractures of the lower limb are particularly prone to occur in motor-cycle accidents, and the number of such cases requiring prolonged treatment is likely to increase if lives are saved by means of the crash helmet. Protection of the legs from injury is a much more difficult problem than that of head protection, since it would entail alteration of the design of motor-cycles and the addition of more weight to the machine, a step which might not find favour with manufacturers or with those who wish to attain high speed on the road. But there are already in existence some types of machine which provide leg protection, and the problem of converting other types should not be insoluble if the case for it can be clearly established and if sufficient pressure can be brought to bear on the manufacturers. This is a matter in which surgeons should take an active part: it is more effective to prevent or alleviate limb fractures than to treat them well. But no amount of protection to head or limbs will prevent fatalities when accidents take place at high speed, so in the last analysis the best preventive measure of all is thorough education in careful use of the road.

MEDICAL STATISTICS IN WARTIME

On September 17 Sir Wilson Jameson said that "at the close of this second summer of the war we had every reason to be thankful for the health of the country," but added that "local authorities and the medical profession must remain on the alert." Sir Wilson briefly reviewed good and less good features of our experience: among the former, the saving of young lives through evacuation and a decline of cerebrospinal fever; among the latter, the prevalence of paratyphoid infections and some increase of mortality from tuberculosis among young women.

So that local authorities and our profession may remain effectively on the alert they should be well informed, and they are less well informed than during the war of 1914-18, when the publications of the General Register Office were continued. Now unofficial students of mortality rates are vouchsafed hardly any information. No complete data for any year later than 1938 have been published. In the last war, as in this, the death rate from tuberculosis increased among young women, and various explanations were suggested—for example, the increased employment of young women in factories. The late T. H. C. Stevenson showed this explanation to be inadequate because an unfavourable trend in this age group antedated the time when large-scale employment could have been a factor; and, after the war, the trend continued to be unfavourable for

several years and has been the subject of research by Bradford Hill, D'Arcy Hart and Payling Wright, and others. Although fresh light has been thrown on the subject by these investigations, the general problem is still unsolved. The conditions of the present war differ in important ways from those of 1914-18 and a new field of investigation is opened; it cannot be cultivated unless workers are allowed to enter it.

It has been suggested that if detailed information were made public it would be of military value to the enemy. Two hundred years ago the House of Lords rejected a Census Bill on that account; exact knowledge of populations was regarded as a military secret by some Continental nations much later. But the enemy now has all our official publications down to and probably including those relating to 1938. Without any more recent information, by the use of common sense and elementary statistical methods he can estimate, and no doubt has estimated, the numbers living in Great Britain in all age groups from 5 to, say, 65 with an accuracy sufficient for any conceivable military purpose. There is, however, a more rational objection to the use of death rates on males. It has long been the practice to give specific rates of mortality in terms of the civilian population. Before 1914 the exclusion of the armed Forces was of trivial importance, but in 1914-18 it deprived the rates on males of any value as public health indices, because, *inter alia*, the denominator of the rate had lost a large proportion of the physically fittest men, so that rates of mortality were unreasonably high. It was necessary to use rates on women alone as indices. This objection is still valid. Unless *all* deaths (by causes and in age groups) are related to the relevant age groups of *all* males observed in Great Britain the rates on males will be of little value. There is no obvious reason why the mortality rates of women should not be as informative as in 1914-18 provided that the deaths of women drafted into the fighting Services are included in numerators and the whole populations taken as denominators.

Wholly apart from the fact that secrecy prevents discussion which might throw light on aetiology, it inevitably encourages rumour and exaggeration. One of the evils of war is unavoidable secrecy; it is important not to increase this evil by needless mystery. The Annual Reports of the General Register Office were not studied by as many medical men as we could wish, but they were, directly and indirectly, the most potent educational instruments forged by the central Government. We know of no adequate reason why the medical profession should be deprived for the duration of the war of means of testing the success of its work.

SPREAD OF ACUTE INTRAPERITONEAL EFFUSIONS

The spread of acute intraperitoneal effusions is of immediate and practical interest to all abdominal surgeons, and a knowledge of the natural history of such effusions has important bearings upon the questions of diagnosis, operative treatment, and post-operative complications. The experimental investigation of the various intraperitoneal watersheds and clinical observation at operation have to-

gether provided most of the accurate data upon the subject. Recently Mitchell¹ has carried out further experimental work and has put forward some new evidence and views relating to the spread of intraperitoneal effusions from the region of the right subhepatic space. When the body is in the supine position there are three main abdominal barriers which act as watersheds. The first is the longitudinal barrier formed by the bodies of the lumbar vertebrae, covered by the great vessels and the mesentery of the small intestine. This divides the peritoneal cavity below the level of the transverse colon into right and left infracolic spaces, but, owing to the obliquity of the mesentery of the small intestine, these are not symmetrical. The second barrier is the upper transverse one formed by the transverse colon and mesocolon. The third is the lower transverse one formed by the posterior part of the pelvic brim, covered by its muscles and great vessels. The supracolic space can be further divided into the right and left subphrenic spaces, the right subhepatic space (Morrison's pouch), and the left subhepatic space or lesser sac. The other principal spaces are the right and left infracolic and the pelvic space.

The generally accepted routes of spread of fluid from a perforated duodenal ulcer, a perforated posterior-wall gastric ulcer, an anterior-wall gastric ulcer near the pylorus, or from a perforated gall-bladder, are as follows. The fluid fills the lesser sac or the right subhepatic pouch and spreads upwards to the right subphrenic space or extends along the right paracolic gutter. It then passes into the pelvis, and when enough has collected here it wells up into either infracolic space, or it may pass into the left paracolic gutter and reach the perisplenic space. Mitchell's experiments were carried out on the bodies of stillborn infants, and fine barium emulsion was injected into the peritoneal cavity through a small perforation on the posterior wall of the stomach. Radiographic examinations were carried out at various stages of the injection, and at the completion of this the findings were checked by dissection. As a result of these experiments it was found that the spread of intraperitoneal barium emulsion did not correspond to the description which has already been given and which is the generally accepted one. Mitchell found that fluid collected in the right subhepatic space, and then overflowed into the antero-internal angle of the right subphrenic space, usually through the quadrangular interval bounded by the quadrate lobe of the liver, the gall-bladder, the falciform ligament, and the transverse colon. At this stage, however, the main part of the right subphrenic space was not invaded, but the fluid spread downwards and to the right in front of the transverse colon and around the margin of the great omentum, and so reached the right infracolic space. From here some of the fluid flowed over the ascending colon into the lower part of the right paracolic gutter, and some of this then extended upwards and entered the right subphrenic space. Part of the fluid from the right infracolic space passed in front of the ileo-caecal junction, entered the left infracolic space, spread throughout this, and extended upwards into the left subphrenic space and downwards into the pelvis. The pelvis may also be invaded by a trickle which runs round the lower margin of the caecum from the paracolic gutter. But it was noteworthy in these experiments, which were carried out in the recumbent position, that the pelvis remained free from fluid at a relatively late period.

From these new experiments three principal facts emerge: first, that there is no direct spread of fluid from the right subhepatic space to the right paracolic gutter; secondly, that the pelvis is chiefly filled by fluid overflowing from

¹ *Brit. J. Surg.*, 1940, 28, 291.

the infracolic spaces; and, thirdly, that there is little evidence that fluid spreads from the pelvis along the left paracolic gutter to the left subphrenic space. It is not, however, any criticism of these careful observations to point out that experimental conditions are very different from those which may be present in the living human being with an acute inflammatory intraperitoneal exudate. Under clinical conditions the patient is not always or entirely supine; he may not remain quite motionless: abdominal rigidity may be present: and intestinal distension or inhibition may be an important modifying factor. All these factors may play a part in determining the spread of intraperitoneal fluid, especially from the region of the right subhepatic pouch, and experimental observations cannot be translated too readily into clinical dogmatism. But these new views should prove a stimulus to further clinical observation by all who operate on acute abdominal conditions.

AN AMERICAN DOCTOR ON THE WAR

Dr. David Cheever, President of the American Association of Surgeons, in his presidential address¹ on "Mars and Aesculapius," delivered at White Sulphur Springs on April 28, paid tribute to the fact that 83% of the Fellows of the Association volunteered for the last war, and gave details of the part played by the American medical profession in general. On the subject of the present war it is worth quoting his remarks: "With our weight tilting the scale the war was won, but the peace, it seems, was lost, for now, scarcely a score of years later, we stand again at the gates of Armageddon. Our idealism in undertaking to ensure the future of democracy by waging a war to end war has become a mockery. The same enemy confronts us, his purpose far more sinister, his strength vastly augmented by the devotion of the whole wealth and power of a great nation for the sole purpose of ruthless aggressions, his resources multiplied by those of the peace-loving, terrorized, conquered peoples; his mailed fist supported by allied ghouls whose nostrils tell them—falsely, to be sure—of the expected kill. More dangerous is he because of his strength, but also because of the doctrine with which he has inoculated the people—a doctrine at once ludicrous, absurd, but dreadful in its evil intent, of a superior race predestined by the Creator to prosper at the expense of all other peoples. This foe is bending all the agencies of the physico-chemical and physiologic sciences to his purpose, and showers death in its most ghastly forms on man, and destruction on the monuments of his civilization to a degree which is callously designed to involve a nation in its totality if it refuses to submit. The unarmed, the defenceless, the weak, the aged, the young of either sex have no privilege of even partial exemption, but rather suffer the more because they have not the strength for self-defence. And, standing rock-like against this monstrous, reckless, merciless destroyer stands the English-speaking island Empire and her overseas daughters, shorn by enemy subjugation of all her allies save one, making us to consider whether a precarious freedom can be enjoyed alone in case of her defeat." He then goes on to discuss, without pronouncing on their validity, the theories of the opportunity for medical development in war as opposed to peace, and from the historical and scientific point of view traces them from their origins. His epilogue ends thus: "Again Britain and her daughter nations, bleeding but with heads unbowed, stand against this monstrous thing. Again America is moving to her side; again the weight of her power will press down the scale pan wherein lie liberty and

justice. When the victory shall be won, let our care be that mankind shall also win the peace by lavishing on its nurture something of the same energy, treasure, and self-sacrifice which is poured into the lap of Mars." These words of Dr. Cheever's come as a high encouragement to us on this side of the Atlantic.

EUMYDRIN FOR PYLORIC STENOSIS

Dr. Helen Mackay has recently² given a detailed analysis of the treatment of forty consecutive cases of congenital hypertrophic pyloric stenosis with eumydrin (atropine-methyl nitrate), and it would seem a suitable time to consider whether or not this method should replace surgery for this condition. All but two of the series were treated as in-patients, the diagnosis in every case included the palpation of a thickened pyloric "tumour," and the average stay in hospital was between three and four weeks. Of the forty patients, five died during the treatment, one of enteritis and pneumonia some weeks after going home, and a seventh died also after discharge. On the basis of five deaths the mortality is given as 12.5%. Actually thirty-one babies were "cured" by eumydrin alone and a fourth by operation when eumydrin had proved unsuccessful. The general management and feeding of these babies has undergone some evolution in the light of experience, and it is more profitable to summarize Dr. Mackay's considered recommendations than to set out the reasons for and against gastric lavage, extra fluid, frequent feeds, and so on.

The routine suggested is as follows. Unless obviously dehydrated the baby is given fluid by mouth only, amounting to 3 oz. per lb. body weight (inclusive of foods), in the first twenty-four hours, and thereafter only such extra water as he will take readily. Breast-feeding should be continued if possible, three-hourly for six feeds in the twenty-four hours being best, with a sweetened condensed milk diluted 1 in 5 by volume to give 20 calories per ounce as a substitute. Full caloric requirements should be reached within two or three days of starting treatment. If feeds are vomited they are not repeated. Freshly prepared eumydrin (1 in 10,000) not more than a week old is given half an hour before each feed, beginning with 0.5 to 1 c.cm. and increasing by 0.5 c.cm. each feed up to 2.5 or 3.0 c.cm., or even more if necessary. No gastric lavage is recommended. If abdominal distension occurs the dosage of the drug and the food intake are reduced. If the treatment fails the drug is omitted for twenty-four hours before operation. After a varying period, probably two to three weeks, a gradual reduction in the dose of eumydrin can be started and the drug eventually discontinued. This routine could be followed by any intelligent mother at home after a period of instruction, possibly as an in-patient with the baby for a limited period. For it is on the question of prolonged stay in hospital that the drug treatment of pyloric stenosis offers greater dangers than operation. Dr. Mackay claims a mortality of 11.5% for eumydrin treatment of 122 cases published in this country, including a series of forty cases with five deaths recently reported by R. H. Dobbs,³ and sets against this a general mortality for surgically treated cases of about 25%, hinting that this is achieved only by special teamwork and may be more in areas where surgeons experienced in the operation are not available. This is hardly fair, for Dr. Mackay's results appear to have been achieved by "anxious work" (her own words) by the sisters and nurses of the hospital, and

¹ *Ann. Surg.*, 1941, 113, 551.

² *Arch. Dis. Child.*, 1941, 16, 1.

³ *Lancet*, 1941, 1, 661.

on the other hand, closely co-operating "teams" have published results from surgery which are better than the eumydrin series, such as those from St. Bartholomew's Hospital with one death in fifty consecutive infants, as reported by C. F. Harris and G. Keynes.* In these columns recently D. Levy† reported a series of 100 consecutive operations on breast-fed infants with pyloric stenosis without a single death. Out of forty-six bottle-fed infants operated on five died. Levy insists that statistics of results from medical and surgical treatment cannot be compared in the absence of full information on the method of feeding.

The crux of the whole matter is summed up by Dr. Mackay in the statement: "It is notorious that in cases of pyloric stenosis treated in hospital the biggest cause of mortality is often infection acquired in hospital." Hence the claims of surgery over drug treatment to shorten the period of stay in hospital have strong adherents. There would seem to be two ways to move on from the present position if operation is to be avoided. The first is for improved hospital construction and routine, whereby infection can be avoided. What, for example, are the results of treating pyloric stenosis going to be in the new building at the Hospital for Sick Children, Great Ormond Street? The second is for a wholesale test of Dr. Mackay's suggested routine with all the babies as out-patients for most, if not all, of the time required for treatment. In this connexion a rather less vague end-point for the use of eumydrin is desirable. Wartime conditions may make for some delay before further progress is achieved. At all events the use of eumydrin is now clearly established and the details for best results are plain. There is no need for sterile controversy. Advocates of surgery on the one hand and of eumydrin on the other can go on working at their respective methods until time proves what is really best in all the circumstances for the young infant suffering from pyloric stenosis.

SURGICAL TREATMENT OF PARKINSONISM

We are apt to forget the trials of peace amid the trials of war, and naturally exert ourselves to solve the immediate acute medical problems which confront us. But the peace-time diseases still remain to be treated, and of these paralysis agitans is surely a disability which calls for all possible help, even if this is only palliative. In the past treatment has been medical, the stand-by being atropine and allied drugs. It is recommended in enormous doses, alone and with other antispasmodic drugs. As in other conditions which resist treatment the therapeutic agents are legion, the vogue for the newer ones usually being short-lived. There is little reliable evidence that the Bulgarian treatment is better than any other; the reports of carefully controlled experiments have shown its efficacy to be identical with that of the more usual tincture of belladonna. Putnam has for some years been trying to improve the distressing tremor of paralysis agitans by surgical methods. Three years ago‡ he reported that section of the anterior column of the spinal cord, which effectively diminishes athetoid movements, did not affect the Parkinsonian tremor in five cases. Puusepp§ cut the column of Burdach, with improvement of the tremor, and Bucy and Case¶ extirpated the motor and pre-motor cortex on the opposite side with some relief of the tremor. Putnam* has extended his work, and now reports on the effect of excision of appropriate areas of the motor cortex and of section of the pyramidal tracts of the spinal

cord. He selected for operation ten patients with very severe disabling unilateral tremor. He found that, although the results of cortical excision were disappointing, pyramidal section in the cord produced considerable relief of symptoms, and supports his claim with electromyograms, photography of the degree of disablement before and after operation, and by samples of handwriting. Of course a spastic hemiplegia results from the pyramidal section, but the degree of spasticity depends on the completeness of the section, and unfortunately the improvement in the tremor also seems to be related to the amount of pyramidal involvement; but, as Putnam observes, it is much less disabling to have a mildly spastic arm which can be used for limited movement than to have continuous rhythmic movements which cannot be controlled. He records that his patients were grateful for the relief obtained. Putnam also points out that his results are at variance with the results of physiological experiments, notably those of Aring and Fulton; but he considers that Wilson's conception^{||}—that the tremor of paralysis agitans is due to dysfunction of extrapyramidal pathways—may be incorrect. He thinks that the abnormal rhythmic discharge is conveyed to the muscles by the pyramidal tracts. Whatever the physiology of the condition, bilateral pyramidal section will indeed be heroic treatment, but little short of this would be required to relieve the majority of the severe examples of paralysis agitans encountered in hospital practice, for unilateral severe Parkinsonism is uncommon.

A WEEK-END OF WAR MEDICINE

During the last week-end of August, at a military hospital (writes a correspondent), there gathered a dozen near-by R.M.O.s for a postgraduate refresher course. For a long time the need for closer liaison with the more "forward" officers has been felt; at the same time the desirability of sharing the immense clinical material of the hospital with others not so fortunately placed was evident. On Saturday afternoon the O.C. welcomed the "students" and spoke of the work of a general hospital. The experience of the hospital at home and abroad was illustrated from records. The startling difference in the type of admission on active service and in quiescent periods gave much food for thought. "Every hospital," he added, "should be a centre of medical culture, and now that so many of the staff of teaching hospitals were doing duty in military hospitals these should not any longer be exceptions." This week-end course, he hoped, would be only a beginning. The physician then led off the clinical rounds. Several "short" and two "long" cases were shown—a streptococcal fever (with a digression on recent work in dust infections) and a case of multiple nutritional deficiencies. The dispenser demonstrated the B.L.B. oxygen apparatus. The surgeon had a large variety of common and uncommon complaints in his wards, and, as luck would have it, the first case of gas gangrene the hospital had admitted in home territory. The radiologist produced one film after another from a seemingly never-ending store. Most interesting was a series of films of cases of pulmonary tuberculosis from the earliest lesion to advanced fibro-calcific pulmonary tuberculosis with cavitation. Sunday morning was devoted to the psychological problems that bulk so large in regimental practice. The physician discussed the modern integration of hypothalamus, emotions, autonomic system, endocrines, and cerebral cortex. The mechanism of psychosomatic disorders was illustrated from the physiology of the stomach and clinical

* *St. Bart's Hosp. Rep.*, 1937, 70, 43.

† *British Medical Journal*, 1941, 1, 963.

‡ *Arch. Neurol. Psychiat.*, Chicago, 1938, 39, 258.

§ *Chirurg. Neuropathol. Krueger*, 1932, 1, 416.

¶ *Arch. Neurol. Psychiat.*, Chicago, 1939, 41, 721.

|| *Ibid.*, 1940, 44, 950.

* *Arch. Neurol. Psychiat.*, Chicago, 1935, 35, 439.

|| *Modern Problems in Neurology*, by S. A. K. Wilson, 1927, p. 129, 130.

work on peptic ulcer. The psychiatrist dealt with neurosis in soldiers, the chronic problems and the more acute ones, such as occurred, for example, at Dunkirk. He showed two cases—a conversion hysteria and, as postscript, an imbecile. As a fitting conclusion the assembled medical officers did the progressive matrix intelligence tests on themselves, and the absence of mental deficiency was a matter for mutual congratulation. In the afternoon the specialists took the field: there was a demonstration of scabies, impetigo, ringworm, and the newer methods of treatment (non-fatty bases and sulphanilamide ointments) that were being tried. The importance of personal hygiene was again and again emphasized. The ophthalmologist's subject was "Eyes, injuries to, and bodies, foreign, in." He also dealt with gas burns and the albucide treatment. Finally, in an open discussion, the talk, as seems inevitable when R.A.M.C. officers meet, was mostly of the problems of mental health in a nation mobilized for total war and the immense responsibility resting on the Corps. The O.C., in a closing greeting, extended the freedom of the hospital to all the medical officers and expressed the appreciation of the hospital staff for their never-failing co-operation.

THE CHEMISTRY OF THYROID DISEASES

The popularity of the basal metabolic rate in the investigation of thyroid disorders during the last few years has perhaps had the effect of limiting interest in other chemical abnormalities in such conditions. The results of certain liver-function tests have already been discussed here,¹ but there are in addition many observations on creatine, lipid, and iodine metabolism which may finally become of clinical importance. Creatinuria has been long recognized as a feature of hyperthyroidism, and there is also a correlation between creatinine excretion and the basal metabolic rate (Palmer, Means, and Gamble²). Recent reports, however, suggest that the incidence of creatinuria among normal subjects is greater than at first supposed (Hobson³) and is perhaps sufficient to reduce the value of the estimation as a diagnostic procedure. The relation between the basal metabolic rate and creatinine excretion in hyperthyroidism is also not close enough to encourage further work on these lines at the moment (Bröchner-Mörtensen and Möller⁴). An inverse relation between blood fat content and thyroid activity has been apparent since the work of Denis.⁵ Either the total fat or the cholesterol determination has been used, and both the fall in hyperthyroidism and the rise in myxoedema have been found of value by some workers (Nicholls and Perlzweig,⁶ Huxthal,⁷ and Green⁸). While these procedures are often useful as confirmatory tests, the wide range of values causes a certain amount of overlapping in the two conditions. Iodine metabolism, while obviously of fundamental importance in view of the structure of thyroxine and of the therapeutic effects of iodine, has so far contributed little to diagnosis. This is no doubt because of the great chemical difficulties in estimating very minute amounts of iodine variously combined. Elmer's work⁹ is outstanding in this field, and it appears from this that the total blood iodine (8-20 microgrammes per 100 c.cm.) is of little

clinical value. Blood thyroxine has been investigated in a few cases, but large volumes of blood are required and the estimation is tedious and not entirely specific. It is certain that technical improvements in this field would have an enormous influence on the whole question of hyperthyroidism, the very definition of which is at present a matter of opinion. If the word is to have an exact meaning it should mean an increased amount of thyroid hormone in the blood, and when the direct demonstration of this is possible as a routine a major advance will have been made.

COMMITTEE ON NURSING SERVICES

Early in 1939 it seemed that at last some radical improvements would be made in the terms and conditions of service of nurses and, with a view to better recruitment, in the status of the profession in the public eye. The Inter-departmental Committee on Nursing Services, of which Lord Athlone was chairman, had recommended fundamental changes, and the Government showed every sign of being prepared to act upon many of the recommendations. Unhappily for the nursing profession and for those outside it who have for years striven against the placid acceptance by the public of almost nineteenth-century conditions of service for nurses, the outbreak of war put a stop to any considered action on the lines of the committee's report. The Royal College of Nursing, however, has now shown that it is not content to await the end of the war before preparing the ground for these and other much-needed reforms, and has set up a committee to consider ways and means of carrying out some of the recommendations and to plan for the future. Actually the decision to establish this committee was taken earlier this year, but it was not then thought expedient to do more than appoint a small subcommittee to examine the most urgent problem—the control of the assistant nurse. The first report of this subcommittee will soon be ready, but in the meantime the College has decided to proceed to the larger task of examining all other problems and of preparing for post-war reconstruction. Half the main committee, of which Lord Horder is chairman, are to be members of the Royal College of Nursing; the other half are to be representatives from the British Medical Association, the Medical Women's Federation, the British Hospitals Association, the National Association of Local Government Officers, the County Councils Association, the Society of Medical Officers of Health, the County and County Borough Hospital Matrons' Association, and the Association of Hospital Matrons. The Council of the B.M.A. at its last meeting accepted the College's invitation to be represented, and appointed Dame Janet Campbell, M.D. The many schemes already put forward for the improvement of nurses' training and conditions of service will be examined by the committee, whose final recommendations should represent an agreed policy acceptable to all parties, not least to the nurses themselves.

We have received a stencilled document entitled "A Report on the Possible Relationship between Electrical Equipment and the Incidence of Anterior Poliomyelitis," by James G. Woolley, with a foreword by Harlan Shoemaker, M.D. This report contains statistical evidence which leads the author to believe that the incidence of poliomyelitis has an aetiological relation to the lay-out of high-tension electricity in the City of Los Angeles. The author's presentation of the data is not very easy to follow, but his researches will no doubt be carefully scrutinized by American experts familiar with local conditions.

¹ *British Medical Journal*, 1941, 2, 166.

² *J. biol. Chem.*, 1914, 19, 239.

³ *Biochem. J.*, 1939, 33, 1425.

⁴ *Acta med. scand.*, 1939, 102, 417.

⁵ *J. biol. Chem.*, 1917, 29, 93.

⁶ *J. clin. Invest.*, 1928, 5, 198.

⁷ *Arch. intern. Med.*, 1934, 53, 825.

⁸ *Ibid.*, 1941, 67, 114.

⁹ *Iodine Metabolism and Thyroid Function*, Oxford University Press, 1938, London.

WAR CONDITIONS AND THE MENTAL HEALTH OF THE CHILD

BY

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Last February Miss Dunsdon, our psychologist, made a survey of 8,000 Bristol school children to assess the incidence of strain following air raids. Her findings were that about 4% of this large sample of the school population showed some signs of strain, either purely psychological or else psychosomatic. Among the psychological symptoms noted were general nervousness, trembling, crying, and aggressive behaviour. Among the psychosomatic symptoms were headaches, anorexia, indigestion, enuresis, soiling, pallor, and epistaxis.

Of the 300 children showing signs of strain 120 suffered from frankly psychological symptoms. These occurred twice as often in the 5-7 group as in the senior school group (aged 11-14). About 170 children suffered from psychosomatic disorders. These were especially frequent in the oldest group of senior school children, and this form of anxiety disguised as physical symptoms was the characteristic reaction of the 11-14 group.

Taking both types of reaction together, Miss Dunsdon found that the younger children felt the strain and lack of sleep more readily than the older ones, who have developed more control and can repress their feelings to conform with adult standards with greater success. Half the cases occurred in the infant group (5-7), another third in the junior group (8-10), and less than a quarter in the senior school children.

This survey concerned the general school population at a time when severe raids were occurring fairly often. I thought, however, that it would be a matter of interest to try to find out how children who had suffered special stress were reacting after some months had elapsed and during a period of freedom from raids. I have therefore carried out a special survey, lasting a fortnight, of a group of children who were exposed to an air raid of maximum severity. This group were the in-patients of the Children's Hospital in Bristol at a time when the hospital was damaged by several high-explosive bombs and the children were evacuated to another hospital at the height of the raid, under particularly terrifying circumstances.

On the night in question there were 54 in-patients, ranging in age from 2 months to 12 years. This was the occasion of the second severe raid on Bristol. Shortly after nine o'clock the Hospital was damaged by several high-explosive bombs. The warden of the sector immediately ran to the hospital at which I was on duty, a quarter of a mile away, where a squad of Regular soldiers were standing by to help deal with incendiaries. On receiving the message the soldiers immediately dashed off in an Army lorry to the Children's Hospital. The scene on arrival was extraordinary. Soldiers were crunching through a litter of broken glass, fallen plaster, and blown-in black-out material, picking children out of cots and beds and, tucking them under their arms, running down the steps and dumping them pell-mell into the lorry. The hospital was in darkness, and the only light came from the fires raging in the city below. A very heavy barrage was in progress and heavy high-explosive bombs continued to fall quite close to the hospital. Most of the children were transferred by lorry to my hospital; a few babies were carried in the arms of the soldiers the quarter of a mile, while spent fragments of "flak" were buzzing down freely. All 54 children were evacuated without a scratch, and the only serious casualty among the nursing staff was the night sister, who had been cut by glass.

Here, then, was a really traumatic incident. I still feel a little frightened myself when I recall it. I have tried in this survey to find out how this incident has been integrated in the minds of the various children.

I do not know whether many readers have undertaken a follow-up of cases in a bombed town : but the search on which I embarked rather light-heartedly proved more than usually difficult. On one occasion the address I had been given proved to be a heap of rubble, and in many cases evacuation, convalescence, and the absence of both parents on war work necessitated many extra visits and a good deal of correspondence. I consider myself fortunate, therefore, that I have been able to trace 51 out of the 54 children.

Of these 51 children 44 are alive; 7 had died—3 of cerebrospinal fever, 1 of diphtheria, and 3 of the illnesses for which they were originally admitted. Of the 44 survivors 5 still have symptoms which can be directly attributed to their experiences on the night of the raid—a percentage of 11. This is barely three times the number found six months ago by Miss Dunsdon in her survey of the school population in general.

Parents reported that on their arrival home from hospital, generally about a week or a fortnight after the incident, 27 children (61%) showed signs of distress. But the majority were stable in a period ranging from three weeks to two months. "He sweated freely when the sirens went the first week he was home"; "She was normal in three weeks"; "She was frightened for nearly two months."

Perhaps the best example of the normal process of digestion of the experience was that of a little girl aged 3 years. At first on her return home Janet woke frightened by the sirens and wouldn't say a word to the grown-ups about what had happened. But at the end of three weeks she was overheard telling her dolls about how the bombs fell and how the windows fell on us; "a man came and took me away to another hospital in a car." After this discussion of the incident with her dolls she was much steadier; she sleeps through the sirens, and only wakes when the barrage is particularly heavy. She has no other nervous symptoms now.

All the children showing persistent signs of strain are between the ages of 1 and 5½; this confirms Miss Dunsdon's finding that the youngest age group is the most vulnerable.

The youngest child is now 17 months old. She showed evidence of the time-lag in the development of symptoms that we have already reported in adults, and began to have screaming fits and night terrors three to four weeks after her discharge from hospital. After another severe raid, in which her home was damaged, she was evacuated with her mother to South Wales, but is still very nervous, and suffers from night terrors, although she can tolerate the noise of engines.

The second child, aged 15 months at the time of the raid, is probably a mental defective. Though she has returned home to a raid-free district, her mother considers her much more nervous since she came home from Bristol.

The third child, aged 2 at the time of the raid, has also gone back home to a relatively quiet area. He was very excited occasionally on his return home, still does not like to hear the sirens, and generally cries out and yells every time he sees a gas mask. He is an only child.

The fourth child, aged 3 at the time of the raid, is the youngest of three children. Her mother, who was suffering from what she described as a "nervous breakdown," described the child as coming home with "shattered nerves." She screams at night and talks and shouts in her sleep, cries when spoken to, picks on her fingers and face, suffers from diurnal and nocturnal enuresis, and soils herself. Even allowing for the mother's tendency to project her own symptoms on her child, I think this was the most severe case I saw.

The fifth child was a boy aged 5 at the time of the raid. Though very much better on his return to his country home, he is still afraid of the dark and suffers from night terrors if he

is no light in his bedroom. Bombs have been dropped near his home and the windows broken since his return.

It is interesting to note that four of these five children have persistent symptoms in spite of the fact that they have returned home to relatively quiet areas.

Taking the remaining children who recovered, I have attempted to analyse the progressive assimilation of the incident in the different age groups. Children under the age of 1 cannot express their feelings by talking and are unable to move of their own accord to a place of safety. Of the 10 under 1 year of age 4 died—3 of infections unfortunately contracted within a fortnight of the raid. Conditions after the raid multiplied the chances of infection, and, though strict isolation was practised, it is perhaps significant that every child who developed infection died, and this 100% mortality suggests a lowered resistance in these young infants. Of the 6 survivors 4 never showed any signs of upset, one was a little upset at first, and the oldest, aged 10 months, still suffers from night terrors.

The next natural group appears to be from the age of 1 to 3. There were 15 of these, one of whom died of meningitis. Of these children 4 showed no sign of strain at any time; 2 still suffer from persistent symptoms. The most common reaction in this group was that to the noise of sirens, or to any noise: "She jumped at the least little noise"; "He knew what the sirens meant and was terribly anxious"; "She put her finger to her lips when the sirens went and seemed to listen, and cried." This reaction soon disappeared in spite of many subsequent alerts. These children are of an age to walk, and some of them ran for a safe person or place when the sirens went. The earliest example of this was seen at 1 year 11 months: "He came after me when the sirens went"; "He runs to anybody on hearing bangs"; said "Bombs, Mummy," or "Is it all clear?"; "He asked to go to shelter when the sirens went." Another reaction observed in this group was a failure to recognize the parents on return home. "She didn't know us when she came out" (1/11). "He didn't know me—he was a bit strange" (1/11).

It is not until the 3-year-olds are reached that any attempt is made by the child to describe the incident. At first the account is disjointed and fragmentary.

Joyce (3/0) said: "They took me away; they wouldn't let Daddy come."

David (3/5): "The black-out came down on me; the soldiers took me away in the car."

Elizabeth (4/1): "The ceiling came down on my bed. I had a ride with the soldiers in a car."

George (4/5) talked about the nurses running up and down the stairs and the bombs dropping.

Brian (7/5) told his parents how his hair was full of powdered glass, how the nurses showed the soldiers where to go, and how the soldiers carried him out.

In this group of children, aged 3 to 7 years (13 cases), there was a slightly earlier phase noted when the child attempted to reject or deny the experience.

Graham (2/5), though talking well when he went into hospital, would for some time say nothing but "No" when he came home. Sylvia (3/0) never talked about the raid.

Janet (3/0) would not say a word at first, and then talked to her dolls as I have described.

Patricia (6/5) never spoke of her own accord of the raid.

Gladys (8/0), who was choreic, never spoke of the raid. She was described by the ward sister as "too awfully normal," but for some time would not play with the other children or join in the ward games. She is quite happy and bright now.

But in the next group of children, aged 7 to 11 (8 cases), there was a tendency to accept the raid as an adventure.

Brian (7/5) treated the raid and subsequent bombings as a joke, but he was upset when evacuated to Cornwall. He had an unlucky billet with a very rough coarse-mouthed foster-father, and was eventually rescued by his father. On his return home he was shy, and cried when spoken to.

Robert (11/0) thought it was thrilling; he was very excitable and rather manic. He wrote a vivid description of his adventures to an aunt, who forwarded the letter to Mr. Churchill, and the Prime Minister's letter of acknowledgment is now a treasured family possession.

In the last group of children (11 to 12½), of whom there were 4 cases, there is an example of a sense of responsibility for the younger ones.

David (11/6) would not leave his ward until all the other children had been evacuated. He asked the nurses to allow him to help them in carrying children out. He paid for his self-control with enuresis after subsequent air raids, and his mother noticed that in severe raids in the following months the only sign of nervousness was a tendency to talk all the time he was in the shelter.

Another point of interest is the reaction of these children to subsequent incidents, when their homes or hospitals were again hit. Leaving out the youngest child, who had been born in an air raid, there were 8 of these.

Ruth (4/0), after the original raid, was evacuated from my hospital when it was severely damaged by a bomb, and a month after her return home she saw the house on the opposite side of the road blown sky-high in a daylight raid. Yet I found her putting her dolls to bed on the front door-step opposite the ruins, quite friendly and charming. She had a stable father, leader of a first-aid party.

Elizabeth (4/1), in a subsequent raid in another town, talked of her previous experience.

Patricia (7/0), five months after the first incident, was in a hospital which was damaged by a bomb, but was quite cool and showed no signs of upset.

Diana (9/1) was cool in a raid at home when her mother and two sisters broke down, and was bright and happy in a raid when another hospital to which she had been moved was hit.

Doreen (10/5) went "hysterical" in the shelter at home in the next raid and was shaken by her disgusted father, a naval petty officer. She was evacuated to Devonshire a month later, settled down happily, and is looking very well.

Robert (11/0), the enthusiastic letter-writer already referred to, was transferred to another hospital in a town which was bombed two months later. The windows were blown in. Two months afterwards, in yet another hospital, the windows were again blown in by a near miss. Beyond being rather excited, he was not upset.

Grace (12/10) two months after her return home found the house wrecked when the family emerged from their Anderson shelter. But she is sleeping well and is looking better than ever she did.

Bernard (12/0) told his father how the ceiling, plaster, and glass came down on his bed: he thought he would be buried alive. In a subsequent raid he heard bombs whistling down, and dived under the bed so quickly that he cut his head open and was the only casualty. But he sleeps well now and, though he is an epileptic, has had no recent fits.

Summary

Of the children exposed to a major air raid 61% showed signs of strain for a period of between three weeks and two months.

After seven months 11% of children still show persistent symptoms.

Persistent symptoms have not occurred in children under 1 year or over 5½ years of age.

The incident is assimilated in varying degrees according to the stage of development of the child's personality.

The earliest reaction is that to sirens and noise in general. In the walking child there is an attempt to run to safety. Later, in the talking child, there is an attempt to reject formulation of the experience, followed by an effort at describing or rehearsing

the incident, the description becoming more elaborate as the child is more mature. About the age of 7½ the tendency is for the child to accept the incident as an adventure. Finally, about 11½ a sense of responsibility for others appears.

The reaction to subsequent raids was on the whole remarkably slight. Out of 8 children who had severe later experiences only 2 showed pardonable anxiety, and they made rapid adjustment.

The most striking finding of this survey is the extraordinary toughness of the child, and his flexibility in adapting to potentially threatening situations.

I am indebted to my house-surgeon, Dr. Monica Hawkins, for tracing records while these children were in my hospital; and to Miss Pierson, the almoner of the Children's Hospital, and Miss Taylor of the Royal Hospital, Bristol, for help in tracing addresses.

THE NATION'S DENTAL SERVICES

PLANNING BY STUDENTS

A joint committee of dental students representing five London hospitals—Guy's, King's College, the London, the National Dental Hospital, and the Royal Dental Hospital—in co-operation with some dental schools in the Provinces, has prepared a memorandum¹ on the nation's dental services. It is a forthright document, especially in its analysis of dentistry as a career and its criticism of methods of teaching.

"Deplorable" Status of Dentists

The public status of the dental practitioner is declared to be deplorably low. The widespread ignorance of the nature of dental disease, and especially of its effect on systemic conditions, is described as appalling. Little more than £5,000 a year has been spent (by the Dental Board) on educating the ignorant public in the elementary principles of oral hygiene; some educational work is also done by the Central Council for Health Education, which the memorandum erroneously describes as a "department of the British Medical Association." The majority of the population have never been reached by dental propaganda, except by way of advertisements for proprietary tooth-pastes. Fear of the dentist's chair is still a factor to be reckoned with, and is considered by the students to be a serious reflection on dental technique. They believe that more research should be devoted to painless dentistry, but the responsibility lies very largely with the individual practitioner to cause his patient as little discomfort as possible while not impairing the efficiency of his work.

Dental attention at child welfare clinics impresses the students as inadequate, though varying from county to county. The school dental service is a valuable effort, but only about 65% of the children receive attention, and for these the facilities are too irregular to permit any degree of thoroughness. The fundamental fault in the school dental service is the lack of sound training for dental surgeons in child dentistry, including orthodontics. The gap between school-leaving age and the age of eligibility—19—for the additional benefits scheme under national health insurance is one of the greatest of the shortcomings, and the insurance scheme itself has many drawbacks. Incidentally the students praise the dental clinics which in London and elsewhere set out to meet the needs of the poorer sections of the community. These are often referred to as commercial practices, for although the charges are cut to a minimum they are run as extremely profitable concerns. "We have watched the work of some of these clinics and have been favourably impressed by the quality of the work they turn out." About seventy large firms employ part-time or whole-time dental surgeons for their workpeople.

Dentistry as a Career

Only a comparatively small proportion of the population can afford to pay the full fees of private practitioners, but it is in this field that the great majority of dental surgeons work. The

Dentists Register, with between 14,000 and 15,000 dental surgeons and dentists, has remained almost stationary for the last fifteen years, and with the gradual dropping out of the "Dentists 1921" it is unlikely to show any marked increase in the near future. During the years from 1927 to 1937 the *Medical Register* showed an increase of 6,572, the *Dentists Register* an increase of only 204. In the United Kingdom there are four doctors to every dentist, but the *Register of Students*, 1938-9, shows the ratio of medical to dental students to be nearer six to one. Of those on the *Dentists Register* about 55% hold a diploma (L.D.S.); less than 2% hold the B.D.S., and less than 1% a higher qualification. The training is long and expensive. An initial outlay of £1,000 is necessary for education and subsistence, and from £500 to £2,000 for the purchase of a practice. The provision of more numerous and valuable scholarships and bursaries is urged.

In peacetime an average of only 24 women qualify annually, but school dentistry offers great scope for women, who also stand a better chance than men as candidates for posts of dental surgeons to maternity and child welfare centres.

Dental Education

Criticism of the methods of teaching is on the grounds of lack of modern apparatus, inadequate knowledge of modern methods on the part of the teachers, a tendency to ignore backward students, and insufficient supervision and aid from professional dental mechanics. Co-operation with manufacturers of dental goods, most of whom are willing to demonstrate their own techniques to students, is discouraged. A serious shortage of trained whole-time teachers is said to exist at all stages of professional training and at nearly all hospitals. Use is made as a supplementary provision of honorary visiting surgeons and demonstrators, but this is unsatisfactory for several reasons, one being that the student is often "taught two conflicting methods for the same operation on two consecutive days."

The examination system, while its advantage is conceded, has the drawback that the setting of a limited syllabus in certain subjects leaves to the teacher the responsibility of extending the syllabus; also that in marking examination results no account is taken of the student's hospital record.

It is also complained that the education of medical students in dental matters is neglected. The general practitioner of medicine is declared to have little or no knowledge of dental conditions and is rarely in a position to advise his patients to obtain dental treatment until some acute trouble arises. "Further, their lack of training in the administration of anaesthetics for dental operations renders them often almost a menace when called upon to perform this task." Again: "A medical house-surgeon is often expected to extract teeth with no previous experience of the operation whatsoever, and even no real knowledge of the anatomy of the parts concerned." It is considered that there are advantages in taking medical qualifications, however low, as well as dental qualifications. The dental surgeon can then speak to the medical man on equal terms.

Dentistry in Wartime

The work undertaken by the dental services with the Forces is mainly "conditioning"—that is, rendering a man dentally fit without impairing his masticatory powers. The tendency is to maintain Service personnel by depleting civilian practice, with the result that a position is arising in which there are not enough dentists to treat the civilian population or to maintain the standard of school dentistry. "Eighty per cent. of the younger members of the profession will have been absorbed into the Forces by the end of this year in order to change the neglected mouths of soldiers into examples of first-class conservative technique. But the school dental service, attempting to cater for the adults of to-morrow, has to pay as large a toll as any other branch of the profession to satisfy the demands of the War Office." It is considered that it would have been better to establish the wartime organization of the profession so as to provide only the most essential treatment for the Forces while doing everything possible to overcome the difficulties of treating the fluctuating evacuated populations and to ensure the best service for children and adolescents. In one West of England town where, before the war, one dentist working half a day a week

¹ Issued by the Planning Committee of Dental Students, Royal Dental Hospital of London, Leicester Square, W.C.2. (1s.)

was able to cope with all demands, a bombed-out dental surgeon has now settled, and is seeing 200 patients a week.

Up to now the problem of calling up the "Dentist 1921" has not arisen, all such men being over military age. It is owing to the inclusion of these men that the average age of dentists is so high; 65% of those on the Register are aged between 45 and 65.

The memorandum urges that all these questions should be the subject of a conference to which a wide representation of the dental profession, of its ancillaries, of health services in general, of approved societies, and of Government Departments should be called.

Local News

SCOTLAND

Scottish Sanitary Congress

The sixty-sixth annual congress of the Royal Sanitary Association of Scotland was held recently in Glasgow under the presidency of Mr. Frank Preston, who in his opening address urged that plans should be prepared now to meet the transitional period from war to peace, and that planning should be of three types—national, regional, and local. In a paper on precautionary measures against infectious diseases Dr. Frank Main, M.O.H. for Perth, emphasized the need for a drastic overhaul of the procedure of exclusion from school for varying periods of all contacts of infectious disease. He said that many thousands of school attendances were lost every year by exclusion of contacts which could be saved without the slightest danger of an increase in the incidence of infectious diseases. Under the present rules a contact of mumps must stay away from school for twenty-one days, while a child with a severe cold might, and usually did, remain at school and infect the whole class. Colonel Sir Alexander Russell, I.M.S. (ret.), of the Department of Health for Scotland, stressed the importance of immunization against diphtheria, pointing out that pre-school children were by far the most susceptible to this infection. Out of an estimated child population in Scotland of 1,124,500 only some 600,000, or about 53%, had so far been immunized against diphtheria. It seemed wrong that, in the name of liberty of the individual, parents could veto the protection of their children against disease and untimely death.

Neurosurgical Unit for Glasgow and the West

Meetings have recently taken place between representatives of the Glasgow Corporation hospitals and of voluntary hospitals to discuss a plan for establishing a single unit for neurosurgical treatment of patients from Glasgow and the West of Scotland. Agreement upon general principles has been reached, and the Department of Health for Scotland has undertaken to place at the disposal of the area a number of beds and facilities for operative surgery at its hospital at Kilmarnock, to which both civilian and casualty patients would be admitted. The Health Committee of the Glasgow Corporation has adopted a resolution recommending approval of this plan as a temporary arrangement during wartime.

The September issue of *Industrial Welfare and Personnel Management*, the journal of the Industrial Welfare Society (14, Hobart Place, S.W.1, price 1s.), includes articles on "Lighting for the Older Worker," by E. B. Sawyer, manager of the Lighting Service Bureau, and on "Foot Wear and Tear," by W. Sayle Creer, M.Ch.Orth., F.R.C.S., who suggests that firms should establish foot clinics needing only very simple essential equipment and a chiropodist (full- or part-time, depending on the number of workers). "In the minds of medical men who have experience of the value of the chiropodist there is no doubt at all that the establishment of foot clinics in industry is something not to be discussed as a possibility or as a luxury but as a necessity and one which quickly repays the money spent on it."

Correspondence

Voluntary Hospitals

SIR.—Sir Frederick Menzies asks: "What are the particular virtues of the voluntary hospital system which are conspicuous by their absence in the municipal hospital system?" Without attempting a comprehensive answer to this question, I would like to mention a few of these virtues.

1. The control of the work of the hospital by a medical committee, consisting of all the members of the senior staff, with a chairman elected by them and re-elected and changed at frequent intervals, no medical superintendent taking full final responsibility.
2. Recommendation for election to the medical staff, of all grades, by the medical committee, of the future colleagues.
3. Part-time visiting senior staff, individually having sole and final personal responsibility for each patient under his care. These members of the staff may hold part-time appointments at another hospital of a different type, do non-institutional work, and see patients in their own homes, thus having a broad professional experience.
4. Apprenticeship system of junior resident staff, each personally responsible to, and each individually trained by, a member of the senior visiting staff.
5. Admission open to all, and not restricted to local government boundaries.

These points will not, I think, be disputed by many of those who believe that the voluntary hospital system has something of real worth to contribute to the health services of the future. I have purposely not enlarged on them. But I must, even at the risk of Sir Frederick Menzies calling this a "Niagara-like cataract of words which are entirely meaningless," mention a much more controversial point. In my view the voluntary hospital system, largely owing to the above features and to the absence of cramping central control, provides great scope for the development and expression of individual initiative and personal responsibility, both so essential to good and satisfying work in clinical medicine.—I am, etc.,

London, Sept. 15.

B. A. BUTTERWORTH.

SIR.—Sir Frederick Menzies's pertinent question (September 6, p. 353), "What are the particular virtues of the voluntary hospitals which are conspicuous by their absence in the municipal hospital system?" is apposite and of fundamental importance if the new hospital (and medical) system which is in the process of forging is to be an improvement. In evaluating the voluntary hospitals the three types should be noted—the teaching, the non-teaching staffed by consultants with over 100 beds, and the cottage hospital; the advantages are not entirely enjoyed by the last. The object of this letter is not to "make a case" for the voluntary hospital, but to try and articulate that happiness, that freedom and apparent superiority of the voluntary hospital, so that the pattern is everywhere available for patients.

The particular virtues of the voluntary hospital are:

1. The primary importance and independence of the clinician. The clinician accepts full responsibility for every patient in his beds and inspires the full loyalty of the staff—medical, nursing, and lay—for his patients. The system of "firms" with their rivalries develops initiative; the periodic visits assist discipline.
2. The staffs and departments of the voluntary hospitals are "open" for all to see. Students, general practitioners, and postgraduates are welcomed and encouraged to discuss and to criticize the clinical work.
3. Many voluntary hospitals have that precious possession tradition, in some cases of many centuries of service. The value of tradition is difficult to define but is easy to feel and recognize. Tradition, however, is not vital, for I have seen new voluntary hospitals staffed by consultants capture the "spirit" in a decade.
4. The voluntary system still provides the leaders, the thinkers, the writers, and the teachers in medicine and surgery.
5. The system of private consulting practice associated with the voluntary hospitals exerts an instructive and co-ordinating influence between the medical services and doctors of the district.

Residents, mostly prospective general practitioners, receive valuable tuition from a chief so engaged.

6. The "open" out-patient system enables doctors to select the man (not the department) possibly 100 miles away who will meet the needs of their patients.

7. Then the monthly medical committees and subcommittees—for example, the nursing and instruments—where hospital management is "thrashed out" in the light of the needs of the patient, of the district, and of experience garnered from other hospitals where the staff also serve, are invaluable. The practice whereby new developments and apparatus must be justified by the member of the staff to the satisfaction of his colleagues is excellent for practicability and economy. Although large institutions (as in London) may be able to buy cheaply, it is expensive to buy unsuitably.

8. In the voluntary hospitals the number of residents and visiting staff per bed is probably much higher than in the municipal hospitals. The voluntary hospitals are always working to capacity, at high pressure with usually efficient clinical service and a quick turnover.

9. They are generally short of money, and careful economic service is general.

From my own experience of municipal hospital service I recall that:

1. In municipal hospitals the first loyalty of the staff—medical, nursing, and lay—is to the Organization, which may, and indeed does, override the clinicians and may come between the clinician and patients.

2. The entrance gates of a municipal hospital are guarded, access is not easy, medical or surgical pilgrims need authority before they are allowed to enter. Patients, too, demand something more personal than a hospital superintendent or county hall. In supporting voluntary hospitals patients enjoy some pride of ownership and responsibility.

3. The municipal hospitals with clinicians holding the highest qualifications have been vigorous for some fifteen to twenty years. It may be apposite to check the original work and writing which has been forthcoming from this wealth of clinical material. How many of the staff are active members of the various medical societies? Does the organization actively encourage membership of learned societies and attendance at professional meetings throughout the country, or is this "mixing" with fellow clinicians passively resisted?

The voluntary hospital is a free, open institution made by its honorary medical staff and large-hearted laymen. The municipal hospital is usually a closed efficient organization: the first savours of a democracy, the latter of totalitarianism; both can be good or bad. The problem is to fuse the independent yet responsible visiting staff of the voluntary hospital with their clinical freedom with the fine organization of the municipal hospital.—I am, etc.,

London, W.1, Sept. 20.

HAROLD DODD.

The Mental Defective in the Army

SIR,—The further letters elicited by Dr. Esher's article (August 9, p. 187) prompt me to return to the subject with your permission. I ventured in my letter in your issue of August 23 (p. 280) to suggest that Dr. Esher's proposed mental age standards were too high, and since then others have written to the same effect in greater detail.

The article referred to virtually asked the question: "Can the mentally defective man play any part in the modern armed Forces?" Gross degrees of deficiency are not, of course, being considered. Experience as a former medical officer in one of the Forces and in the colony for mentally defective men of which I have charge leads me to the belief that a fair proportion of feeble-minded men, otherwise healthy, can be satisfactorily utilized in certain units of the Forces, and that too high a standard of intelligence estimated by "test" at recruitment will lose the useful services of many.

The question of stability has been suggested very properly as one of the major criteria. Out of my present population of 420 defective men, some 250 are feeble-minded with mental ages of over 6½. During a longish period of frequent nocturnal air attack in the immediate area it was repeatedly observed by members of our staff that these men showed few signs of fear, pre-

served good discipline voluntarily, and rapidly became philosophical to the most exasperating discomforts. There was never any panic among them, even when a shelter containing thirty had its entrance ramp demolished by a direct hit by a high-explosive bomb, fortunately without casualties. This may mean only lack of sensitiveness, but the result is the same. I do not, of course, mean to suggest that the mental age of 6½ is a suitable standard.

Dr. Herd (September 20, p. 422) warns us rightly that too much reliance should not be placed on "mental age" assessed by standardized tests. It is difficult to see in what other way a rapidly operating medical recruitment board can gauge mental capacity. If these tests must be used, and it seems they must, then let the minimal assessment, at least on enlistment, not be too high, for that would be as wasteful of personnel as too low a minimal assessment would prove to be of training effort once in the Forces.

Where the mentally defective soldier shows moral delinquency resulting in anti-social conduct, repeated acquisition of or concealment of venereal or dirt-borne diseases, he has obviously become a nidus of indiscipline and a source of inefficiency. It is largely such defectives who should be notified and handed over at once to the civil authorities, but I gather the state of our civil laws does not allow such action yet, so the Service concerned can only discharge him as "Services no longer required."

As regards the "weeding-out" by Army psychiatrists of these defectives who are making unsatisfactory soldiers, there is one small possibility, mention of which I trust will not be offensive. Many of the psychiatrists are practitioners who until recently had only association with aspects of life quite different from soldiering. They may sometimes unconsciously allow their decisions to be led by the opinions of the men's officers and N.C.O.s, whose object may be in some cases a short cut to a "smart unit."—I am, etc.,

Brenty Colony, Bristol, Sept. 20.

JAMES JOHNSTON MASON.

Depressive States in the Soldier

SIR,—I should be grateful if you would allow me to answer a few points raised after the publication of my article, "Depressive States in the Soldier" (July 26, p. 109).

I am sorry if I have attributed to Dr. C. H. Rogerson views which are not his. As he suggests desirable (August 9, p. 209), I endeavoured to curtail the neurosis-versus-psychosis argument as far as seemed possible, and I appear to have done this to such an extent as to have made false implications of his views—for which I must sincerely apologize to him.

Dr. Carver feels "bouts of narcotic substances" undesirable in shirking neurotics (as well as in alcoholics), but, as he will see from the table I showed, only very few of those who had prolonged narcosis could be so regarded: the latter treatment was reserved for patients with acute anxiety or making unsatisfactory progress.

I must thank Dr. Henry Yellowlees (August 16, p. 243) for his charitable and perfectly correct assumption that a slip of the pen was responsible for the misquotation of his views on insight: he was also correct in his assumption that the insight which I was venturing to assess was that of the patient rather than that of the physician.—I am, etc.,

Sept. 23.

R. F. TRIGOLD

Selection for the Army

SIR,—I was interested in your leading article on selection for the Army (September 20, p. 410), in which you reviewed the latest report of the Select Committee on National Expenditure. This report is "chiefly critical of the allocation of man-power once it has passed into the Service—not the occasional acceptance by the Army of medically unfit men, but the assignment of men to military occupations for which they are mentally ill adapted." With regard to the selection of officers, the committee holds that "the qualities essential to an officer cannot be ascertained solely by testing."

Since this report raises a really urgent and serious problem, I venture to direct your attention to a psychological method of selection and allocation which appears to be wider in scope than intelligence tests—the analysis of handwriting, known as graphology. It is well known that the German War Office

have made use of this method for purposes of selection and allocation for the last ten or fifteen years, and particularly with regard to selection of officers and men with specially responsible tasks this method seems to have worked out satisfactorily. According to G. Kvergie, Hitler's air-pilot was selected with the help of an examination of handwriting (*News Letter*, vol. 4, No. 53, p. 641). In this country some child guidance clinics and institutes such as the Institute for the Scientific Treatment of Delinquency, as well as important business firms, have availed themselves of this method and have expressed their satisfaction.

I myself have had good results from graphological reports on patients of mine, not only with regard to their psychological problems but also as regards their vocational suitability. I have come to use graphological reports much in the same way as a physician will use laboratory or x-ray reports, for it is often possible for a graphologist to see at once into an aspect of the personality which can otherwise only be grasped after long investigation. I know that other psychotherapists have had similar experiences.

H. J. Jacoby reports that the graphological method was tested on an experimental-statistical basis, yielding a high degree of reliability—between 85% and 93% (*Analysis of Handwriting*, 1939, pp. 26-7 and 40), while R. A. S. Paget suggests that it may be useful to carry out similar control tests of this method in this country (*Nature*, April 27, 1940). Ernest Jones maintains that "graphology is now in a position to supply the data in an accessible form" (*Internat. J. Psycho-analysis*, vol. 21, October, 1940 part 4). It is my opinion that the task of interviewing officers could be shortened and lightened by the analysis of handwriting, which can ascertain essential personality qualities that cannot be discovered by interview and intelligence tests, and that this method, if applied in a reasonable and critical way, may fill a serious gap in the psychological means of selection and allocation in the Army at present at our disposal. The Ministries concerned should have no difficulty in obtaining the services of qualified advisers.—I am, etc.,

Nottingham, Sept. 22.

MICHAEL FORDHAM, M.R.C.P.

Wholemeal Bread

Str.—A general practitioner in earnest mood who bursts into print expects a certain amount of good-natured chaff from his friends, who perhaps read the first and last paragraphs of his letter. He also faces the possibility of kindly comment or caustic criticism from the experts. But rarely, I conceive, does he evoke such extraordinary criticisms as I received in a letter from Mr. J. C. Mottram (August 16, p. 244) in reply to my letter on wholemeal bread (July 12, p. 64).

The winning of this war may depend on the health of our nation. From a nutritional point of view wholemeal is of great importance to the community. It is sad, therefore, to hear it derided on account of two fallacious arguments, and more than disturbing to find it being replaced by so-called national wheatmeal, whose specification is such that it can comprise a variety of meals chameleonic in colour, kaleidoscopic in appearance, rich or poor in vitamins as the miller decides in his "gentleman's agreement" with the Government. It is illuminating by way of comparison to read the strict, detailed, definite specifications for animal feeding stuffs under the Feeding Stuffs Act.

The two fallacious arguments are: (1) that the roughage of wholemeal is undesirable in wartime; and (2) that wholemeal has very poor keeping qualities. I advocated wholemeal as the staple bread because of its splendid nutritional value, especially for its iron and vitamin content. I pointed out that the M.R.C. preferred 85% extraction flour because "it is undesirable to increase the roughage in wartime diets." I suggested that this was a matter of opinion, for I could find only one reference to experimental work on the effect of roughage on the intestine, and this was not derogatory. Mr. Mottram gives six references "which may be added to the single one mentioned." Is Mr. Mottram pulling my leg? I have looked up the first four (two of which are incorrectly given) and was extremely surprised to find that none of them had anything to do with the subject of roughage and the alimentary canal! I confess I was so disappointed that I did not look up the last two. But, after all, a joke is a joke!

I pointed out that till recent years wholemeal was the only wheatmeal available and was eaten in double the quantity it is to-day. Mr. Mottram has it from "personal knowledge that

germ meals consisting of a mixture of white flour and germ have been available to the public for over fifty years." The fault is mine; I apologize for the indeterminate "recent." As the hymn says: "A thousand ages in Thy sight are like an evening gone." My recent years started just before the fifty years of Mr. Mottram, which makes my statement no less true.

The M.R.C. objected to wholemeal because it could only be kept under reasonable conditions of storage for "four to six weeks or longer." I described an experiment wherein samples of wholemeal were kept in a bakery for six months without signs of deterioration. Mr. Mottram says "this is not a fair test, as it would not be practicable under ordinary manufacturing conditions to store flour at such temperatures in the summer." Mr. Mottram disappoints me. If a bakery in June, 1941, was not hot enough for experimental purposes, one might have to wait a long time for a hotter month. But his remarks suggest that he has some evidence on the keeping qualities of wholemeal and germ meal. I cannot find a single reference—not even one experiment on the susceptibility of wholemeal to the mysterious disease known as "rope"—to which he refers. If he has some evidence will he please bring it forward?

Here, then, is the position to-day. National wheatmeal is official. It will vary in value from loaf to loaf. No check is made on its iron or vitamin content. We "kid" ourselves that we are feeding the population scientifically.—I am, etc.,

Leeds, Sept. 24.

R. A. MURRAY SCOTT.

Communal Feeding in Schools

Str.—There are good reasons for making attendance at communal feeding centres compulsory. Their establishment cannot be justified by attacking any one class of the community; nor can they be justified by imputing such a degree of ignorance that appals and such a lack of intelligence that creates despair of ever training mothers of the working class in the right ways of diet. I also have been appalled by the ignorance manifested in food values. It is not the ignorance of the mothers of the working class that appals me: it is the ignorance, or rather the apathy and indifference, of our own profession to the modern facts of nutrition. For example, it seems, so far as I have been able to discover, that no systematic inquiry is made into the habitual dietetic habits of a patient either by general practitioners or by physicians at hospital out-patients. Again, is there any member of the medical boards established under the Military Service Act whose duty it is to study the dietetic habits of the new recruit?

Further, one of the main factors leading to diet deficiency is the use of white bread. In 1940 it was stated in Parliament that 95% of flour milled was white; 95% of all families, including professional and working class, therefore, consumed an article of food deficient in calcium, iron, and vitamins. Ignorance of food values is not peculiar to any one class.

There is a certain type of child for whom compulsory attendance is necessary. It is not a child from a family of the working class where there is lack of food and lack of knowledge of food values: there are other ways of dealing with these situations; it is the child who has developed faulty feeding habits. In my experience the child who is more likely to fall ill is the one who refuses to eat the food that the parent provides. The ignorance shown by the parent is not so much of food values as of how to persuade or to train the child to eat the food that the parent knows is good. This is the faddy child, or the one who does not like meat or fat, green vegetables or milk. Such children should be sought for by the medical or nursing staff of the public health services. Faddiness is apt to develop after acute catarrhal illnesses of the respiratory tract. After a preliminary period of residence at a convalescent home these children should be sent to a communal feeding centre. The purpose of such treatment is two-fold: first, to change the faulty feeding habits, and, secondly, to establish sound habits of feeding. Compulsory attendance should be maintained for a definite period of six months or longer, according to the home situation. The failure of the parent to establish right feeding habits should be thoroughly investigated. After the cessation of the period of compulsory attendance the child should be supervised, the home visited, and the co-operation of the parent enlisted to maintain the healthy habit of feeding.—I am, etc.,

P. A. GALPIN,
Tottenham Office.

London, E.13, Sept. 15.

Cysticercosis Epilepsy.

SIR.—In reply to Dr. C. W. Ewing's article on cysticercosis epilepsy (August 23, p. 263), in which information is requested as to the presence of cysts in the cerebrum in the case reported by me, I have to state that radiographic films of the skull proved inconclusive in this case. There was an opaque object situated in the left frontal region, but as the degree of opacity was less than in the other cysts it was considered advisable to carry out radiographic examinations on the case at yearly intervals in order to assess the degree of calcification rather than to make a definite diagnosis at the time. The cerebral findings were therefore omitted until such time as more definite evidence of intracerebral calcification of the cysts became available.—I am, etc.,

Glasgow, Sept. 18.

WILLIAM BLYTH.

Scabies: Questionable Evidence of Cure

SIR.—Medical journals continue to report treatments for scabies. Each writer finds his or her method efficient; cases reported on are often few, and control by dermatologist or entomologist is almost invariably lacking. Successes are claimed on questionable evidence. How many readers (or contributors!) are aware that scabies may for weeks be undetected and cause no local discomfort? Absence of obvious lesion and irritation is no proof of cure. Presence thereof provides no evidence of persisting infestation.

Kenneth Mellanby has already shown that we may be blindly accepting prejudiced concepts. His work to be published later may still further disillusion enthusiasts who claim discovery of a panacea. Personal investigation and conversation with Mellanby's willing volunteers might enlighten contributors. Those called upon to treat scabies should accept reports in which test of cure is dependent on the absence of living acari. Superficial inspection and patients' comment recorded a fortnight after treatment should under no circumstances be regarded as criteria of cure.—I am, etc.,

P. B. MUMFORD, M.D., F.R.C.P.

Familial Neurofibromatosis

SIR.—Dr. A. Garland's memorandum on the hereditary nature of Von Recklinghausen's disease (August 26, p. 120) gets further support from three cases that have come under my observation. The father, a man of small stature who died comparatively young, had patches of brown pigmentation on the body, with masses of pedunculated and sessile tumours under the chin, on both arms, neck, chest, and back. His sister, a diminutive woman with marked kyphosis and scoliosis, has similar pigmentation and the same distribution of tumours. His two daughters have the neurofibromata on the arms, neck, chest, and back; but so far pigmentation has not developed. His father, who was small of stature and of a low-grade mentality, was a typical case of neurofibromatosis.—I am, etc.,

Wellington, Somerset, Sept. 20.

S. McCLEMENTS.

Treatment of Impetigo

SIR.—The letter from Dr. G. A. Grant Peterkin (September 20, p. 422) might well have been the last word in this correspondence, for 2% aqueous solution of gentian violet is a simple, effective, and economical treatment for impetigo, and the Edinburgh school deserves credit for popularizing it in British dermatological clinics. Ointments are less effective, and examples of impetigo, refractory or spreading under ointment, are common in large skin clinics, and many cases of sycois barbae appear to be the result of ointment therapy. These unfavourable results might be expected, for a film of grease retains exudates and sweat, which encourage the growth of organisms and irritate the follicles. Nature's defence against skin infection is the dry, intact stratum corneum, and our treatment should be designed to maintain it.

The common types of impetigo are scaly, scabbed, bullous, circinate, and ulcerative, and treatment has to be adjusted accordingly. If healed lesions are present it indicates that the patient can cope with the infection without the aid of antiseptics, and simple cleansing with carbolic soap followed by the application of calamine lotion or a dusting powder to dry the active lesions will usually terminate the infection in three days. Scabs and crusts should be removed, and this is facilitated by the use of

hot compresses of 1% sod. bicarb. or 1% sod. sulphate, and then a lotion is applied to the clean red moist surface. Outpatients with exposed lesions prefer a less conspicuous colour than violet, and acriflavine 1/1,000 plus 4% tannic acid to diminish exudation when necessary is a good application, but lot. calamin. plus 2% phenol or the lotion of zinc and copper sulphate are just as useful, always providing that no idiosyncrasy towards them exists.

Under such treatment most cases resolve in five to ten days, but occasionally a deeper erythema around a lesion denotes a more virulent infection, and then prosectasine, 1 gramme t.i.d. for a week, and sulphanilamide powder to the lesions often cause dramatic improvement. Sulphanilamide is unnecessary and has no demonstrable effect upon the average case of impetigo. Ointments have a limited use in preventing the formation of hard crusts in the scalp over-night, but even for the scaly variety of impetigo a cream or paste is preferable to an ointment, and their use instead of the latter means a saving of 50% of the fatty base. No mention has been made of mercury, because, although of value, it is more essential to the national economy in war industries.—I am, etc.,

London, W.1, Sept. 21.

R. T. BRAIN.

Surgical Statistics for the General Surgeon

SIR.—I consider that Mr. J. C. Goligher, in his article on the operability of carcinoma of the rectum (September 20, p. 393), has presented statistics of the utmost value to the general surgeon, who also meets such cases constantly day by day. I have read his article again and again, and consider it to be just such a classical statistical record for our guidance as was that of Winsbury-White many years ago in the *British Journal of Surgery* on findings on prostatic cases at St. Peter's Hospital. Though many general surgeons have special leanings to certain branches, in these days we have to have the up-to-date figures of our colleagues for specialties which we also have to deal with, and they should be encouraged to publish such articles as the above quoted.—I am, etc.,

Oxford, Sept. 23.

HUGH WHITELOCKE.

Puerperal Tetanus

SIR.—We are grateful to Prof. Fletcher Shaw (September 20, p. 418) and to Mr. Owen-Jones (September 13, p. 388) for drawing our attention to the Tetanus Committee's report in the *Journal of Obstetrics and Gynaecology of the British Empire* for June, 1941, with reference to the anaerobic infection of vulval pads and infection of cotton-wools and cellular tissues after sterilization in manufacture, and on the difficulty of eliminating spore-bearing organisms unless absolutely rigid technique of sterilization is followed. But we must point out that our article on puerperal tetanus was submitted before publication of this report. In our article we had referred to foreign journals in view of the fact that we could obtain no reference to recorded cases occurring in the British Isles.

After perusal of the committee's report we find that S. Merriam, in 1838, reported one death from puerperal tetanus in 10,190 confinements, and J. Y. Simpson, in 1854, wrote an article on tetanus following abortion and parturition, and commented on the association of plugging the vagina in cases of abortion and the onset of tetanus.

The committee was not able to obtain recent statistics in relation to non-fatal cases, and it describes figures of fatal cases from the reports of the Registrar-General and from representative institutions with large maternity departments. The Registrar-General's figures showed that a century ago there were only two fatal cases in the year 1840, an incidence of 1 in 250,000. For the years 1927 to 1937 there were 10 cases, giving an incidence of 1 in 700,000 deliveries. Figures from the institutions recorded only one fatal case of tetanus.

The committee reported that in spite of the fact that the risk of tetanus may be very remote it was important to investigate the possible part played by dressings as a source of infection, and it felt that after investigations which confirm that cotton-wools and cellulose dressings are generally heavily infected with spore-bearing anaerobic bacteria, among them virulent strains of tetanus bacilli, there is nothing improbable that such dressings are a potential source of surgical and puerperal tetanus. It admitted that there are many other possible sources of infection with the *Bacillus tetani* in the puerperium, and, therefore,

it is not possible to be certain of the part played by dressings in the aetiology of clinical tetanus.

Though the matter is not yet quite clear as to whether infection of the vulva arises from infected pads or from the rectum, there still remains the unexplained query why the condition is so rare. We would point out that we have been unable to trace in the British Isles any case of recovery from puerperal tetanus—apart from that we recently published in your *Journal*.—We are, etc.,

BRUCE MACLEAN.
P. CHALLEN.

Newcastle, Staffordshire, Sept. 25.

* The subject of this letter was discussed in an annotation in last week's *Journal* (p. 445).—Ed., *B.M.J.*

Epidural Novocain Injection in Cervical Cancer

SIR.—I wonder whether any reader could explain the following, which I find rather puzzling. Cases of carcinoma of the cervix uteri with pelvic and perineal pain are relieved by epidural injection of novocain followed by saline (up to 200 c.cm.), and the relief may last for months. The effect can hardly be psychological, but I cannot think of a rational explanation of the relief of the pain, which is presumably due to pressure and strangulation of the nerves in the pelvis. There is no evidence of anaesthesia of the perineum following the injection, which rules out a forcible rupture of nerve fibres.—I am, etc.,

Sheffield, Sept. 22.

J. WALTER, D.M.R.E.

Obituary

ROBERT THIN, LL.D., M.B., C.M.

Past-President, Royal College of Physicians of Edinburgh

The death has occurred at the age of 80 of Dr. Robert Thin, a Fellow and former President of the Royal College of Physicians of Edinburgh: he had been a member of the British Medical Association for fifty-two years, held high local office in the Association, and attended many of the Annual Meetings.

The son of James Thin and Catherine Traquair, he went to the Royal High School, Edinburgh, and thence to the University, where he first took an Arts course and graduated M.A., and proceeded to the M.B. and C.M. degrees in 1887. After serving as resident surgeon and resident physician at the Royal Infirmary, and as resident physician at the Royal Hospital for Sick Children, he did postgraduate work in Vienna and Prague. On his return to Edinburgh in 1890 he set up in general practice and held a medical appointment at the Forth Bridge Works. He obtained the M.R.C.P.Ed. in 1892 and was elected to the Fellowship in the following year. He served the College as Honorary Librarian from 1923 to 1931, was Vice-President in 1928-30, and for a general practitioner had the unusual distinction of holding office as President of the College in 1931-3. On vacating the presidential chair he received from the University of Edinburgh the honorary degree of LL.D.

Dr. Thin joined the British Medical Association in 1890; he was chairman of the Edinburgh and Leith Division in 1922 and acted as its representative at five Annual Meetings of the Association, the last one being the Centenary in London. He was elected President of the Edinburgh Branch in 1924. He contributed articles to medical journals, mostly on the history of medicine; his writings included an interesting account of the old Royal Infirmary and earlier hospitals, and under the title "College Portraits" a group of attractive biographical sketches of the medical worthies of Edinburgh in former times.

In the daily round of practice Dr. Thin gave of his best to all who sought his help, and the skill and sympathy he bestowed upon them won him the love and gratitude of his patients and their friends. He had no doubt about the high place of the family physician in the framework of medicine, and his long life of service bore testimony to this conviction.

J. LOUGHEED BASKIN, M.D.

Dr. Joseph Lougheed Baskin of Worminghall, Bucks, who died at Oxford on August 30 at the age of 71, was a distinguished physician and neurologist.

Born at Enniskillen, son of the Rev. Charles Baskin of Belfast, he was educated at Armagh, and took the Scottish triple qualification in 1897 after studying medicine in London, Cork, and Edinburgh. In 1911 he obtained the Brussels M.D. His life-work was devoted to psychiatry, which he practised in many different institutions. He served as medical officer to the Belfast Mental Hospital, the Royal Albert Hospital, Devonport, and the Devon County Mental Hospital, Axminster. In more recent times he was special neurologist for the Ministry of Pensions at Maudsley, and did a spell of post-war duty at Ashurst, Littlemore. For many years he was superintendent at Fisherton House, Salisbury, when it was the largest private mental institution in the country. Dr. Baskin published a number of papers in medical journals, including articles on katatonia and on the influence of gardening as a form of treatment. He was a member of many learned societies, all connected with his branch of medicine, and his work was always marked by its originality and analytical character. He had long been a keen member of the British Medical Association, and frequently attended the Annual Meetings, where he took special pleasure in promoting the social activities of the Irish members. He served as secretary of the Section of Neurology and Psychological Medicine at the Brighton Meeting in 1913, and was for some time secretary of the Irish Medical Schools and Graduates Association.

In his time, writes a colleague, Dr. Baskin was well known in many directions outside his profession. He was a minor poet of some distinction, and his work, mostly of the pastoral lyric or sonnet type, was favourably known to many, including Dr. Robert Bridges. His interest in sport was diverse, but he excelled in aquatics, and he had many awards as an expert swimmer in the South of England. Dog breeding and exhibiting was a hobby, and while in Salisbury he was admitted to be the leading breeder of Pomeranians. He was an instinctive naturalist, and his wide knowledge of plant, tree, and bird life was a never-failing mine of information for those who sought his advice. His later years were given up to intensive teaching of first-aid and ambulance work in many of the villages surrounding his home. He served with distinction in the last war, where he saw service with a battalion of the London Fusiliers and later with a heavy artillery brigade. He was severely wounded at Messines and recommended for the Military Cross. His was a very full life, and he served well his generation and his country.

B. R. ARCHER TAYLOR, M.R.C.S.

We regret to announce the death, on the eve of his eighty-sixth birthday, of Dr. Benjamin Robert Archer Taylor at his home in Meckering, Western Australia. He had belonged to the B.M.A. for fifty-eight years and was the oldest member of the Western Australian Branch.

Dr. Archer Taylor was born on June 29, 1855, at Tottenham, Middlesex, and on leaving school was entered at Lloyds. He was still there when Ferdinand de Lesseps visited England not long after the opening of the Suez Canal: the visit left a deep impression on his mind, and he often related how the company sprang as one man to its feet cheering wildly. Finding the work at Lloyds too slow for his vigorous spirit, he resigned his position and began the study of medicine as a student at Guy's Hospital. The four senior surgeons at Guy's in his day were Cooper-Foster, Thomas Bryant, Arthur Durham, and Henry Howe. He acted as dresser to Cooper-Foster, and related that on one occasion while he was at work Arthur Durham came in and stopped at the bed of the patient whom he was examining. Durham entered into conversation with Cooper-Foster and a discussion arose regarding Listerism, which had then come into vogue: Durham said with sarcastic humour, "These Listerites will soon be opening the peritoneum." Of the four senior surgeons, Howe was the only one who had adopted the teachings of Lister at that time; he was the junior of the four. Lister had been appointed Professor of Clinical Surgery at King's College, London, just a year before this.

The Services

NAVAL AWARD AND COMMENDATION

The D.S.C. has been awarded to Temporary Surgeon Lieut. Alexander Gibson Reid, R.N.V.R., for bravery and devotion to duty during an enemy air attack in which H.M.S. *Mashona* was sunk; and Surgeon Lieut. Joseph Patterson, R.N.V.R., has been commended for bravery during an air raid on Plymouth.

AIR FORCE AWARDS AND MENTIONS IN DISPATCHES
The O.B.E. (Military Division) has been awarded to Acting Wing Commander James Proctor Huins, A.A.F., and to Acting Squadron Leader Benjamin Charles Curwood, R.A.F., in recognition of distinguished services rendered in operational commands of the Royal Air Force during the period October 1, 1940, to March 31, 1941.

Acting Group Captain Percival Maurice Keane, R.A.F., Acting Squadron Leader Thomas Arthur Hunt, R.A.F., and Squadron Leader Malcolm Langley Maley, R.A.F.V.R., have been mentioned in dispatches by Air Officers Commanding-in-Chief.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Prisoner of War

Surgeon Lieut. Patrick Christopher Steptoe, R.N.V.R.

Medical News

A meeting of the Section of Orthopaedics of the Royal Society of Medicine will be held at Horton Hospital, Epsom, on Saturday, October 11, at 2 p.m., when short papers on "The Problem of the Foot in Service Cases," "Psychological Reactions to Injury," "Conditions of the Back simulating Visceral Disease," "Spinal Cases of Interest," and "Some Points in the Diagnosis of Osteochondritis of the Knee" will be read. Clinical cases and x-rays of interest and special cases will be shown, and there will be a demonstration of physical treatment.

At the annual meeting of the Hospital Saturday Fund, presided over by the Lord Mayor of London at the Mansion House, Sir Walter Womersley, M.P., Minister of Pensions, said that the restoration of disabled men to employment had been the subject of frequent conferences between the Ministry of Pensions and the Ministry of Labour and National Service. Everything is being done, he said, to ensure that while the disabled man receives treatment in hospital he is also considered in relation to his employability, so that there may be no delay in putting him into direct contact with the training schemes that are being developed by the Ministry of Labour.

On Saturday, September 27, the Chartered Society of Massage and Medical Gymnastics held a half-day congress in the Cowdray Hall of the Royal College of Nursing, Cavendish Square, W. The Founders' Lecture, at which Lord Horder took the chair, was given by Prof. F. Wood Jones, F.R.S., F.R.C.S., on "The Muscles of the Body Cavity."

Sir Bernard Docker, as chairman of the British Hospitals Association, has approached the Ministry of Health with regard to the growing difficulty experienced by all hospitals in getting and keeping domestic staffs, a matter which has been publicly ventilated in the *Times* by a letter from Dame Agnes Hunt, honorary superintendent of the Shropshire Orthopaedic Hospital.

The September issue of the *Glasgow Medical Journal* (Alex. Macdougall, 104, West George Street, 3s.) opens with an article on the effort syndrome by Lieut.-Colonel J. Gibson Graham and Captain J. D. Olav Kerr, and includes an Educational Supplement giving full particulars of the curriculum at the Glasgow Medical School.

An epidemic of infantile paralysis, the largest in the history of the province, has recently broken out in Manitoba. In the latter part of August there were more than a hundred cases. Most of the attacks are slight and there have been only a few deaths so far.

The draft Defence Regulation referred to in this column on September 13 (p. 390) came into operation on October 2, from which date no paraffin emulsion may be manufactured containing more than 25% volume in volume of liquid paraffin.

Archer Taylor qualified L.S.A. in 1880 and M.R.C.S. in 1881. Not long afterwards he bought a practice at Kendal, Westmorland, where he remained for over twenty years: he was on the committee of the Westmorland County Hospital and was also a magistrate for the Borough of Kendal. An acute attack of rheumatic fever caused him to turn his thoughts to a warmer and drier climate, and he applied for a practice at Broome, Western Australia: his application, however, came too late, but his eyes being turned towards Australia, it was only a matter of time when an opportunity presented itself. Sir Gerald Strickland of Sizar Castle, Kendal, having been appointed Governor of Tasmania about that time—he was later Governor of Western Australia—reports reached Dr. Archer Taylor concerning the favourable climate there, and in 1909 he bought a practice at Swansea, East Coast, Tasmania, where after a short residence his health was completely restored. He returned to England and took a course at Moorfields Eye Hospital, London, going back to Australia in 1913 and settling at Temora, New South Wales. After the war he went to Ceylon and practised at Nuwara Eliya, but returned to Australia in 1921 and settled at Meckering, where he practised until his death, exactly twenty years later. Archer Taylor belonged to the old school. He had a whimsical sense of humour and his mind did not track along the usual ruts; so that, always open to new impressions, he was in the forefront of any community with which he was associated. He was an ardent optimist, a loyal and generous friend, and a practitioner of the kind that is honoured with the confidence and love of his patients. He was a keen cricketer and an enthusiastic golfer almost to the time of his death.

Dr. THOMAS RONALD FULTON, who died suddenly on August 5 at Sutton-on-Sea, Lincolnshire, where he had been in general practice since 1936, graduated M.B., Ch.B. at Glasgow University in 1916. He immediately joined the R.A.M.C. and served in India and Mesopotamia with the rank of captain during the last war. In 1920 he became a partner with the late Dr. Alex. Day, M.B.E., and Dr. V. E. Badcock, M.C., at Wooler, Northumberland, where his practice extended far into the Cheviot Hills. He remained in Wooler until the end of 1935. For many years he was a member of the B.M.A., and was chairman of the North Northumberland Division in 1926-7. He was medical officer at the infant and child welfare centre at Wooler; and later on medical officer to the Mablethorpe Convalescent Home and Alford War Memorial Hospital while at Sutton-on-Sea. Dr. Fulton was a keen golfer and was president of the Wooler Golf Club for a number of years. He leaves a widow and three children.

We regret to record the death of Mr. MATTHEW LOGAN TAYLOR at his home in Park Quadrant, Glasgow, on August 20. Mr. Logan Taylor was the son of a doctor in Johnstone. He graduated at Glasgow University in 1897, and after passing through the house-physician and house-surgeon terms in the Western Infirmary became an assistant in the pathological department of the Western Infirmary and to the University professor of pathology, Sir Robert Muir. About the same time he was appointed surgeon to the out-patient department of the Royal Hospital for Sick Children and to the out-patient department of the Western Infirmary. Before settling down in Glasgow he was for a time in charge of a malaria expedition in Sierra Leone and the Gold Coast; that work was most favourably noticed by Sir Ronald Ross. During the war of 1914-18 Mr. Logan Taylor was Captain, R.A.M.C., in No. 3 Scottish General Hospital, Stobhill. For nine years (1915-24) he held the appointment of casualty surgeon at the Central Police Station. He was appointed visiting surgeon to the Western Infirmary in 1922. On his retirement under the age limit in 1940 he was appointed honorary consulting surgeon. For some years he acted as consulting surgeon at Dumbarton Cottage Hospital, and in the last few years held a similar appointment at Greenock Royal Infirmary. His contributions to medical literature were mainly along pathological lines. An article contributed to the *Journal of Pathology and Bacteriology* jointly with the late Prof. Teacher on a series of double malignant tumours, and another, published in the *Proceedings of the Pathological Society of Great Britain*, on a case of chorion epithelioma and adenocarcinoma of the testicle, were substantial contributions. His interest in pathology was maintained throughout the whole of his surgical career.

Field-Marshal Sir Philip Chetwode, chairman of the Executive Committee of the Red Cross and St. John War Organization, in a statement made last week, said that they had been officially informed that the Soviet Government would welcome the aid of the British Red Cross in supplementing its supplies of medical and other goods for the use of sick and wounded members of the Soviet armed Forces and for civilians injured by enemy action. The British Red Cross had accordingly allocated £250,000, which would be available to deal with all the immediate needs of Russia and of our other Allies. The organization is prepared to place the whole of its machinery at the disposal of any bodies that may wish to take advantage of its facilities for the purchase and transmission of supplies. Since the assumption of these great new responsibilities will add much to the financial requirements of the organization, Sir Philip Chetwode has asked Lord Iliffe, chairman of the Duke of Gloucester's Red Cross and St. John Fund, to issue a special appeal for funds.

Sir Robert Robinson, Waynflete Professor of Chemistry in the University of Oxford, has been awarded the first Paracelsus Gold Medal of the Swiss Chemical Society.

The McGill Medical Faculty, Montreal, opened its term with 400 students, which is considerably more than had been expected.

EPIDEMIOLOGICAL NOTES

Discussion of the Table

A further decline was recorded in the incidence of measles in England and Wales, 136 fewer cases being notified than in the preceding week. The notifications of whooping-cough also showed a substantial decline (319), the total of 2,710 cases being the smallest recorded this year. For the fifth consecutive week the incidence of diphtheria has increased: the increase is not yet general, however, being confined to the northern counties and Wales. The trend of this disease during the coming months will be of special interest in view of the immunization campaign. A slight rise was recorded in the incidence of scarlet fever, and the notifications have exceeded 1,000 for the first time since the end of May. In Scotland whooping-cough, after the large increase reported in the preceding week, declined; there were, however, increases in the notifications of diphtheria (20), measles (26), and scarlet fever (1).

Paratyphoid declined in England and Wales. A further 27 cases were notified from Bristol C.B. The only other area with a large number of cases was Liverpool C.B., with 14. In Scotland the 15 cases notified were 5 in excess of the number for the preceding week.

Dysentery

The 94 cases of dysentery notified in England and Wales, and the 67 cases in Scotland, represent an increase of approximately 50% on the totals of the previous week. The chief of the local outbreaks in England and Wales were those of Gloucestershire (Bristol C.B. 13) and Suffolk E. (Blyth R.D. 13). In Scotland the principal outbreaks were those of Aberdeen Burgh 8, Dundee 12, Lanark County 21, and Glasgow 12.

Cerebrospinal Fever

There were 118 cases of cerebrospinal fever in England and Wales, a decrease of 10 compared with the preceding week. The largest returns were those of Lancaster 22, Yorkshire, West Riding 15, and Glamorganshire 10. Although the number of cases notified in Scotland was unchanged during the past two weeks, the cases in Glasgow have risen from 6 to 10.

Polio-myelitis

An increase of 7 cases on the total for the preceding week was recorded in England and Wales, but the number of counties notifying the disease diminished by three. Berkshire with 5 cases (Maidenhead M.B. 4 and Cookham R.D. 1) had the largest county total. Four cases were notified in London (Bermondsey 1, Fulham 2, and Paddington 1). The only other registration area with more than one case was Oxford C.B. 2. Three cases were reported from each of the following counties: Lancashire, Middlesex, Oxfordshire, and Somerset. No case was reported from Buckinghamshire. The 2 cases in Scotland were from the county of Ayr.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended September 13.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	118	6	23	3	11	122	2	37	2	5
Deaths ..	—	—	—	—	—	—	—	—	—	—
Diphtheria ..	917	30	254	13	30	1,027	28	348	31	30
Deaths ..	22	—	5	1	1	41	1	16	1	2
Dysentery ..	94	9	67	—	—	33	5	63	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute ..	1	—	—	—	—	4	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	1	—	—
Enteric (typhoid) fever* ..	49	4	7	8	5	93	1	20	12	1
Deaths ..	1	—	—	—	—	—	—	—	—	—
Erysipelas ..	—	—	48	4	2	—	7	53	3	7
Deaths ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years ..	25	3	16	16	8	62	3	13	17	11
Deaths ..	—	—	—	—	—	—	—	—	—	—
Measles ..	808	25	38	35	1	6,179	78	405	2	19
Deaths ..	2	—	—	—	—	14	—	—	—	—
Ophthalmia neonatorum ..	83	9	20	2	—	91	1	19	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid A and B ..	141	8	15	1	—	—	—	—	—	—
Deaths ..	1	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† ..	466	16	3	5	—	440	13	2	—	4
Deaths (from influenza) ..	8	8	—	—	3	9	—	—	—	—
Pneumonia, primary ..	—	—	132	11	—	—	—	105	9	5
Deaths ..	—	—	—	9	—	—	—	—	1	—
Polio-encephalitis, acute ..	4	—	—	—	—	6	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Polio-myelitis, acute ..	36	4	2	1	1	47	—	10	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever ..	1	1	19	4	—	3	3	13	1	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia ..	150	13	11	—	3	113	3	17	—	2
Deaths ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever ..	1,005	39	185	51	25	1,384	47	157	31	27
Deaths ..	3	—	—	—	—	2	—	—	—	1
Small-pox ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Typhus fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough ..	2,710	246	153	35	16	1,106	8	111	—	13
Deaths ..	15	3	6	3	—	7	1	—	2	1
Deaths (0-1 year) ..	256	15	55	52	20	325	50	53	25	24
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) ..	3,436	419	535	173	113	5,228	1450	544	154	120
Annual death rate (per 1,000 persons living) ..	—	—	—	—	—	—	—	—	—	—
Live births ..	4,910	423	828	452	235	5,435	665	873	327	219
Annual rate per 1,000 persons living ..	—	—	—	—	—	—	—	—	—	—
Stillbirths ..	185	16	35	—	—	207	20	45	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	—	—	—	—	—	—	—	—

* Includes paratyphoid A and B for Northern Ireland.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, the birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Neurovascular Disorders

J. B. writes: I should be grateful for advice in the treatment of the following case. A man over 75 has suffered for six months from: (1) Numbness in right toes and loss of sensation to light touch. (2) Pain in right calf after three minutes' walk; there is complete relief from pain after two minutes' rest. (3) Mild angina on severe exertion (this for a few years). (4) Imperceptible pulses in posterior tibial arteries. The kidneys and other organs appear to be normal.

Function of the Vocal Cords

Dr. JOHN DONALD (Edinburgh) writes: Can one of your readers tell me where I may find in literature any information referring to Claudius Galen having been the first to suggest, about the year A.D. 200, that the generation of sound was in the vocal cords?

Recurrent Erysipelas

Dr. A. J. COLBY TINGEY writes in reply to E. C. A. (September 13, p. 392): Some years ago I was successful in treating a case of recurrent erysipelas with erysipelas phylacogen. This remedy is prepared by Messrs. Parke, Davis and Co., and is stated to be a sterile aqueous solution of bacterial derivatives from cultures of streptococcus and staphylococcus. Injected in a series of doses subcutaneously, it may be expected to produce some degree of immunity to the infection. My patient did not complain of any severe reaction. Autohaemotherapy is another method of treatment which has been favourably reported on in cases of streptococcal infections, including erysipelas.

Dr. F. F. ILLIER (Leeds) writes in reply to E. C. A. (September 13, p. 392): This is frequently due to some streptococcal infection in the nose, such as an infected sinus and/or a streptococcal fissure. Sinus infection may require an operation, but if there is a fissure at the corner of the nares, or at the bottom of the ear, it should be painted with a silver nitrate pencil, or 10% silver nitrate in 90% spirit. General artificial sunlight will help to improve her resistance.

Warts

Dr. F. J. ALLIN writes from Letchworth in answer to J. W. (September 13, p. 392): Is the headmaster of the school aware that warts are often due to an infection from garden earth? The most severe case I ever saw was in a gardener, who had the back of one hand entirely covered with them. As a child I used to play in a garden, handling the soil, and I then had several warts. In recent years, while doing much gardening, I had three warts on the palmar surface of the hands. One of them was large, fungating, and as painful as a corn on the foot. Radium seemed not to affect it, so I pulled out the enormously enlarged papilla and applied acid mercuric nitrate. The wart then healed in a week, and left a hardly perceptible scar.

Income Tax

Deductions from Salary

W. M. has been refused deductions for (a) "interest of £8 paid on hire purchase agreement for loan of £100 to purchase car," (b) replacement of medical books, and (c) interest on loan from a relative, the interest having been paid without deduction of tax.

* * (a) If the transaction is really one of "hire purchase"—the "interest" being paid to the future vendor of the car—the £8

can be regarded as a payment for hire, and will be allowable if, e.g., car allowances, running costs, etc., are allowable in W. M.'s circumstances. (b) This is strictly not allowable as the income is assessed under Schedule E. (c) Loan interest is not allowable; tax should have been deducted, and any claim for exemption, etc., made by the relative. Retrospective deduction can be arranged by agreement with the inspector, or if the relative can be shown to be exempt from income tax the inspector may be able to give W. M. the allowance for this year, if not for the future.

LETTERS, NOTES, ETC.

Treatment of Incontinence in Children over Four

Dr. J. HARTSILVER (Hove) writes: I have found the following method of treatment successful where other and more orthodox ones have failed. It would be of value if a more extensive trial could be made. It is assumed that any local cause has been excluded. First the urine should be examined. Then no fluids should be taken after 4.30 p.m. A thin night garment should be worn, and there should be as few bedclothes as possible. Curtains should be drawn back and window opened after the child is in bed. The child should be awakened every three hours to pass water whether he likes it or not, and a note taken of the times when the bed is wet; the child should then be made to pass water half an hour before such times. Next morning the draw-sheet should be pulled out, and if it is wet the child should be made with much firmness and kindness and without scolding to wash the sheet and his night attire. There is a nervous background to most cases of bed-wetting which should be investigated; it usually dates from some illness or mental upset.

Dust Infection in Wards

Lieutenant-Colonel H. A. MOFFAT, F.R.C.S., S.A.M.C., writes from South Africa: In all the articles which have recently appeared in the *Journal* on the above subject it is surprising that no mention is made of the use of vacuum cleaners instead of sweeping, and apparently no work has been done to test the effectiveness of their use. With vacuum cleaners the organisms on the floors are removed, not left stuck to the floors as by the oil methods. Further, blankets, etc., can be cleansed of dust and so of organisms. Hospitals appear to be behind the times in this respect, since private houses and office premises use these cleaners extensively.

Status of the Ship Surgeon

Dr. J. L. BARFORD (Redhill, Surrey) writes: The status of the Merchant Navy is once again "in the news"—How long, O Lord how long? May I urge that consideration be given to the establishment of a Royal Merchant Service Medical Service. During fifteen years in the Merchant Service I made endeavour, perhaps at times misguided, to raise the status of the ship surgeon. That it is "low" in the public estimate may be instanced by the fact that so popular a writer as Francis Brett Young typifies a ship surgeon as a "slovenly elderly man with a scurfy coat collar who drifts from place to place and has a voice heavily charged with whisky and orange peel." But apparently Mr. Brett Young found the pen more profitable than the stethoscope.

Rose-hips for Vitamin Syrup

Plans have been made by the Ministry of Health and the Department of Health for Scotland to harvest the vitamin wealth of Britain's hedgerows in the form of wild rose-hips, which are well known to be particularly rich in vitamin C. Both garden and wild varieties are twenty times richer in this vitamin than orange but hitherto these health-producing fruits have been allowed to go to waste. The collecting is being organized chiefly through schools, boy scouts, and girl guides, the Women's Institutes, and the Scottish Women's Rural Institutes. The hips, which must be ripe, can be gathered from wild or cultivated bushes, but the should be free from bits of stem and leaves. Haws, the red berries of the hawthorn or may tree, are not wanted, and care should be taken to avoid picking them. The gathering season extends until the end of October. The collecting organizations will supply the rose-hips in bulk to a number of firms who have agreed to pay for them at the rate of 2s. for 14 lb. (minimum 28 lb.), carriage forward. Small quantities should not be sent direct to the firms, but handed in to a collecting depot. Anyone who, however, is able to pick a large quantity can obtain the name and address of the nearest manufacturing firm from any of the collecting organizations or from the Women's Voluntary Services. As a result of the campaign it is hoped that some 500 tons of rose-hips will be converted into a tasty health-fortifying syrup for the benefit of babies, children, and adults. The syrup will be marketed at a reasonable price.

LONDON SATURDAY OCTOBER 11 1941

THE TREATMENT OF BACILLARY (FLEXNER) DYSENTERY WITH SULPHANILYLGUANIDINE

BY

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AND

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With a Note on the Preparation of the Drug, by James Walker, Ph.D., D.Phil.

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Search for an efficient intestinal antiseptic has in the past yielded poor results. *In vitro* tests of the bactericidal activity of antiseptics are no guide to their usefulness in suppressing pathogenic bacteria in the gut, for the substance must first pass the acid barrier of the stomach, withstand the action of bile and other intestinal juices, and exert a bactericidal action on the intestinal pathogens in a *milieu* of broken-down organic matter and hordes of saprophytic bacteria. Because the natural intestinal infections of man are so difficult to reproduce experimentally, the bactericidal or bacteriostatic activity of an antiseptic substance on the normal intestinal flora, particularly the coliform group, of experimental animals is probably the most useful index for its therapeutic trial in intestinal infections. Graham (1932) tested in this way a large series of substances which were powerfully bactericidal to the colon bacillus *in vitro*, but he failed to find any which produced an appreciable change in the intestinal flora when given by stomach-tube to mice. With the advent of the sulphonamides a fresh attack was made on the problem, and claims have been advanced for the therapeutic activity of different sulphonamide preparations against intestinal infections mainly on the basis of their bactericidal action on the typhoid-dysentery group of organisms *in vitro* or in the peritoneal cavity of injected animals. Since very large doses of typhoid or dysentery bacilli are usually required to kill a mouse infected intraperitoneally, the animal experiments were little better than tests in the tube. On the clinical side, different drugs, particularly those of the phenol series, have from time to time been popular as intestinal antiseptics. Lately, reports of an apparently beneficial result from the use of sulphapyridine or sulphathiazole on single or small groups of cases of typhoid and dysentery have appeared. As examples, Reiter and Marberg (1941) treated 20 cases of acute bacillary dysentery at Haifa with 1 gramme of sulphapyridine three or four times daily for two to four days, and found that most of the symptoms disappeared in two days' time; while Bell (1941) reported good results in the treatment of 14 cases of Flexner and Sonne dysentery with a total average dosage of 5 grammes of sulphapyridine; in neither group was there an adequate control series. The objections to the use of these drugs as intestinal antiseptics are that they are gastric irritants and readily absorbed from the gut, so that if given in full doses they may not only upset an already irritable stomach

but because of the risk of dehydration and oliguria may produce severe toxic effects on the kidneys.

Properties of Sulphanilylguanidine

Marshall and his colleagues at Baltimore conceived the idea of using as intestinal antiseptic a sulphonamide compound which, although soluble in water and efficient chemotherapeutically, was poorly absorbed from the intestine. Of a number of such compounds which they had prepared, sulphanilylguanidine was chosen as being the most active against various bacteria. In 1940 Marshall *et al.* described the preparation of this drug, its pharmacology and toxicity, and its bactericidal or bacteriostatic activity on the intestinal flora of mice; and in a second paper (1941) its therapeutic value was demonstrated in a small series of dysentery infections. In their experience the toxicity of the drug for animals was of the same order as that of sulphapyridine and sulphathiazole, but as only a fraction of sulphanilylguanidine given by mouth was absorbed the risk of toxic effects with it seemed small. What absorption occurred was mainly from the small intestine, so that for a maximum therapeutic effect on the lower bowel infrequent large doses seemed likely to serve best. The absorbed fraction, part of it acetylated, was quickly excreted by the kidneys. Its most remarkable property was its power, when fed to mice, to reduce to scanty numbers the thousands or millions of coliform bacilli in the faeces. For clinical use these authors recommended an initial dose of 0.1 gramme per kg. of body weight followed by a maintenance dose of 0.05 gramme per kg. every four hours until the number of stools daily was four or less; then 0.1 gramme per kg. (0.05 gramme per kg. for adults) every eight hours for another three days. With such dosage they reported good results in 7 cases of acute bacillary dysentery treated within three days of onset; the therapeutic effect was variable in 10 cases treated later in the course of the disease. They quoted Lyon as having obtained excellent results in 15 out of 20 treated cases of severe dysentery, compared with 20 untreated control cases.

The value of a drug which, particularly in wartime, could be used for the control of dysentery was at once apparent to one of us (R. C.), and through the kindness of Sir Henry Dale a supply of sulphanilylguanidine was prepared by Mr. J. Walker, who appends a note on its preparation. Later we were fortunate in obtaining further supplies from

the American Red Cross Harvard Field Hospital through the kindness of Prof. J. E. Gordon and Dr. P. B. Benson, while a generous sample was also given us by Dr. Prescott of the Wellcome Foundation, Ltd.

Material and Methods

Although dysentery was the obvious choice of infection on which to test this new sulphonamide, the prevalent form of dysentery in the community was the usually mild Sonne infection, which, being self-limited and uncomplicated like bacterial food poisoning, did not lend itself to the therapeutic assessment of a new drug. However, with the good will of Dr. W. Allen Daley, Medical Officer of Health to the London County Council, and the sympathetic help of Prof. S. Nevin and Dr. S. A. Mann of the L.C.C. Mental Hospitals Pathological Service, arrangements were made to give the drug a therapeutic trial at Canic Hill Mental Hospital, where, opportunely, an epidemic of Flexner dysentery began in December, 1940, and continued with intermissions until June, 1941. Dysentery in mental hospitals is usually an endemic infection, often flaring up in the winter months and varying in severity from a mild diarrhoea to the most violent dysentery with frequent bloody stools and marked prostration. In this particular outbreak the infection was more severe and protracted than usual. Attempts to control its spread in the early stages by the use of a stock polyvalent Flexner vaccine were unavailing, and the prevalence and clinical severity of the outbreak may have been due to the introduction of a new type of Flexner bacillus along with a large influx of fresh patients. Once introduced into a ward the infection spread quickly to a large proportion of the inmates, who could not easily be taught the principles of personal hygiene. The prevalent type of organism was at first *B. dysenteriae* (Flexner Z) and later *B. dysenteriae* (Flexner X).^{*} The period of our investigation was from January to June, 1941.

All the patients were adults, of whom 130 were under observation. In this report, however, only patients who had both blood and mucus in their stools or who were bacteriologically confirmed to be suffering from Flexner dysentery were accepted for analysis. This reduced the number to 96, of whom 41 were treated with the drug and 55 were untreated controls. Their ages varied from 25 to 76 years; 55 were over 50 and many of them were in poor physical condition; 40 were males and 56 females.

Dosage of Drug.—The drug was given in powder form. It can be introduced as a suspension in water or milk; it has very little taste, and does not produce any nausea or vomiting. At first the prescribed dosage was 6 grammes a day in three doses of 2 grammes for four days, but after a preliminary trial this dosage was changed to 9 grammes a day in three doses of 3 grammes for two days, followed by 4 grammes a day in two doses of 2 grammes. If the diarrhoea was not controlled in four days the maintenance dose of 4 grammes a day was continued for one week. These are smaller doses than those recommended by Marshall *et al.*, but we were anxious to avoid the risk of any toxic effects from a new and clinically untried drug, and this dosage seemed to be therapeutically effective in most cases. However, later experience has convinced us that larger doses can safely be used, and may be advisable in the more severe cases of dysentery. A sample of blood was taken into oxalate twenty-four hours and again four days after starting treatment, in order to estimate the blood level of the drug. A morning specimen of urine was collected on the fourth day of treatment and examined for drug content, protein, crystals, casts, and cellular content. White cell counts were done on a number of treated and untreated cases. Bacteriological methods are discussed later. In all treated cases a liberal supply of fluids was insisted upon during the period of drug therapy, since sulphanilylguanidine, and particularly its acetylated derivative, might have irritative and toxic effects on the kidneys, similar to those produced by sulphapyridine and sulphathiazole, if adequate excretion was not maintained.

Clinical Results

While the principle of the alternate case was adopted in selecting cases for treatment, a fair number of patients did not develop the typical features of dysentery in the first day or two

of illness, but were later diagnosed on either clinical or bacteriological findings as Flexner infections. As a result treatment with the drug was reserved for an unduly large proportion of the more severe and classical infections. For purposes of analysis, therefore, the cases, both treated and untreated, were divided into two groups, labelled "severe" and "mild." The criteria of a severe case were a high initial temperature of 101° to 105° F., frequent stools (four to sixteen a day) containing both blood and mucus, and a prostrated toxic patient. The typical course of such a severe untreated case was an abrupt onset with high fever, headache, general malaise, severe abdominal pain, and in a few cases vomiting. Very soon there were frequent stools containing blood and mucus and accompanied by much tenesmus; the patient became quickly dehydrated and was very weak and toxic. Many of these cases had a typical, almost diagnostic, odour. The diarrhoea, usually with blood and mucus, continued for a week or ten days, and sometimes longer, and when the blood and mucus disappeared the motions often remained relaxed for a further few days. The temperature fell by lysis to normal in four to seven days; appetite improved after a week but convalescence was slow and protracted. In the milder case there was an initial rise of temperature to 99° to 102° F., abdominal pain and malaise, and relaxed stools, usually with blood and mucus, for two to five days. The temperature settled fairly quickly; abdominal pain disappeared, but malaise and anorexia persisted for a week or so, and the patient made a slow recovery.

Of 41 treated cases, 28 were classified as severe and 13 as mild; for the 55 untreated cases the distribution was 16 severe and 39 mild. Thus there was a much higher proportion of severe cases in the treated than in the untreated group. Two patients died among the 28 severe treated cases: one, aged 42, on the eighth day of infection despite a dramatic response to drug therapy; the other, aged 62, on the twenty-second day after making a good recovery from his dysentery. Three patients among the 16 severe untreated cases died: one, aged 29, on the third day of infection; one, aged 47, on the seventh day; and one, aged 60, also on the seventh day.

The criteria of clinical response to sulphanilylguanidine were: (1) a change in the character and frequency of the stools; (2) a rapid fall in temperature; and (3) the disappearance of toxic symptoms. A careful daily record was kept of the number and naked-eye appearance of the stools of every patient under observation, particular attention being given to the presence of blood and/or mucus. As the investigation proceeded it was felt that the number of motions a day was a less reliable guide to the response to treatment than the time in days of the disappearance of blood and mucus from the stools. In this connexion the day of disease on which chemotherapy was begun was an important factor in the reckoning. Among the severe cases the average time was 3.0 days from onset, ranging from two to five days, and in this group blood and mucus were present for an average period of 4.8 days, or 1.8 days after treatment was begun. In two patients blood and mucus persisted for more than a week after treatment was started. Among the severe untreated cases the average duration of blood and mucus in the stools was 6.8 days, or exactly two days longer than in the treated series. In the group of mild treated cases chemotherapy was begun at an average of 3.2 days from onset, and blood and mucus were present for 2.8 days from onset, so that in many cases blood and mucus had disappeared before specific treatment was given. The average duration for bloody mucoid stools in the untreated mild group was 2.5 days. This criterion of clinical response was therefore valueless in the mild type of dysentery.

Temperature charts of all cases were kept for analysis, but a cursory examination of these showed that the difference in duration of pyrexia between treated and untreated cases was not likely to be statistically significant. The fact that in many cases treatment with the drug was not begun until the third day of illness precluded any striking effect on pyrexia, which in untreated patients was beginning to settle by the third or fourth day of disease. There were, however, outstanding cases with a critical fall of temperature apparently in response to drug therapy, just as there were untreated cases with pyrexia continuing at a fairly high level for five to seven days. It is impossible to say, with the limited numbers under review, whether these were chance occurrences or not.

^{*} We are indebted to the late Dr. W. M. Scott and to Dr. Marion Watson for the final identification of these strains.

The general response and behaviour of an ill patient under treatment with a new remedy is not readily susceptible to analysis, and the evidence must be assessed as objectively as possible by a physician with experience of the disease and with an adequate control series. At first, when the infection was rather mild and the initial dosage small, it was difficult to be positive about the beneficial effect of sulphanilylguanidine. Later, particularly with early treatment of the more severe cases, the clinical response to the drug was very definite and sometimes dramatic. Nursing staff became enthusiastic about its curative value. In a typical severe case improvement of the patient's condition was noted in twenty-four hours after giving the drug, and by the third day the patient was feeling much better with disappearance of toxic symptoms and return of appetite. Bowel movements became much less frequent within two days, though blood and mucus often persisted for three to four days. Most striking of all, convalescence was much shorter than in the untreated cases. In the milder infections, too, the treated patient was quickly sitting up, with good appetite, while the relaxed stools were followed by a period of constipation.

Relapses.—In the untreated series it was not uncommon for relaxed mucoid stools to continue for some time after the patient was clinically well, whereas the treated patient usually became constipated. But in the treated group four of the severe cases and one mild case had slight relapses, with blood and mucus in the stools for one or two days. These fresh attacks all occurred within a week after cessation of drug therapy, and were probably true relapses rather than reinfections. In only one of them was the Flexner bacillus isolated during the relapse.

Bacteriology

In the early stage of this investigation material for bacteriological examination was taken every day of the acute illness direct from the rectum by means of a rectal speculum and stout loop. The material obtained—usually mucus mixed with some faecal matter—was either planted immediately on to plates of MacConkey's medium or emulsified in warm saline and inoculated in the laboratory within one to two hours of taking the specimen. Suspicious colonies were picked next day, inoculated into the appropriate sugars for fermentation reactions, and tested by the slide-agglutination technique with the Flexner I and II polyvalent antisera of the Oxford Standards Laboratory. The results obtained by these methods were not very satisfactory, and towards the end of April a new medium became available which gave a much higher yield of positive results. This medium is a modification of the Difco S.S. formula, which is based on Leifson's (1935) work on the selective inhibitory action of sodium desoxycholate, citrate, and other chemicals on the normal intestinal bacteria. Full details of this desoxycholate-citrate agar and its usefulness in the isolation of the various intestinal pathogens will be published separately by Dr. Martin Hynes. Table I, prepared by Dr. Hynes, shows the results obtained with material from patients with Flexner infections, and demonstrates in particular the value of the new medium in isolating the pathogen during convalescence.

TABLE I.—A Comparison of the Isolation of *B. dysenteriae* (Flexner)

Day of Disease	No. of Specimens			% Positive	
	* Mc.C. + † D.C. +	Mc.C. - D.C. -	Mc.C. - D.C. -	Mc.C.	D.C.
1	16	4	0	80	100
2-4	19	15	1	84	97
5-7	5	10	3	28	83
>7	6	27	82	5	29

* Mc.C. = On MacConkey's medium.
† D.C. = On desoxycholate-citrate agar.

These figures refer to the total number of specimens examined on desoxycholate-citrate agar. So far as the results from individual patients are concerned the Flexner organism was isolated from 59 (61.4%) of the 96 patients in this series. During the period when Hynes' modification of the S.S. medium, or in a small number of cases the S.S. medium itself, was being used, 37 (92.5%) out of 40 patients yielded the Flexner organism; in 6 of these cases neither blood nor mucus was noted in the stools at any time, and others were suffering from

mild infections. It is only fair to state that during this period, when additional technical assistance was available in the hospital laboratory, the Flexner bacillus was isolated on MacConkey's medium in specimens from 27 (67.5%) out of 40 patients, which was a considerable improvement on the early results. Latterly specimens of faeces were being used as often as material obtained by the rectal loop and speculum.

Convalescent Carriers

With the new desoxycholate-citrate medium, which detects relatively small numbers of pathogens in the faeces, it became possible to assess the value of sulphanilylguanidine in eliminating Flexner bacilli from the bowel. While it is generally believed that the Flexner organism quickly disappears from the gut after an acute attack, there is little doubt, from epidemiological evidence, that convalescent carriers must exist, and these cases, together with cases of chronic dysentery, are mainly responsible for spreading the disease and for maintaining it as an endemic infection in a community.

If an intestinal antiseptic should prove to be not only beneficial against the acute infection but also able to prevent the convalescent carrier state or the development of chronic dysentery, it would be a great boon to the public health in general and to asylum communities in particular. With the help of the new medium an examination was therefore made for convalescent carriers of Flexner's bacillus in a series of treated and untreated patients, all of whom gave positive cultures in the first week of infection. Among 16 treated cases 3 gave positive cultures after the end of the first week; 2 of these were positive on the eighth or ninth day respectively, and neither of them gave positive specimens after a week's treatment with the drug. The third case had a mild relapse on the tenth day of disease, and gave two positive cultures following this fresh attack, which may have been a true reinfection. In contrast to these findings, among 17 untreated cases 8 were positive after the first week of infection, and 5 of them were still positive in the third week, 2 in the fourth week, and 1 in the sixth week. The difference between the two groups may be expressed in another way. Of 43 specimens of faeces examined from the 16 treated patients after the seventh day of disease, only 4 were positive, whereas 14 out of 54 similar specimens examined from the 17 untreated patients were positive. Thus sulphanilylguanidine given in the acute stage of a Flexner dysentery infection seemed to be effective in preventing the convalescent carrier state. It should be noted, however, that of the eight convalescent carriers in the untreated group three were initially mild infections, and it may be that such cases are more likely to become carriers than those with more acute infections. Our experience with sulphanilylguanidine in the treatment of Sonne dysentery, in which convalescent carriers are common (Cruikshank and Swyer, 1940), suggests that if the drug is given after the diarrhoea has ceased it is less likely to influence the carrier state. As the drug will now encounter much more organic matter and many more saprophytic bacteria in the bowel, larger doses than seem to be effective in the acute diarrhoeal phase may be required to eliminate the pathogens from the intestine of carriers. For the same reason, sulphanilylguanidine may not be an effective prophylactic in a ward outbreak of dysentery.

Absorption and Excretion

It was desirable to find out what proportion of sulphanilylguanidine was being absorbed from the intestine of patients with acute bacillary dysentery and whether it was readily excreted by the kidneys. The concentration of the drug in the blood twenty-four hours and four days after starting treatment and the urinary concentration on the fourth day were therefore estimated on 28 patients by the method of Hynes (1940). In addition an estimate of the total amount of drug excreted in the urine was made in three patients in order to determine more exactly what proportion of the total dosage given by mouth was absorbed and excreted. The average concentration of the drug in the blood, examined about two hours after the last dose of 2 or, more often, 3 grammes and a total amount of 6 to 12 grammes in the previous twenty-four hours, was 1.55 mg. of free sulphanilylguanidine and 2.57 mg. of total drug per 100 c.c.m.: on the fourth day, after a dosage of 4 grammes in the previous twenty-four hours, the corresponding blood levels were 0.74 and 1.28 mg. per 100 c.c.m. The drug concentra-

tion at twenty-four hours varied for free sulphanilylguanidine from 0.5 to 3 mg. and for total drug from 0.75 to 6 mg. per 100 c.cm.; at four days the corresponding extremes were 0.25 to 1.75 mg. free drug and 0.5 to 2.5 mg. total drug per 100 c.cm. These figures, when compared with the blood levels after similar doses of the other sulphonamides, show that sulphanilylguanidine is poorly absorbed from the bowel and that the amount absorbed bears some relation to the dosage given. The urinary concentration of sulphanilylguanidine on the fourth day after treatment averaged 94.3 mg. per 100 c.cm. for free drug and 150.2 mg. per 100 c.cm. for total drug. The highest concentration, 240 mg. of free drug and 300 mg. of total drug, occurred in the patient who gave the highest blood concentration—namely, 3 and 6 mg. per 100 c.cm. Thus the urinary findings indicated that the absorbed moiety was being readily excreted. The rate of excretion could best be appreciated from the drug concentrations in the measured twelve-hourly collections made on three patients during and immediately after the period of drug therapy. The findings in one of them are given in Table II as an example which was closely paralleled by the other two.

TABLE II.—*The Urinary Excretion of Sulphanilylguanidine after Doses of 9, 9, 4, and 4 Grammes daily from April 12, 1941*

Date	Time	Volume	Sulphanilylguanidine per 100 c.cm.	
			Free	Total
April 12-13	8 a.m.-8 p.m.	32	30	35
	8 p.m.-8 a.m.	12	170	260
.. 13-14	8 a.m.-8 p.m.	16	120	220
	8 p.m.-8 a.m.	14	150	250
.. 14-15	8 a.m.-8 p.m.	24	60	150
	8 p.m.-8 a.m.	14	110	190
.. 15-16	8 a.m.-8 p.m.	32	70	105
	8 p.m.-8 a.m.	22	110	180
.. 16-17	8 a.m.-8 p.m.	16	60	170
	8 p.m.-8 a.m.	10	100	110
.. 19..	8 a.m.-8 p.m.		10	15
	8 p.m.-8 a.m.			

It will be noted that the concentration rose to a maximum between twelve and thirty-six hours after beginning treatment, fell to a lower level on the third and fourth days when the dosage was smaller, and quickly dropped to a very low concentration after treatment was stopped. There is therefore no evidence that the drug is retained in the tissues for any time after absorption. The proportion of acetylated drug varied both in the blood and in the urine between an eighth and a half of the total, and, as with other sulphonamides, there was no clue as to why certain patients conjugate a large proportion and others very little.

In three cases a rough estimate was made of the total amount of drug excreted in the urine during and immediately after the period of treatment. The calculation, based on the total volume of urine and on concentrations of the drug in twelve-hour collections, gave amounts of 7.5, 8.5, and 13 grammes respectively out of a total of 26 grammes ingested by each patient. If these figures represent the actual amount of drug absorbed, then about one-half to two-thirds must remain in the intestine, to be excreted in the faeces. Estimations were made of the drug concentration in twelve specimens, from three different patients, of fluid or semi-solid stools passed during the period of treatment; the concentration varied from 10 mg. (in a very watery specimen) to 700 mg. per 100 c.cm. Actually only half of the specimens gave concentrations above 200 mg. per 100 c.cm., which is the saturation level of the drug. These figures are lower than those quoted by Marshall and his colleagues (1941), and might be regarded as an indication for bigger doses than were used in this investigation.

Toxicity

With the doses used and the small amount of drug absorbed systemic toxic effects such as occur with the other sulphonamides were not anticipated with sulphanilylguanidine. In fact with one exception no clinical evidence of toxicity was noted: a rash of morbilliform type occurred on the twelfth day of treatment in a patient who, because of persistent diarrhoea, had been given a total dosage of 58 grammes of the drug (9 grammes daily for two days and 4 grammes daily for ten days). Marshall

et al. (1941) commented on the absence of toxic effects in their series of 25 treated children: in a group of 25 adults treated with the drug there were two cases of drug fever and one of mild haemolytic anaemia. The complication that seemed most likely to occur, as a result of the dehydration and diminished urinary excretion, was deposition of the drug in the urinary tract, with consequent irritative or obstructive effects. In no patient in our series, however, was there oliguria or urinary suppression, and no one complained of lumbar pain. Laboratory examination of the fourth-day specimen of urine of 28 patients showed a trace or slight trace of protein in 5: it seemed likely that this finding was related to the infection rather than to the drug. Epithelial cells and leucocytes were seen in about half the specimens, which were all non-catheter; neither red blood cells nor casts (apart from occasional hyaline casts) were noted in any specimen of urine. Crystals, usually in the shape of narrow rectangles, were present in the urinary deposits of 21 out of 28 patients: sometimes scanty, sometimes abundant, the presence and the amount of crystalline deposits bore a close relation to the urinary concentration of the drug. In this series of specimens crystals were usually present when the urinary concentration of free drug was over 100 mg. per 100 c.cm., which seemed odd in view of Marshall's statement that the drug is soluble to 200 mg. per 100 c.cm. Test-tube experiments were therefore made in order to find out the saturation level of the drug in urine of pH 5.6. At body heat (37° C.) the solubility was 175 mg. per 100 c.cm., at room temperature (18° C.) 150 mg., and at 4° C. 125 mg. Thus our finding of crystalline deposits with low urinary concentrations of the drug was probably related to the fact that many specimens of urine in this investigation were sent by post to the group laboratory during the winter months; solubility may also be affected by a high level of other inorganic constituents such as would be present in concentrated urine from febrile patients. Where the urinary concentration of the drug was high—as, for example, in the second-day specimens of the patients whose urine was examined daily—sheaves of narrow pointed crystals rather like those of tyrosine were seen in the urinary deposit and were regarded as the crystals of the acetylated drug. Similar crystals were observed in the urine of treated patients not in this series. One of these was a woman aged 86 with a severe *Salmonella reading* infection who was not benefited by large doses of sulphanilylguanidine and who died on the eleventh day of her infection. Histological examination of the kidneys showed marked degeneration of the tubular epithelium but no evidence of any irritative reaction. Nevertheless where large doses of the drug are being given it seems a wise precaution to insist on a liberal fluid intake.

White cell counts were done on 12 treated cases at the end of the period of drug therapy and in 9 untreated control cases. In the treated group the counts varied from 7,900 to 13,000 cells per c.mm., with an average count of 9,666; in the control group the extremes were 7,300 and 14,800 cells per c.mm., with an average of 9,733. Two treated patients with counts of 12,000 at the onset of infection were retested two weeks later and had counts of 9,800 and 10,200 cells per c.mm. respectively, which merely suggests that there is a slight leucocytosis at the onset of an acute dysentery. When it is remembered that more than half of the patients in the series were over 50 years of age, with a natural tendency to impairment of function, it is obvious that sulphanilylguanidine in the doses given has practically no toxicity for the tissues.

Conclusions

Sulphanilylguanidine, a new intestinal antiseptic, has been used in the treatment of 41 adult cases of acute bacillary (Flexner) dysentery with beneficial results, particularly in the more severe infections. A series of 55 cases in the same epidemic served as controls. While a dosage of 3 grammes three times a day for two days followed by 2 grammes twice a day for two to five days was therapeutically effective, larger doses are safely tolerated and may be advisable in severe or refractory infections.

Treatment with the drug in the acute stage of the infection apparently helped to prevent a convalescent carrier state, which was present in about half of a bacteriologically controlled untreated group.

Sulphanilylguanidine probably owes much of its effectiveness as an intestinal antiseptic to its poor absorption from the intestine, since one-half to two-thirds of the drug remains unabsorbed.

Blood and urinary concentrations of the drug were low relative to the dosage given, and toxic effects were conspicuous by their absence. Since crystalline deposits occur in the urine with concentrations over 175 mg. per 100 c.cm., an adequate fluid intake and output should be maintained to avoid local toxicity or irritation in the urinary tract, although there was no evidence of any such effect in this series of treated cases.

The use of a new culture medium, desoxycholate-citrate agar, resulted in the isolation of *B. dysenteriae* (Flexner) from a high proportion of both typical and atypical infections. Its superiority over MacConkey's medium was most noticeable in the isolation of the pathogen during convalescence.

The combination of an efficient intestinal antiseptic and a culture medium which will readily detect mild infections and convalescent carriers may be instrumental in eliminating dysentery from mental hospitals.

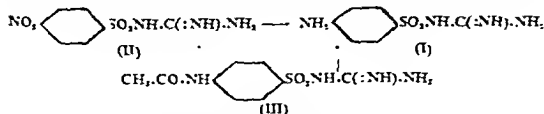
We wish to thank Dr. G. A. Lilly, medical superintendent of Cane Hill Hospital, for facilities and encouragement throughout this investigation, and the technical staff of the hospital and group laboratories for their help.

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THE PREPARATION OF SULPHANTILYLGUANIDINE

It appears that sulphanilylguanidine (I) was first obtained by Buttle *et al.* (1938), who, from its mode of formation, unwittingly ascribed an erroneous constitution to their product (Dewing and Smith, 1941). The compound was first described as such by Roblin and his co-workers (1940), who encountered it accidentally in the course of their study of the synthesis of heterocyclic derivatives of sulphanilamide. These authors, for identification purposes, then obtained the substance by reduction of the nitro group in *p*-nitrobenzenesulphonylguanidine (II), which they synthesized (cf. Winnek, 1940, 1941). A few weeks later Marshall and his colleagues (1940) published a description of a large-scale preparation of sulphanilylguanidine, and their method was followed in the present work. Condensation of acetyl-sulphanilyl chloride with guanidine nitrate in the presence of a large excess of sodium hydroxide yields acetyl-sulphanilylguanidine (III), which is subsequently hydrolysed with hydrochloric acid to free sulphanilylguanidine:



Two points of interest emerge and deserve comment. As obtained initially, the acetyl sulphaniylguanidine (III) forms a somewhat pasty white solid which tenaciously retains water. Drying is a very slow process under the ordinary conditions (hot oven at 90° C., or vacuum desiccator, etc.), and furnishes apparent yields of the same order as those quoted by Marshall *et al.*—namely, 65 to 70% of theory. Hydrolysis of this product yielded free sulphaniylguanidine also in the amount reported by Marshall *et al.*—namely, 45 to 60% of theory. The process of drying can, however, be greatly accelerated by washing the cake of crude acetyl derivative on the filter with small volumes of spirit and then ether, in which solvents the

compound is insoluble. Drying in the hot oven at 90° C. then gives an absolutely dry product in an hour or two, and, on account of the more efficient drying, the yields obtained at this stage appear to be somewhat smaller—namely, 59 to 62% of theory. On the other hand, hydrolysis of the acetyl derivative dried in this way gave free sulphanilguanidine in the improved amounts of 61 to 72% of theory.

Tests for acute and chronic toxicity of this preparation on mice gave results very similar to those reported by Marshall *et al.* (1940).

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**A TELLURITE-IRON-ROSOLIC ACID
MEDIUM SELECTIVE FOR B. DYSENTERIAE
(FLEXNER)**

BY

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AND

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Dysentery bacilli, unlike those of the typhoid-paratyphoid groups, have not shown any peculiar characters enabling the investigator to devise a medium which, while inhibiting the growth of other organisms, allows them to develop and be readily identified.

On litmus lactose agar and on the media of MacConkey, Conradi-Drigalski, and Endo the unrestrained growth of *B. coli* leaves little place on the plates for the development of dysentery bacilli, so that their successful isolation is usually possible only in the early acute stages of the disease and when the stools are planted out within a few hours of their collection. To the antiseptic action of such dyes as malachite green, methyl green, victoria green, brilliant green, fuchsin, crystal violet, and gentian violet dysentery bacilli are more sensitive than most strains of *B. coli* (Churchman, 1912, 1913 : Krumwiede and Pratt, 1914 : Kligler, 1918). The new Difco Bacto S S agar specially devised for the isolation of *Salmonella* and *Shigella* strains is designed to meet a long-felt want, a want which may also be satisfied by the medium described in this paper.

The Action of Sodium Tellurite

In the course of an investigation of the suitability of a modified bismuth sulphite medium for the selective growth of Flexner's bacillus, addition of sodium tellurite was found to reduce the growth-inhibitory action both of the bismuth and of the tellurite.

We have shown in the development of our bismuth sulphite medium that the addition of iron salts enabled the *B. typhosus* to develop while the growth of many other organisms continued to be suppressed (Wilson and Blair, 1927). It was this experience which led us to try a combination of tellurite and a ferric iron salt. Having found the bismuth sulphite media unsuitable for use with tellurite, we tried the addition of tellurite to MacConkey's medium, and discovered that the addition of 0.5 c.cm. of a 1% watery solution of sodium tellurite to 100 c.cm. of the medium completely inhibited the growth of nine strains

of *B. lactis aerogenes* and nineteen of twenty-one strains of *B. coli*, whilst all of six strains of Flexner's dysentery bacilli showed some growth, varying from a few isolated colonies to confluent growth. It was clear that tellurite showed possibilities of being used in a medium selective for Flexner bacilli. However, the concentration necessary for the suppression of *B. coli* was sufficient to prevent the growth of all but the most resistant strains of *B. dysenteriae* (Flexner); in other words, instead of hundreds of colonies or a confluent growth, only a few isolated colonies developed. It was then found that the addition of 2 c.cm. of a 4% watery solution of iron citrate scales to 100 c.cm. of the MacConkey tellurite medium allowed a rich growth of the dysentery bacilli and that the suppression of *B. coli* continued. How the iron salt acts, whether by precipitating some of the tellurite or by a process of oxidation, is uncertain. It would seem that the iron salt converts the tellurite into a form which permits rich growth of Flexner bacilli and yet inhibits the growth of *B. coli* to a very large extent. There is an optimum proportion in the ratio of tellurite to iron, and as the result of numerous experiments we found that for 0.5 to 1 c.cm. of a 1% potassium tellurite solution the amount of a 4% watery solution of iron citrate should be 2 c.cm., or of a 4% watery solution of iron alum 1 c.cm. ($K_2SO_4 \cdot Fe_2(SO_4)_3 \cdot 24H_2O$). The basis of our medium is ordinary nutrient agar consisting of distilled water 1,000 c.cm., peptone 10 grammes, Lemeo 5 grammes, sodium chloride 5 grammes, powdered agar 20 grammes. The reaction is adjusted to pH 7.4. The nutrient agar is sterilized under pressure and is not filtered.

Constituents of the Medium Used

A medium which we employed in many of our experiments, and with which we were successful in isolating Flexner dysentery bacilli from two samples of faeces sent by post, is made as follows:

0.5 gramme of sodium tauroglycocholate and 0.5 gramme of lactose are dissolved in about 10 c.cm. of boiling water in a 100-c.cm. wide-necked flat-bottomed extraction flask; then melted nutrient agar cooled to 60° C. is added up to the 100 c.cm. mark, followed by 0.5 c.cm. of 1% potassium tellurite, 2 c.cm. of 4% iron citrate, and 0.5 c.cm. of 1% neutral red watery solution.

On the surface of this medium colonies of Flexner's bacillus are yellowish, and any strains of *B. coli* that are not suppressed are reddish. In practice we found that stools which show few colonies of *Streptococcus faecalis* on ordinary MacConkey provided abundant tiny colonies on this medium. There was no danger of confusing these colonies and those of Flexner, but it was obvious that their suppression would be a great advantage. After numerous trials of various substances we found that the addition of 0.5 c.cm. of 1% rosolic acid dissolved in absolute alcohol to 100 c.cm. of the tellurite medium secured the desired result. This suppression of *Str. faecalis* by rosolic acid was confirmed by the examination of over sixty stools and the employment of pure cultures of *Str. faecalis*. Our results confirm those of Bronfenbrenner, Schlesinger, and Soletsky obtained in 1920. These authors found that rosolic acid, or a mixture of rosolic acid and china blue, when added to 100 c.cm. of media to the extent of 0.25 c.cm. of a 2% solution of rosolic acid in 50% alcohol, allowed the growth of colon, typhoid, and dysentery bacilli while suppressing that of Gram-positive bacteria, including *Str. faecalis*.

In our medium the tellurite-iron complex inhibits many coliform organisms, but allows rich growth of Flexner's dysentery bacilli, and the rosolic acid acts not only as an indicator but as an agent for the suppression of *Str. faecalis*

and other Gram-positive bacteria. The tellurite-iron-rosolic acid medium is highly selective for Flexner's dysentery bacilli. On this medium the growth of typhoid-paratyphoid bacilli, Sonne's bacillus, and cholera vibrios is completely suppressed, as is that of twenty strains of *Salmonella* food-poisoning organisms kindly supplied to us by Dr. St. John-Brooks from the National Collection; these included such strains as *aertrycke* (mutton), *chesier*, *chaco*, *berlin*, *binns*, *derby*, *dublin*, *heidelberg*, *hirschfeld* para C, *kapsover*, *kunzensdorf*, *morbificans-bovis*, *london*, *limerick*, *newport*, *panama*, *stanley*, *senftenberg*. The growth of most strains of *B. coli* and *B. lactis aerogenes* is completely inhibited or is very scanty.

In the recent examination of fifty stools we found that heavy inocula of faecal emulsions did not, as on MacConkey plates, lead to confluent growth of *B. coli* but to the formation of discrete colonies, which were sometimes few and sometimes numerous. There was no difficulty in isolating the dysentery bacillus when it was mixed with the faecal emulsion. On the medium few non-lactose-fermenting bacteria developed, apart from Flexner's dysentery bacilli; such as developed have been found to belong to the *Proteus*, *Alcaligenes*, and *Pyocyaneus* groups, and can be distinguished from dysentery bacilli in that they form pink colonies, larger, more raised, and with a centre more opaque than that of the more translucent colonies of Flexner's bacillus.

Experimental Technique

In our experiments we employed five strains of Flexner's bacillus (V, W, X, Y, Z) obtained from the National Collection of Type Cultures and five strains recently isolated in Northern Ireland. All the strains grew well on the medium which for some time past we have found most satisfactory. It is prepared as follows:

To 100 c.cm. of melted nutrient agar cooled to 60° C. in a flask are added 0.5 c.cm. of 1% rosolic acid dissolved in absolute alcohol, 1 c.cm. of a 4% watery solution of iron alum, and finally 3 c.cm. of a lactose-tellurite solution. The latter solution is made by boiling 20 grammes of lactose in 100 c.cm. of distilled water, cooling the solution, and then dissolving in it 0.1 gramme of potassium tellurite. It is necessary to dissolve the tellurite in the cold, otherwise reduction occurs. This lactose tellurite solution keeps for weeks, the tellurite being an effective preservative against bacteria, but not against moulds: growth of the latter can be prevented by the addition of 3% of ether and keeping the bottle tightly stoppered.

When the contents of the flask containing the medium have been thoroughly mixed they are poured out into Petri dishes and allowed to set with the lids removed. A large loopful of a thick faecal emulsion in peptone water is spread over the surface of the plate and allowed to dry in the air. After incubation at 37° C. for eighteen hours the pink colonies of Flexner's bacillus are readily distinguished from any yellow colonies of resistant *B. coli* which may have developed. Flexner's bacillus forms a pink and the colony becomes distinctly pinkish red. In many cases the growth can be tested at once on a slide by agglutination with a polyvalent Flexner agglutinating serum. It is also easy to subculture suspicious colonies on to MacConkey's agar and test the agglutinability of the growth. For further proof of the nature of the organism cultures are made in small test tubes containing mannitol and glucose dissolved in peptone water with Andrade's reagent as indicator; the addition to these tubes of a melted and cooled to 45° C. is a ready method of detecting the absence of gas formation.

When this paper was being completed two stools containing blood and mucus arrived, having been posted

previous day. Both of these specimens on the tellurite-iron-rosolic acid medium showed hundreds of colonies of Flexner's bacillus and absolutely no *B. coli*, whereas the same emulsion on MacConkey's plates yielded a profuse growth of *B. coli* and no recognizable colonies of *B. dysenteriae*.

Summary

Lactose nutrient agar containing, per 100 c.c.m., 0.5 c.c.m. of a 1% alcoholic solution of rosolic acid, 0.5 c.c.m. of a 1% solution of potassium tellurite, and 1 c.c.m. of a 4% solution of iron alum provides a medium on which Flexner's *B. dysenteriae* grows profusely, whereas there is great inhibition of most strains of *B. coli* and *B. lactis aerogenes*. The growth of *Salmonella* food-poisoning organisms, typhoid and paratyphoid bacilli, Sonne's bacillus, and cholera vibrios is suppressed.

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A NEW SULPHONAMIDE (SULPHONAMIDE E.O.S.)

ITS PHARMACOLOGY, CHEMOTHERAPY, AND CURATIVE VALUE IN MENINGOCOCCAL MENINGITIS

BY

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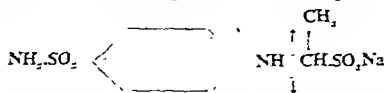
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Although some thousands of sulphonamide derivatives have now been prepared and investigated, very few have displayed any outstanding therapeutic qualities which would justify their general adoption in preference to the simple parent substance sulphanilamide or its popular variant sulphapyridine. The clinician desires something more than an active chemotherapeutic agent. He asks for the means of easy administration to patients of all ages and in all conditions and for freedom from side-actions which are either distressing or dangerous. The new compound employed in this investigation* is freely soluble in water, and 50% w/v solutions are easily obtained. It dissolves to form an almost tasteless preparation with a faintly acid reaction which can be reduced to one of absolute neutrality without precipitation or loss of stability. The treatment of infants and of fastidious, comatose, vomiting, or diarrhoeal patients is therefore easily carried out with solutions given by the mouth, nasal tube, rectal tube, or intravenous drip. The familiar 0.5 gramme tablet can be reserved for routine use. In these respects it contrasts favourably with sulphanilamide, which is relatively insoluble in water, with sulphapyridine, which is much more insoluble still, and with sulphapyridine sodium, which, although freely soluble, forms a strongly alkaline solution approximately equivalent in reaction to decinormal caustic soda. Sulphonamide E.O.S. possesses the further attractive feature of low toxicity, and its administration does not lead to the formation of such highly insoluble bodies as the acetylated compounds, which tend to crystallize in the urinary passages when sulphapyridine or sulphathiazole is used (Leedham-Green, 1941).

* The material used in this investigation was supplied by the Research Department of Imperial Chemical Industries Ltd.

Chemistry and Fate in the Body

The substance was first described by Green and Coplans (1940), who identify it as sulphonamide ethyl-alpha-sulphonate,



The side chain was chosen with two deliberate intentions—namely, that of reducing the basicity of the original sulphanilamide and so reducing its toxicity, and that of furnishing a link (as indicated by the arrows) which could easily be broken in the body by hydrolysis, with the liberation of the parent nucleus. In aqueous solution it is stable at room temperature, but hydrolysis occurs on boiling, with the formation of sulphanilamide, acetaldehyde, and sodium bisulphite. Decomposition proceeds more quickly in the presence of acids or alkalis, and is accelerated very greatly indeed by oxidizing reagents such as iodine or hydrogen peroxide. Hydrolysis at body temperature and at pH concentrations which are known to occur in the alimentary tract is relatively slow. The pertinent data given in Table I were furnished by the late Prof. A. G. Green.

TABLE I.—Hydrolysis of Sulphonamide E.O.S.

Reaction of Solution (2% E.O.S.)	% E.O.S. hydrolysed in 3 Hours at 37° C.
N/10 HCl (hyperchlorhydria)	4.0
N/20 HCl (normal test-meal peak) ..	2.8
Neutral	0.7
0.2% NaHCO ₃	1.8

Throughout this range more than 95% of the drug remains unaffected at the end of three hours, and during this period a large proportion of the drug is absorbed. After absorption hydrolysis proceeds much more rapidly.

A 50% solution w/v was injected intravenously (dose 5 c.c.m. = 2.5 grammes E.O.S.). Of this only 16% could be recovered unchanged from the urine, and even during the first thirty minutes about one-half was excreted as sulphanilamide or as acetyl-sulphanilamide, the side chain having been removed from the original drug (Table II).

TABLE II.—Intravenous Administration of Sulphonamide E.O.S. (Man). (Dose, 2.5 grammes in 5 c.c.m.)

Interval after Administration (Hours)	Rate of Urinary Excretion	
	Unsplit Sulphonamide E.O.S. (Mg. per ½ hour)	Total Sulphanilamide, expressed as Sulphanilamide (Mg. per ½ hour)
0-1	220	471
1-1½	150	317
1½-2	20	—
2-5	0	69
5-6	0	115

TABLE III.—Administration of Sulphonamide E.O.S. by Mouth (Man). Dose, 4 grammes dissolved in water taken between meals at 11 a.m.)

Interval after Administration	Vol. of Urine (c.c.m.)	Rate of Urinary Excretion	
		Unsplit Sulphonamide E.O.S.	Free Sulphanilamide, expressed as Sulphanilamide (mg. per ½ hour)
0-20 minutes	15	Small amount	Trace
20-45 "	15	" "	3.0
45-60 "	15	" "	15.4
1-1½ hours	25	" "	15.5
1½-2 "	25	" None "	17.0
2-3 "	35	" "	12.0
3-5 "	45	" "	11.8
5-7 "	50	" "	9.6
7-9½ "	60	" "	9.2

The excretion of sulphonamide E.O.S. ceased after two hours, but excretion of considerable amounts of sulphanilamide continued for many hours. The rate of excretion was substantially modified by variations in urinary flow. Excretion was decidedly more rapid during water diuresis. This rapid hydrolysis in the

body can be ascribed provisionally to the presence of oxidizing agents such as tissue oxidases and oxyhaemoglobin.

When a single dose is given by mouth, excretion of unsplit E.O.S. begins within twenty minutes and continues for an hour and a half, after which time E.O.S. can no longer be found in the urine, but sulphanilamide and its acetylated derivative are excreted in substantial amounts throughout the day. The peak rate of total sulphonamide excretion occurs between one and a half and two hours after administration of the drug (Table III). Of the original 4 grammes only about 30 mg. could be found in the urine in its original form. Hydrolysis is therefore almost complete.

With the slower rate of absorption following administration by rectum it was impossible to find any unsplit E.O.S. in the urine, and the peak rate of sulphanilamide excretion was much delayed (Table IV). Nevertheless the drug is therapeutically effective when given in this way (Case 19, Table VIII).

TABLE IV.—Rectal Administration of Sulphonamide E.O.S. (Man). (Dose, 4 grammes in 8 c.cm.)

Interval after Administration (Hours)	Vol. of Urine (c.cm.)	Rate of Urinary Excretion	
		Unsplit Sulphonamide E.O.S.	Total Sulphonamide expressed as Sulphanilamide (Mg. per ½ hour)
0-½	55	Nil	17
½-1	30	"	12
1-1½	23	"	21
1½-2	47	"	19
2-3	160	"	26
3-4	1,150	"	41
4-5	230	"	23

During routine administration of the drug by mouth the unsplit sulphonamide E.O.S. appears in the cerebrospinal fluid (Table V) together with a preponderance of sulphanilamide.

TABLE V.—Cerebrospinal Fluid (after Administration of Sulphonamide E.O.S. by Mouth)

Case	Age	Illness	Dose	Lumbar Puncture Performed	Interval between Lumbar Puncture and Most Recent Dose of E.O.S.	Concentration of Drug in C.S.F.	
						Unsplit E.O.S.	Total Sulphonamide, expressed as Sulphanilamide
A	6	Cerebro-spinal meningitis	Repeated 2 gm. four-hourly	2nd day	Hours 3½	Trace	Mg. % 8
				2nd day (later)	4	"	10
				3rd day	1½	"	16
B	32	Epilepsy	Single Dose 4 gm. fasting		½	Nil	1.6
C	31	"	"		1	"	Trace
D	26	"	"		1½	"	2.6
E	15	"	"		2	"	1.2
F	73	"	"		2½	"	Trace

The analytical methods used were:

Sulphanilamide + E.O.S. = free sulphonamide
Sulphanilamide + E.O.S. + acetylated sulphanilamide = total sulphonamide } Marshall's method (Marshall et al., 1937)

Unsplit sulphonamide E.O.S.:

The following method was devised by A. G. Green: To 25 c.cm. of urine add 5 c.cm. of 10% barium chloride solution and filter. To filtrate add 2 c.cm. of concentrated hydrochloric acid and filter again if necessary. To the clear solution add 1 c.cm. of N/1 sodium nitrite (7.2% solution). If free sulphonamide E.O.S. is present a further turbidity or precipitate will form and can be compared with a standard control.

Conclusions.—Sulphonamide E.O.S. is probably adsorbed unchanged when given by mouth or rectum. In the body it is rapidly hydrolysed, but during therapeutic schemes of routine four-hourly doses small amounts of unsplit drug persist in the cerebrospinal fluid throughout the inter-dose period. When administered orally it is excreted in the urine to a small extent unchanged, but mainly in the form of sulphanilamide with a small proportion of the acetylated

derivative of sulphanilamide. On intravenous injection hydrolysis to the extent of 25% occurs within an hour and is complete after two hours. Opportunities for an individual therapeutic action are offered by (1) the production of sulphanilamide *in situ* in the blood and tissues, and possibly in the bacterium itself; (2) the independent action of the unsplit drug; (3) the rapid rate of absorption from the upper alimentary tract and rectum.

Experimental Therapeutics

The toxicity of sulphonamide E.O.S. has been assessed in terms of lethal dose administered to animals by mouth and by clinical survey of phenomena appearing during therapeutic administration in man. Values given by various observers for the toxicity of sulphanilamide measured in terms of L.D.50 range between 60 and 80 mg. for the 20-gramme mouse. Such figures are influenced by the strain of mouse used. In the present research female albinos were employed and parallel doses of sulphanilamide suspension and sulphonamide E.O.S. solution were administered by oesophageal tube. Deaths were recorded seventy-two hours later, when surviving animals appeared to be normal. For sulphanilamide L.D.50 was found to be 70 mg. per 20-gramme mouse. For sulphonamide E.O.S. it was 200 mg., giving a toxicity ratio on a gravimetric basis of about 1:3 in favour of sulphonamide E.O.S. The relative molecular weights of the two substances must be taken into consideration:

$$\frac{\text{Mol. wt. E.O.S.}}{\text{Mol. wt. sulphanilamide}} = \frac{302}{172} \text{ i.e., approximately } \frac{7}{4}$$

7 grammes of E.O.S. are therefore equivalent in nuclear content to 4 grammes of sulphanilamide. Making the appropriate correction, the toxicity ratio becomes 1:1.6, showing that the amount of sulphonamide nucleus which can be given in the form of sulphonamide E.O.S. is substantially greater than that which can be given with equal safety in the form of sulphanilamide. Further toxicity tests and an experimental investigation of the curative action of the drug on infected laboratory animals were carried out by Dr. M. Coplans as follows:

(i) Acute Infections

Streptococcus pyogenes (from the National Collection of Type Cultures Group A—Griffith No. 5493)

Albino mice, and doses calculated per 20 grammes weight: 5 million streptococci injected intraperitoneally; 1 c.cm. 5% aqueous solution (neutral) E.O.S.=25 mg., given subcutaneously 1/2 hour after inoculation and repeated daily.

21 mice inoculated and treated:

3, duration of treatment 2 days. All died on ninth day.
18, duration of treatment 10 to 20 days. 11 survived, and cultures taken between 46th and 58th day were all negative.

Controls:

18 mice inoculated and not treated. All dead within 17½ hours and organism recovered from heart blood and peritoneal fluid.
18 mice treated for 10 to 20 days but not inoculated. 15 survived (3 died on 7th, 18th, and 27th days).

Pneumococcus Type III (from the National Collection of Type Cultures Type III—Griffith No. 2438)

Albino mice, and doses calculated per 20 grammes weight: broth culture (100×M.L.D.) intraperitoneally; 0.5 c.cm. aqueous solution of E.O.S.=166 mg., given by mouth 1/2 hour after inoculation and repeated daily.

6 mice inoculated and treated for 5 days. All alive and well 9 weeks later.

Controls:

6 mice inoculated and not treated. All dead within 60 hours and organism recovered from heart blood and peritoneal fluid.
6 mice treated for 5 days but not inoculated. All alive and well 9 weeks later.

(ii) *Urinary Carriers*

Immature Dutch rabbits were used and the carrier condition induced by Coplans's (1940) method.

B. typhosus:

7 carriers. Treatment started on 19th day Sulphonamide E.O.S. 2 grammes per kilogramme by mouth alternate days for 5 doses and then daily for a further 33 doses (10 surviving animals). In every case the bladder and urine became free from infection.

6 untreated carriers. 1 recovered spontaneously. In 5 infection persisted in the bladder or urine.

B. paratyphosus A:

5 carriers. Treatment started on 40th day Sulphonamide E.O.S. 2 grammes per kilogramme by mouth daily for 45 doses. In every case the bladder and urine became free from infection.

6 untreated carriers. Infection of bladder and urine persisted in all animals.

Conclusions.—Sulphonamide E.O.S. controls acute infections by *Str. pyogenes* and pneumococcus Type III in mice and chronic infections of the urinary carrier type due to *B. typhosus* and *B. paratyphosus A* respectively in rabbits.

Clinical Observations

The clinical data relating to the toxicity of sulphonamide E.O.S. are derived from 130 cases treated for a variety of acute infections. The doses used in different age groups are given in Table VI.

TABLE VI.—*Sulphonamide E.O.S. Dosage (Clinical Toxicity Test) (130 Cases)*

Group	No.	Average Age in Years	Dosage in Grammes					
			Initial		1st 3 days		Total	
			Range	Average	Range	Average	Range	Average
Infants* (up to 12 months)	27	6.12	1-1	0.8	1-18	10.3	2-67	21.7
Children (1 to 10 years)	31	3.1	1-3	1.5	2-45	19.0	5-82	36.7
Adolescents (10 to 20 years)	17	16	2-4	2.5	12-49	29.3	12-72	44.6
Adults (above 20 years)	55	—	1-41	2.5	9-56	32.0	15-100	51.9

* The youngest infant, aged 3 weeks, was given an initial dose of 1 gramme, 114 grammes in three days, and 171 grammes in 10 days. When first seen she was extremely ill with bronchopneumonia, and artificial respiration was required. An oxygen tent and e-labelling injections were used. The condition came steadily under control in the course of a few days. No toxic signs attributable to the drug were noted in spite of the exceptionally heavy dosage adopted.

The general malaise of sulphonamide therapy was very little in evidence, and that miserable sequence of pallor, nausea, and vomiting characteristic of sulphapyridine never occurred. In many cases (not included in Table VI) treatment was instituted with sulphapyridine and subsequently completed with sulphonamide E.O.S. The general appearance and subjective feeling of severe illness of these patients disappeared rapidly when the substitution was made. The visible change for the better on E.O.S. therapy was very remarkable indeed.

Cyanosis was commonly seen, but never caused any distress or necessitated the interruption of the prescribed course:

Absent...	40%
Trivial...	28%
Substantial...	29%
Severe...	3%
Requiring withdrawal of drug...	0%

Vomiting was rarely encountered. In pregnancy and meningitis vomiting often occurs without provocation. If such cases are excluded the trouble was confined to a small minority of infants and young children in whom the causal relation between the drug and the vomiting was by no means clear.

Leucopenia.—Routine blood counts were made without bringing to light any instance of agranulocytosis or simple

leucopenia. The leucocytes were never fewer than 6,000 per c.mm. of peripheral blood, with the exception of one case in which the white count fell to 5,400 cells per c.mm.

Anaemia.—Minor degrees of anaemia were found, but not with greater frequency or of greater severity than is usual after severe infective illnesses. No severe anaemia of aplastic or of haemolytic type was ever observed.

Rashes.—One patient developed a simple erythematous rash—a fine pink widely distributed eruption occurring in a young child after a week of treatment with E.O.S.

A curious case of acidosis (Case 25, Table VII) occurred in a young woman of 28 who was semicomatose from meningococcal meningitis. There were no ketone bodies in the urine, but the alkaline reserve of the blood was low. In terms of CO₂ binding power it varied between 34.8 vols. CO₂% and 36 vols. CO₂% respectively over two successive days (normal value, 53 to 77). The inorganic blood phosphorus remained within normal limits. The pH of the urine fell to 5.0 (analyses by Dr. S. J. Hopkins). The outstanding clinical feature was pronounced hyperventilation beginning at the end of the second day of treatment, by which time 40 grammes of sulphonamide E.O.S. had been taken. It persisted for three days, and was unaffected by oxygen administration (B.L.B. mask). There was no cyanosis. Hyperventilation subsided when full doses of alkalis were given. Administration of E.O.S. continued uninterrupted, and its curative effect as judged by the mental condition, defervescence, and observations in the cerebrospinal fluid was not prejudiced. The temperature was normal within 7 days.

Although the case must be put on record it is by no means certain that the abnormality was caused by the drug, and the complication might possibly have been prevented by a freer use of routine alkalis, always advisable for febrile patients taking sulphonamides.

The general inference to be drawn from these observations is very satisfactory indeed. In spite of the heavy doses given and the cyanosis produced, there were no serious complications, and the assortment of symptoms which distress without endangering the patient when sulphapyridine is used were conspicuously absent.

Chemotherapeutic Effect (Human)

The drug has now been used in a large number of different clinical conditions with apparently excellent effect—e.g., acute *B. coli* infections of the urinary tract, puerperal infection, septic cuts, acute infections of ear, nose, and throat, pneumonia (including pneumococcal and Friedländer infections, the mixed bronchopneumonias of infancy), and septic pleuritic effusions. The expected recovery rate in these disorders is reasonably high even when non-specific therapy alone is carried out. The prognosis varies greatly from case to case. For these reasons it is extremely difficult to secure a datum line from which to judge the success or failure of any new curative method. More trustworthy conclusions can be formed by selecting more intractable

TABLE VII.—*Dosage of Sulphonamide E.O.S. (Acute Cerebrospinal Meningitis—Meningococcal)*

	Adults (Grammes)	Children (Grammes)			
		10 years	5 years	2 years	Infants
1st two doses { 6 doses	4	3	2½	1½	1
Remainder of first 24 days { 4-hourly	3	2½	2	1½	1
Next 1½ days { intervals	2-2½	1-1½	1-1½	1-1	1-½
5th day { 5 doses daily	1½-2	1-1	1-1	1-1	1-½
6th day { 4-hourly intervals	1-1½	1-1	1-1	1-1	1-½
7th day { 6th dose omitted during night	0-1	0-1	0-1	0-1	0

diseases, such as chronic *B. coli* infections of the kidney and bladder or purulent meningitis, as the medium for therapeutic assay.

Attention has therefore been centred on acute epidemic cerebrospinal meningitis. The cases all occurred in the

Guy's Hospital Sector of the E.M.S. during 1940 and the early part of 1941. These patients were suffering from the disease in its acute form and many were very seriously ill indeed. Their ages ranged from 7 months to 63 years. About one-quarter were either less than 1 year or more than 45, and so fell into the age periods of gravest prognosis. The general dosage scheme is given in Table VII. Small variations were introduced to meet the needs of individual cases. The amount of sulphonamide used was not so great as these figures suggest. It must be remembered that 1 gramme of sulphonamide E.O.S. is equivalent chemically to no more than 0.57 gramme of sulphanilamide.

The outstanding clinical features of the cases are indicated in Table VIII. In every instance Gram-negative diplococci were seen in the cerebrospinal fluid. In most cases the organism grew in culture and many of them were typed. The commonest type was Group I, but some were not agglutinated either by Group I or Group II serum.

Case 19 is of particular interest. It demonstrates the efficacy of sulphonamide E.O.S. when administered by rectum. It also indicates that pregnancy does not interfere with the action of the drug and is not affected adversely by it. Normal labour occurred later at full term and the child was correctly formed and well nourished. The mother's health during the later months of pregnancy was excellent and the puerperium passed uneventfully. A considerable number of patients were comatose or semicomatose on admission. In spite of the high proportion of infants and elderly persons and the coincident pulmonary diseases of Cases 2, 24, 26, and 34, the mortality rate of 9% is reasonably low. Analysis of the factors leading to death in the three fatal cases reveals special features in each case.

Case 1.—This was a neglected case, and chemotherapeutic treatment was not instituted until the third week of illness, when hydrocephalus was already established.

TABLE VIII

Case No.	Age Years	Treatment Day of Illness	C.S.F. (1st Lumbar Puncture)			Comment	Result
			Pressure mm.	Cells (Polymorphs per c.mm.)	Protein Per cent.		
1	7/12	20th				A neglected case in coma with hydrocephalus already established	Died in 48 hours
2	10/12	2nd	300	520	0.24	Intensely ill and unconscious. Had only recovered from pneumonia a month previously	Complete recovery 2½ weeks
3	11/12	14th	+	3,140	0.24	Slow onset. Convulsions just before admission	Complete recovery. Temp. normal in 4 days
4	1 3/12	3rd	+	9,000	0.30	Very severe case. Pneumonia present on admission	Complete recovery. Rapidly controlled, but tardy clearance
5	1 9/12	3rd	+	3,460	0.90	Full average severity. Semi-comatose	Complete recovery
6	1 10/12	3rd	300	1,840	0.10	Average severity	Inadequate initial dosage, recovery protracted but eventually complete
7	1 11/12	2nd	280	4,250	0.45	" "	Complete recovery
8	3	2nd	250	2,140	0.16	" "	" "
9	5	4th	320	7,360	0.10	" "	" "
10	7	5th	290	2,000	0.65	" "	" "
11	7	5th	250	1,620	0.20	Semi-comatose. Old mitral regurgitation. Profuse herpes	" "
12	9	4th	280	3,290	0.38	Average severity	" "
13	13	3rd	230	1,106	0.35	Abrupt onset. Delirium. Screaming. Semi-coma	" "
14	14	2nd	260	4,380	0.29	Average severity	Complete recovery. Temp. normal in 3 days
15	16	5th	300	12,700	0.30	Full average severity	Complete recovery
16	17	4th	290	7,200	0.25	Average severity	Complete recovery. Temp. normal in 5 days
17	19	4th	240	800	0.20	Full average severity	Complete recovery
18	20	1st	335	2,720	0.36	Semicoma. Petechial rash	Complete recovery. Five mths. later gave birth to healthy full-term child
19	22	2nd	250	2,600	0.35	Pregnant, and comatose 5 days. Early medication entirely per rectum. 87 grammes administered in this way over period of 5½ days before patient able to take by mouth. Subsequent progress exceptionally rapid	
20	24	3rd	200	2,280	0.22	Average severity	Complete recovery. Temp. normal in 41 days
21	24	3rd	210	3,490	0.31	" "	Complete recovery. Temp. normal in 3 days
22	26	4th	300	10,000	0.50	Insidious onset. Delirious on admission but not comatose	Complete recovery
23	27	3rd	280	8,620	0.37	Full average severity	Died on 4th day of treatment.
24	28	2nd	320	19,000	0.56	Very severe case. Coma complete within 24 hours. Fat and difficult to nurse. Vomiting conspicuous. Fluids, food, and drugs by nasal tube	P.M.: meningitis clearing. Cause of death, purulent bronchitis
25	28	3rd	315	28,000	0.52	Very severe, with persistent coma. Hyperventilation and acidosis for several days. Severe facial herpes	Complete recovery. Control established steadily. Temp. normal in 6 days
26	34	6th	324	9,800	0.15	Average severity. Old fibroid phthisis with cavities (X-ray finding)	Complete recovery. Temp. normal in 2½ days
27	35	3rd	280	10,100	0.28	Severe illness. Semicomatoze for 2 days, but able to take fluids by mouth	Complete recovery
28	35	2nd	240	7,420	0.10	Average severity	Complete recovery. Terminated by crisis in 36 hours
29	40	4th	350	13,000	0.48	Very severe. Semicoma for several days. Blood transfusion on 5th day of treatment. Temperature normal 36 hours later	Complete recovery
30	46	3rd	320	11,900	0.30	Severe illness; delirium but no coma	Died after 2 days' treatment.
31	48	3rd	140+ (Pus too thick to register correctly)	16,000 rising to 84,000	1.50	Intensely ill, comatose, dyspnoeic, cyanosed, and finally hyperpyrexial. Drug administered by rectum	P.M.: suppurative meningitis and acute suppurative pericarditis. Section of heart examined for secondary invaders, but none seen
32	53	4th	210	5,600	0.27	Average severity. Acute monarthrititis of rt. wrist, a complication on 2nd day of treatment, continued for a little time after subsidence of fever and cerebral symptoms	Complete recovery
33	56	5th	250	6,200	0.18	Average severity	" "
34	63	2nd	300	9,000	0.90	Severe attack. Semicoma, but able to take fluids by mouth. Acute bronchitis on admission. Bronchopneumonia as a complication after 2 days' treatment, but temp. normal a week later	" "

Case 24.—This patient appears to have died of a complication of the unconscious state, possibly due to inhalation of infected material, rather than from the meningitis itself.

Case 31 acquired a particularly lethal and rare complication—suppurative pericarditis.

There were no deaths among those who were seen during the first week of illness and who remained free from serious secondary infections of the viscera. For these reasons more than for the simple statistical fact of a low mortality rate on a limited series of cases, I feel justified in believing that sulphonamide E.O.S. has a pronounced curative action in this disease. Very diverse figures have been published by other observers using different remedial agents. This diversity is readily understood by anyone who has worked among these patients. The mortality rate is affected greatly by so many factors other than that of the chemotherapeutic potency of the drug employed. It varies with the epidemic, locality, age distribution, the speed with which the diagnosis is made, the amount of medical attention which can be focused on each patient, and, above all, with the perfection of the nursing care available. Superb nursing skill is required by delirious, comatose, or semiconscious patients. I know that I have been particularly fortunate in my house-physicians and nurses.

The figures given below furnish a suitable basis for comparison.

Epidemic 1914-17 (pre-sulphonamide):
5,306 cases; mortality 65%

These national figures were analysed by H. D. Rolleston (1919), who found in them evidence of a dwindling mortality as serum treatment came into more general use.

Present epidemic, first quarter, 1940 (sulphonamides widely used):
4,388 civilian cases; mortality 23.7%

Individual groups of smaller numbers but more unified medical control have yielded better results:

120 cases observed personally by Banks (1940) (sulphapyridine or other sulphonamides used in all cases):
Mortality 10%

154 cases at Wrexham (*Lancet*, 1940) (various doctors) (sulphonamides widely used):
Mortality 12.3%

The mortality in the present series treated with sulphonamide E.O.S.—34 cases (9%)—is therefore closely in accord with the current figures.

Summary

A new sulphonamide of low toxicity and full chemotherapeutic activity in acute cerebrospinal meningitis is described. Less critical clinical data lead one to expect that it will be equally effective in combating infections due to *B. coli* and haemolytic streptococci. More extended clinical observations will probably reveal other fields of utility. In animals it controls acute infections due to *Str. pyogenes* and pneumococcus Type III, and chronic urinary infection by *B. typhosus* and *B. paratyphosus* A. Its low toxicity has been investigated by experiment on mice. The rarity with which in therapeutic dosage it provokes unpleasant side-effects in man has been demonstrated by a clinical survey of 130 cases. It seldom causes vomiting, and malaise attributable to the drug is inconspicuous. It is hydrolysed in the body with the liberation of sulphamylamide *in situ*, and is excreted in forms which are far more soluble than those following the administration of sulphapyridine or sulphathiazole. It possesses the convenient property of ready solubility in water. Neutral and almost tasteless pharmaceutical solutions can easily be prepared for administration by mouth, rectum, or vein.

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THE SIZE AND VISIBILITY OF THE FILTERABLE OR VIRUS BODIES

BY

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The filterable, so-called ultra-microscopic or elementary, bodies, generally spoken of as the viruses, are not easy to examine on account of their very small size and the difficulty of staining them; but fortunately they are nearly always present in enormous numbers, often in almost pure cultures. The measurement of such small bodies is very difficult by eye-piece or screw micrometer, and usually one has to resort to photography.

The Photographic Method of Measurement

Muir and Ritchie (1937) state:

"In the microscopical study of virus particles Barnard has utilized photography by ultra-violet light, which is of shorter wave-length than that of the visible rays, and thus has obtained greater microscopical resolution. By this method he has been able to demonstrate photographically virus particles of 0.075 μ in diameter."

Let us compare this with the results obtainable by the use of the ordinary microscope and objectives in common use when these are employed correctly. The late Mr. Edward Milles Nelson (1909), who devoted the whole of his long life to the microscope and was undoubtedly the greatest authority on the subject, says: "Briefly, the method is to bring the object just to the point of invisibility by reducing the N.A. (numerical aperture), and then the correction for antipoint will be the measure of the object." I might add that one can determine the minimum visible of any objective by the following calculation: for white light of 45,300 waves per inch divide 1.041 by the N.A.; for green light of 50,000 waves per inch divide 0.942 by the N.A. of the objective. A full table of the values of the N.A. is given in Mr. Nelson's paper.

I have used this method of measuring by extinction for many years, employing for this purpose a Leitz 1/10⁴ fluorite objective fitted with an iris diaphragm graduated in N.A.s, immediately behind the back lens, and find it remarkably accurate and easy after one has had some practice.

From Nelson's table it will be seen that an objective of N.A. 1.4 will reveal a particle of 0.0744 μ with white light and 0.0673 μ with a green screen. Nelson later, in 1935, informed me that even greater visibility could be obtained by using a motor head-light bulb (3 amps 12 volts with a transformer, as suggested by Ivimey-Cook), with the filament in focus, and a deep blue screen. Then the size of an object seen would be 0.841 divided by the N.A.; so that an objective of N.A. 1.3 would show a particle 0.065 μ , and one of N.A. 1.4 a particle 0.06 μ , in diameter. From these figures, given in much greater detail in a previous paper (Coles, 1929), ultra-violet microscopy does not seem very urgently needed.

Mr. Eliot Merlin (1929), the distinguished microscopist, in concluding his masterly article, says:

"In the writer's opinion it is of paramount importance that the true optical capacity of the ordinary worker's microscope, furnished with ordinary glass and fluorite achromatic or apochromatic object-glasses, should be clearly understood and not underestimated, this being the tool exclusively used by thousands of laboratory and technical workers all the world over. It cannot be too emphatically maintained that it is an experimentally absolute fact that an object-glass of 0.4 N.A. (i.e., a common

1/2-inch) will, in white light of wave-length of 45,300 per inch, just render visible a particle of 0.262μ in diameter; and similarly the 1/12 oil immersion of 1.30 N.A. in common laboratory use should, if properly used to its full defining capacity, reveal particles of not less than 0.08μ diameter in white light, of 0.0724μ diameter with a screen wave-length of 50,000 per inch, and of 0.057μ with the photographic wave-length of 63,500 per inch."

Stained Films and Filtration Method Compared

In recent times organic membranes such as collodion have been devised by Elford (1931) to test filterability. These are called "gradocol" membrane, and by their means Elford and his co-workers have computed the size of the particles. A list of filterable viruses, with their size, is given by Mackie and McCartney (1938). The unit used to express these minute viruses is $m\mu$ —i.e., one-thousandth part of a micron (μ) or one-millionth part of a millimetre.

When we compare the size of the filterable viruses as determined by microscopical methods on stained films we are at once struck with the extraordinary difference between these and those obtained by filtration methods. The following measurements of the elementary bodies of definite virus diseases will show how much the results differ.

The size of the virus of *variola* and of *vaccinia* as determined by filtration is stated to be 0.15 to 0.175μ . They were not recognized as the causal organisms till Paschen described them in 1906, but as a matter of fact Dr. John Buist of Edinburgh had fully described and photographed them nearly twenty years previously. Buist (1887), after staining them with aniline gentian violet, gave their size as from 0.15 to 0.5μ ; and von Prowazek (1912) gives exactly the same figures. Mr. Nelson and Mr. Eliot Merlin, knowing nothing of these figures, estimated the size of some of them as up to 0.45μ in preparations stained with Giemsa which I sent them in 1922. *Vaccinia* was the first of the filterable bodies that I dealt with in my work on the viruses in 1913.

The size of the virus of *foot-and-mouth disease* is given as 0.01 to 0.02μ , or 10 to $20 m\mu$, and it is regarded as one of the smallest of filterable bodies and quite invisible.

In 1929 Sir Charles Martin, then director of the Lister Institute, kindly sent me films from the vesicles of cases of foot-and-mouth disease, and later sealed ampoules of the filtrate; and in 1933 Dr. (since Sir) John Ledingham, his successor, sent some of the filtrate—both through the kind service of Dr. J. T. Edwards. Films made from the filtrate were fixed in alcohol and stained for twenty-four to forty-eight hours in well-diluted Giemsa. Films were also made with indian ink as in Burri's method, and control films of the ink alone were made at the same time. Lastly, the filtrate was spread in thin film on perfectly clean slides and merely allowed to dry in the air. When these were quite dry they were put under a cover-glass and the margins sealed with cement, taking great care that none of the cement should run in—i.e., they were mounted, unfixed, and unstained in air. It is interesting to note that these preparations and the indian-ink films mounted in 1929 and 1933 are to-day in as good condition as when they were made.

The Giemsa-stained films, when examined with the 1/10-inch oil-immersion objective, show clearly innumerable very fine virus bodies, differing from those seen in other virus diseases, such as *vaccinia*, herpes, molluscum, etc., on which I have been working for the last twenty-eight years, only by their enormous number and their small size. These stained preparations, when examined by dry dark-ground with only the 8-mm. or 1/3-inch apo-objective and an 18 compensating ocular, show the minute bodies exceedingly well. The indian-ink preparations under the oil-

immersion objective reveal the elementary bodies very distinctly, in marked contrast to the control film of ink. The merely air-dried unstained films mounted in air, when examined by dry dark-ground illumination with the same objective, distinctly show the minute bodies, and exclude the possibility of their being colloidal protein molecules or precipitates from the stain.

Mr. Eliot Merlin, who has during the past years examined nearly all my preparations of virus bodies of various diseases, writing in 1929, confirms my findings in every way. He describes the preparations of foot-and-mouth disease as consisting of densely packed strongly stained particles, measuring from 0.15 to 0.3μ in the stained films, and precisely similar bodies were seen in the indian-ink slides. He says:

"Your findings re size and appearance are in agreement with the facts as they appear to me, and the presence of the bodies in the unstained, merely air-dried, films is pretty conclusive that what we had seen in the stained films was not due to stain debris. The foot-and-mouth virus seems to me to greatly resemble the vaccine and many other virus bodies which we have examined previously. What surprises me is that the bodies with which the films swarm should be considered difficult to define with the ordinary microscope. I think the appearance of the bodies under the microscope is in itself fairly convincing to anyone with an open mind on the subject. If they be not virus bodies one wonders how they can be proved not to be."

Causal Virus of Various Diseases

The causal virus of *yellow fever* is said to be one of the smallest of the elementary bodies, and according to filtration experiments is estimated to measure 0.018 to 0.027μ , or 18 to $27 m\mu$. Blood films from monkeys infected with yellow fever were kindly sent me by Prof. Edward Hindle in 1929 and Prof. W. Schüffner in 1931, and when these were stained with Giemsa I found minute bodies in the red blood corpuscles and also free in the plasma. They varied considerably in size; many measured from 0.1 to 0.35μ , but some were only just visible specks. The larger bodies were resolvable in most cases into three or four minute spots not larger than 0.1μ . The number seen varied according to the day of the disease; they were most numerous on the second or third day of the fever, and in several of the films many free and intracorpuseular forms could be seen in every field.

In blood films of patients naturally affected and in volunteers inoculated with about 0.33 c.cm. of dried serum of infected blood, from cases of dengue fever, somewhat similar bodies were found. These were numerous on the first three days of fever, considerably less numerous on the fourth day, and on the fifth and sixth days they were exceedingly few, being found only with difficulty. Blood films from three cases of *sandfly* or *pappataci* fever taken during the first twenty-four hours showed bodies almost exactly like those of dengue. Mr. Merlin kindly examined and confirmed my findings in these three virus diseases, which have been described in detail with photomicrographs elsewhere (Coles, 1937).

Lastly, let us examine another of the extremely small virus bodies, that of *poliomyelitis*, which measures according to filtration experiments 0.008 to 0.017μ , and according to other textbooks from 0.010 to 0.020μ . I have received air-dried films from proved infective filtrate of poliomyelitic monkey-cord suspension from three reliable sources—namely, Dr. J. A. Kolmer, Dr. A. B. Sabine, and Dr. E. W. Schultz, all of the U.S.A.—and after staining these in Giemsa very definite elementary bodies were easily seen. They varied in size from 0.15 to an average of 0.2 to 0.3μ . These have been described and photographed (Coles, 1939).

Discussion

How can the marked difference in size of the elementary bodies as determined by filtration experiments and microscopical methods be explained? It should be remembered that the size of the virus particles as measured by means of collodion filters represents the size of the *smallest* of the living bodies and not that of the average of the stained elementary bodies. Have fixation and staining any effect on the size of the particles? The answer to this is strikingly in the affirmative, and to a much greater extent than most of us realize. In 1929 I stained a film containing *Treponema pallidum* in Giemsa for fifteen to twenty minutes, and after washing and drying examined it with the 8-mm. or 1/3-inch apo-objective by dry dark-ground illumination, without any cover-glass or mounting medium. A spirochaete was very easily found by this means, partly because the eosin red of the Giemsa shows up brilliantly by dark-ground illumination, but chiefly because the difference in its refractive index and that of air is so great. The position of the spirochaete was logged, and ringed with the marker. The oil-immersion objective was then turned on, and the spirochaete was practically invisible; only after prolonged careful search was it seen, and it appeared as the very thinnest and finest spirochaete possible. The slide was placed back in the stain for twenty-four hours, and then it was markedly thicker and very easily seen with the oil objective. A film or a section stained by any of the flagella stains after mordanting, or in silver-impregnated preparations, shows spirochaetes and leptospira as very thick coarse structures, easily seen with quite low-powered objectives.

As the virus bodies are probably very minute organisms, why should the difficulty of examining them be further increased by restricting the examination to them in the living condition? Do we examine sputum for tubercle bacilli, or the diphtheritic membrane or its cultures for the bacilli, in the living unstained preparations? The size of all bacteria is determined in stained preparations, and in the case of the tubercle bacillus in films mordanted by carbolic acid and heat. The size of the tubercle bacillus is generally given as varying from 2.5 to 3.5 μ in length and 0.3 μ in thickness: has anyone detected this bacillus in its unstained living condition, and can anyone even guess at its size in its living state?

The only reason I can imagine why the elementary bodies are studied in their living unstained state is that the very few exponents of ultra-microscopy would have us believe that this is the only correct method: even if this method were adopted the viruses would never be seen but could only be photographed.

Conclusions

I am of the considered opinion (a) that all the filterable virus bodies, including the smallest and the so-called invisible virus of foot-and-mouth disease and that of infantile paralysis, are easily within the range of the ordinary microscope when used correctly; (b) that ultra-microscopical methods are not essential, and their use has so far added little to our knowledge.

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CLINICAL MANIFESTATIONS OF TETRYL AND TRINITROTOLUENE

BY

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AND

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Since many filling factories have been built recently in different parts of the country it might be of interest to practitioners to know something about the effects on the human body of continued exposure to tetryl and trinitrotoluene.

Tetryl, or "C.E."

This compound is a sharp crystalline powder, yellow in colour. Its clinical manifestations are as follows:

1. The powder stains the skin of the hands, face, neck, and also the hair, and this colour deepens to orange on exposure to sunlight. It should be emphasized that the staining varies considerably in different workers and bears no relation whatever to any of the following manifestations.

2. New workers sometimes complain of a sharp tingling sensation in the nose. This causes sneezing and more rarely epistaxis, and is due to the irritating effect of the crystals on the nasal mucous membrane.

3. The commonest complaint from tetryl workers is dermatitis. This starts as an erythema, followed by a papular eruption accompanied by some exfoliation. It arises in the region of the sweat glands of the face—i.e., the naso-labial fold and submandibular regions of the neck. It may spread all over the face, causing severe irritation, and in some cases gross oedema of the eyelids, which may prevent the patient opening the eyes for two or three days. In severe cases secondary sensitization may occur on the hands, arms, and trunk. Should tetryl come into contact with the conjunctivae a mild conjunctivitis results. Constitutional symptoms are present only in the more severe cases, usually as headaches and general malaise. They are to some extent understandable, as patients suffering from extensive rash often lose sleep. The treatment of C.E. dermatitis is first and foremost removal from contact with the powder. It is not enough merely to change the worker's occupation: he or she must be removed right away from the vicinity of the powder, otherwise the condition will be aggravated by the small amount of dust present in the atmosphere in all shops where tetryl processes are carried on. It is also important that the worker be given a complete change of working clothes. The local treatment, generally successful, consists in frequent applications of calamine lotion or, if there is much desquamation and drying of the skin, lotio calaminae oleosum. A word of warning is, however, necessary when using the latter preparation: tetryl workers should be told on no account to use oily preparations on their skin as a preventive measure, as by so doing ideal conditions are produced for the development of a second attack of C.E. dermatitis. Mild cases clear up in a few days, but severe rashes often persist for two or three weeks. Suspension from work is seldom necessary. When the dermatitis has quite cleared up the worker may return to contact work, but if a second or third attack occurs it is an indication that the patient is very susceptible and should be removed permanently from tetryl work. In our experience those workers who develop oedema of the face and periorbital tissues are bad risks, and we remove them permanently from contact at the first outbreak of the rash.

4. Although it is not generally admitted that tetryl gives rise to any constitutional symptoms, we have found that numbers of new workers complain of epigastric pain, with nausea or vomiting. These symptoms, like those of T.N.T. toxic gastritis, bear no relation to food and are seldom severe enough to keep the patients away from work. Such workers are removed from contact until the symptoms abate. They are then allowed to return, and usually no further trouble arises.

Trinitrotoluene, or T.N.T.

T.N.T. is a yellowish crystalline powder more stable than C.E. and is used either by itself or mixed with other sub-

stances—e.g., ammonium nitrate (amatol), barium nitrate (baratol). It is a highly toxic substance, of which the clinical manifestations are as follows:

1. The hands and, more rarely, the face and the hair are stained orange, but the staining is not so deep as with C.E. This staining should not be confused with the yellowish coloration due to jaundice.

2. *Dermatitis*.—This arises on those skin surfaces which are exposed to direct contact with the explosive—i.e., hands, forearms, neck, wrists, and ankles, the last three areas through friction from the operator's clothing. It seldom appears on the face, but this may be involved in a general outbreak all over the body. On the hands it starts as a sago-grain eruption, and is particularly evident between the fingers and on the thenar eminence. Elsewhere it takes the form of a coalescing papular eruption with areas of erythema. Desquamation is the rule, and may be severe, leading to complete exfoliation of the hands and feet. Small "powder"-holes are also seen. The irritation is intense; and treatment is the same as for C.E. dermatitis—i.e., removal from contact and local application of bland lotions and ointments. One attack of T.N.T. dermatitis, unless unusually severe, is no bar to further employment with the explosive.

3. *Cyanosis*.—T.N.T. exerts a specific action on the haemoglobin, forming a mixture of methaemoglobin and NO-haemoglobin. A large percentage of these workers are "cyanosed" to a greater or lesser degree and present a typical appearance. The lips, tongue, and mucous membranes become a greyish-mauve shade, very different from the true cyanosis of cardiac or lung disease. There is no real anaemia, and very often the condition is symptomless. In fact, we have met workers looking quite purple who declare that they have never felt better in their lives. When present the symptoms are those of oxygen dearth—i.e., fatigue, lassitude, and dyspnoea on exertion. At one time it was our practice to remove from T.N.T. contact all workers showing this sign no matter to what degree, but now we allow mild cases, in which the patients are otherwise well, to remain in contact under observation.

4. *Toxic Gastritis*.—This is a definite syndrome, and is not to be confused with other forms of gastritis arising in T.N.T. workers, including latent hypochlorhydria, which may be unmasked by the action of the trinitrotoluene. The symptoms are: (1) central epigastric pain of a colicky nature, relieved by rest but not by vomiting, and bearing no relation to food; (2) nausea with or without vomiting; (3) a feeling of tightness in the chest; (4) anorexia; and (5) constipation. The cardinal symptom is pain. These patients present a distinct appearance. Cyanosis may or may not be present, but they show a greyness of the face, with a worried expression, and often a definite pallor over the bridge of the nose extending on to the cheeks; the tongue is usually clean. Examination of the abdomen reveals nothing except slight epigastric tenderness, probably due to the constant retching and vomiting. The treatment again is immediate removal from all contact, including the changing of any contaminated clothing and a thorough cleansing of the skin. In very early cases the patient need not be suspended from work, but if there is much vomiting—in our opinion the most important symptom—rest in bed is indicated, combined with saline purges and a high carbohydrate diet containing plenty of fresh fruit and vegetables. There is some evidence to show that vitamin C in large doses may be of value in these cases. Workers who have had a severe attack of toxic gastritis should not be allowed to return to T.N.T. work.

5. *Toxic Jaundice*.—Fortunately this is a rare complication, but it carries a 30% mortality, and all such cases must be treated as serious. It may be heralded by an attack of cyanosis or toxic gastritis, or it may arise *de novo*, patients being found who are symptomless and maintain that they feel perfectly well. The jaundice starts in the conjunctivae and spreads rapidly to the skin. It is a late and grave sign, and indicates severe liver damage. These patients should always be removed to hospital, as it is impossible to carry out adequate treatment at home. The treatment is the same as that for toxic jaundice due to other causes. On admission to hospital the patient should be given a warm bath, and if possible the skin should be scrubbed with acetone or ether to remove any trace of T.N.T. that may still be present.

Special attention should be paid to the hands, nails, and hair. Cyanosis may be treated with inhalation of oxygen and carbon dioxide, but this is only necessary where there are definite symptoms of oxygen dearth. The bowels should be kept open by saline purges, and the diet should contain fresh fruit and vegetables, and be rich in carbohydrate, calcium, and vitamin C. It has been maintained that Webster's urinary test for T.N.T. is invariably negative in cases of toxic jaundice, but we are of the opinion that this is not so. We have obtained a positive reaction in a severe case six weeks after admission to hospital. Prognosis on these cases is difficult and should be given with great caution until the patient is well on the way to recovery and the jaundice has cleared up. It is often months before they are fit to return to work, and on no account should any patient ever be allowed back on T.N.T.

6. *Aplastic Anaemia*.—This is a still rarer complication, nearly always fatal and sometimes preceded by jaundice. We have seen three cases, all of them fatal, but in only one was there a definite history of jaundice.

Conclusion

These manifestations appear formidable on paper, but the percentage of workers in contact who are affected is small. Our experience points to the fact that, other things being equal, personal idiosyncrasy must play an important part in the production of toxic symptoms. We are sure that factory medical officers as a body would willingly co-operate with general practitioners in helping to diagnose these somewhat unusual conditions.

Medical Memoranda

Preliminary Note on the Properties of s-Methyl Isothiourea Sulphate

While working with some thiourea derivatives it was observed that s-methyl isothiourea sulphate when administered intravenously in animals raised blood pressure and stimulated respiration. Further observations showed that it also acts when given by mouth. The pharmacological properties of the substance have apparently not been described hitherto, and are manifest in doses which after repeated trials appear to be harmless in lower animals and in man. The circulatory effects have been observed in the dog, cat, rabbit, and man. The rise of blood pressure is either mainly or entirely of peripheral origin, since it takes place after destruction of the central nervous system. The blood-pressure increase is not likely to be the result of stimulation of sympathetic-nerve endings, as it occurs when these endings are paralysed by ergotoxine.

Other smooth muscle besides that of the blood vessels is contracted by s-methyl isothiourea sulphate, notably plain muscle of the isolated intestine. In the whole animal, however, this action on the intestine is not a prominent feature except with big doses. A more detailed communication describing the action in animals will be published shortly, in collaboration with Dr. M. McGeorge (Duñedin) and Prof. Mahomed Sherif (Cairo).

Following animal investigations it was decided to study the action in man. The work in this connexion began in collaboration with Dr. Nassif in Cairo and has been continued by me. It has been shown in healthy men that doses of 0.2 to 0.4 gramme of s-methyl isothiourea sulphate when taken orally cause slowing of the heart and usually a blood-pressure rise. No subjective sensations have been observed to accompany these changes. Two doses of 0.4 gramme given with an interval of about thirty minutes between them have been administered on a number of occasions without leading to subjective sensations. The fall in heart rate is then as much as 20 beats per minute, and in some instances the heart rate has dropped to below 50. On several occasions healthy volunteers carried out a standard Army exercise-tolerance test before and after administration of

s-methyl isothiouraea sulphate and observed no special difference as a consequence of taking the substance.

ITS POSSIBLE VALUE IN CASES OF SHOCK

Some observations have been made by me in man and in experimental animals to ascertain if this substance might be of value in the treatment of surgical shock. It has been noted in about twenty obviously moribund patients, mostly medical cases with terminal circulatory collapse, that the systolic blood pressure may rise promptly from, say, 60 to 120 mm. after the intravenous administration of 0.2 to 0.4 gramme. The diastolic pressure is raised proportionally. The blood pressure remains elevated for fifteen minutes to one hour. The heart rate, however, may fail to slow or does not diminish to the degree observed in health. Some of these results were encouraging in that several moribund patients made a temporary recovery. Two cases of severe surgical shock were treated by the intravenous injection of s-methyl isothiouraea sulphate. Both patients survived, and improvement coincided with the administration of the substance. It is regretted that most of the clinical observations were not made on cases of surgical shock, but opportunities for a satisfactory study of this subject are lacking in New Zealand.

More definite evidence has been obtained that the substance is of value in treating acute shock produced experimentally in healthy animals. Thus crushing of limbs and extensive abdominal injuries were employed in anaesthetized cats and dogs to reduce the level of the blood pressure to 30 or even 20 mm. Hg. Ordinarily when the blood pressure has been reduced to such levels cessation of the heart beat usually follows within a minute or two. A majority of animals with blood pressures of 20 or 30 mm. Hg. were revived for periods of one or more hours when treated with s-methyl isothiouraea sulphate intravenously. It seems, therefore, that the substance delays death if given to animals in extreme traumatic shock. There is thus a chance that the substance would be useful to tide over air-raid casualties which cannot be removed to a place with facilities for transfusion.

The substance also may be worthy of clinical trial in those cases of traumatic shock in which a vasoconstrictor substance could be of value, but even so it should be regarded as an adjuvant and not as an alternative to methods of treatment which restore the blood volume. Patients whose blood pressures remain at a low level despite restoration of the blood volume might be benefited by s-methyl isothiouraea sulphate.

In my patients dosage has been controlled by observing the pulse and blood pressure. It appears that in divided doses as much as 1 to 1.5 grammes may be administered in the course of three hours, and probably more would be tolerated. Solutions have been sterilized by tyndallization and kept in ampoules, 0.2 gramme in 2 c.cm. So far only one contraindication to the use of this substance has been found—namely, that it should not be employed in congestive heart failure.

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Malachite in the Control of Bilharzia

The possibility of controlling bilharzia in Southern Rhodesia has been under investigation for the past two years. This work was begun at the instigation of the medical director of Southern Rhodesia, Dr. A. P. Martin, with the aid of a grant from the trustees of the State Lottery. I proceeded to the colony in the first place in company with Sir Malcolm Watson, director of the Ross Institute of Tropical Hygiene. Certain results of this work seem to be important enough to merit immediate announcement.

An essential phase of the investigation has been a search for effective and practical means of destroying the intermediary hosts of human bilharzia—namely, the snails *Physopsis globosa* and *Biomphalaria pfeifferi*. Previous attempts to destroy these dangerous snails have centred largely around the use of copper sulphate. The principal objections to the use of this substance are its relative toxicity to man and other mammals, its great solubility (approximately ten parts of copper per hundred), and its high cost. Copper carbonate is at least as lethal to snails as is copper sulphate, it is much less soluble than the sulphate (approximately one part of copper per million), and in saturated

solution it has been proved by experiment in Southern Rhodesia to be non-toxic to white rats when given in repeated doses. The relatively high cost of copper carbonate as well as of the sulphate has led to a search for some less expensive form that would be suitable for control work on a large scale.

Malachite (mineralized basic copper carbonate) when ground fine enough to pass through a 200-mesh sieve has been found to be suitable for this purpose. In this condition malachite from two sources in Southern Rhodesia has been proved to be effective in destroying snails both in the laboratory and in actual bilharzial pools in the field. The present cost of malachite in many parts of Africa is less than £1 a ton. Finely powdered malachite yields an effective concentration (dissolved and colloidal) of 0.5 part of copper per million when placed in natural water (from the Macabuzi River, near Salisbury, S.R.). It has been found that the solubility of this substance is considerably increased by mixing it with fresh brewer's waste (i.e., fermented barley) or with the powdered pods of a common Rhodesian tree, *Swartzia madagascariensis*.

These methods of destroying snails will play an important part in a campaign for the control of bilharzia in Southern Rhodesia which will begin shortly. A full account of the control methods to be used is in preparation.

I am grateful to the Medical Director of Southern Rhodesia for permission to publish this note.

Salisbury, Southern Rhodesia

ALAN MOZLEY, D.Sc. Ed.

Melanotic Carcinoma: Sudden Spread after Hysterectomy

The following case may be interesting enough to be worth recording.

CASE REPORT

The patient, aged 41, had hysterectomy performed for fibroids of the uterus on April 25, 1941. Her only complaint was menorrhagia. At operation a routine inspection of the abdominal contents revealed no other abnormality. Pre- and post-operative examination of the chest showed no disease, and the patient left hospital after a normal convalescence. The pathological report on the uterus indicated simple myoma only.

The patient was readmitted on August 1 complaining of abdominal swelling and vomiting for two weeks: for one week she had been breathless. Symptoms had come on quite suddenly twelve weeks after operation. On admission she was cyanosed and breathless at rest; there were scattered subcutaneous black nodules, including three in the abdominal scar; the abdomen was distended with fluid, but a large nodular liver was readily palpated. Search for a primary melanoma revealed only a small scar over the left clavicle. The patient then gave a history that five years ago she had had a "black naevus" there. It was treated with carbon dioxide snow, but increased in size—whereupon it was excised under local anaesthesia. There had been no recurrence since.

She died on August 7. At necropsy melanotic carcinomatous deposits were found in almost every organ of the body—heart, thyroid, lungs, meninges, and brain. The liver weighed 110 oz., and there were profuse deposits in the mesentery, kidneys, spleen, suprarenals, pancreas, and stomach. The abdominal scar was studded with melanotic deposits. The urine gave a positive test for melanogen.

Twelve weeks previously there had been no macroscopical abdominal deposits. If the sudden spread of melanotic deposits was purely coincidental the rapid dissemination after five years' complete quiescence is noteworthy. It is, however, interesting to speculate whether the operation on a distant site initiated the spread: whether, in fact, the malignant cells had lain dormant for five years only to be stirred into activity by the mechanical or physiological disturbance of the operation. Although so far as I know no mechanism for this is described, it seems to be a more possible explanation.

My thanks are due to Mr. Edgar Freshman, under whom the case was admitted, for permission to report it, and to Dr. Norman Ashton, who carried out the necropsy, for the use of his report.

KE: and GUNTER H. H. H. H.

LESLIE J. TEMPLE, F.R.C.S.

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SULPHANILYLGUANIDINE AS INTESTINAL
ANTISEPTIC

In the past various drugs have been used as intestinal antiseptics, mainly without any sufficient evidence that they achieve the effect desired. Not only has any such drug to run the gauntlet of the several digestive secretions and to survive admixture with foodstuffs in successive stages of breakdown, but if it is to act in the lower bowel—and it is here that action is usually desired—it must escape absorption before the intestinal contents reach this area. This is asking much, and, in fact, none of the older intestinal antiseptics possessed all the qualities necessary to overcome these obstacles: those of coal-tar origin were certainly absorbed, because a tolerable daily dose mixed with the daily output of faeces would be actively bactericidal, whereas a corresponding effect was not demonstrable in the stools of patients under treatment. Now that sulphonamide compounds are becoming recognized as having a direct antiseptic action, and are being used more and more in the form of local applications, it is natural that inquiry should be made into the possibility of influencing the intestinal flora by their means. Sulphanilamide itself is much too rapidly absorbed to reach the lower bowel at all, and other less soluble compounds are not believed to reach it in any considerable amount. From a seemingly endless series of these compounds there emerges from time to time one which meets a therapeutic need previously unsatisfied, and although there was no reason for supposing that the peculiar qualities demanded of an intestinal antiseptic could necessarily exist in a compound of this class, such a substance has apparently been found. Sulphanilylguanidine, to which we made a brief editorial reference not long ago, has an action on bacteria comparable to that of its predecessors, but differs from them in being much less readily absorbed, with the result that much of the drug given by the mouth remains in the alimentary tract. This property is the more peculiar because the drug is fairly soluble; failure of absorption, therefore, does not mean that it remains in the bowel largely in a solid and therefore inactive form.

The brief history of this drug is given by D. E. W. Anderson and R. Cruickshank in their paper on page 497 of the present issue. The contribution of these authors to its study is a carefully observed therapeutic trial in bacillary dysentery, for which an extensive outbreak in a mental hospital provided the opportunity. This is a disease in which therapeutic effect cannot easily be assessed in quantitative terms, and the results claimed may seem unimpressive for that reason. It seems nevertheless that a decided amelioration of symptoms, more

particularly in severe cases, was usually brought about within the first two days; that treated patients felt better and regained their appetite at an earlier stage; and that convalescence was shortened. More positive evidence of a specific action was that dysentery bacilli ceased to be recoverable from the stools at an earlier stage in treated than in control cases. Observations on this point were complicated by a change-over from MacConkey's to a more selective medium during the progress of the study; a culture medium which facilitates the detection of small numbers of dysentery bacilli is a valuable asset in such work, and the peculiarly selective action on Flexner dysentery bacilli of the medium described by W. J. Wilson and E. M. McV. Blair on page 501 may be found valuable in further studies of this kind. Anderson and Cruickshank's observations included estimations of sulphanilylguanidine in the blood, urine, and faeces. Blood levels, as claimed in the original American reports, were low, and heavier dosage would therefore probably be safe: it may be added that no toxic effects of any kind were observed in this series except a rash in one patient. Such of the drug as is absorbed is excreted in the urine, where fairly high concentrations are attained, and an adequate fluid intake appears advisable to prevent crystalline deposition in the urinary tract. Varying but mainly high concentrations were found in the faeces, and it was calculated that from one-half to two-thirds of the drug given remained in the bowel.

These authors do not record any general diminution in the numbers of bacteria cultivable from the faeces during treatment with sulphanilylguanidine, but quantitative methods of culture were not employed. Marshall claims that administration to mice causes a striking diminution in the numbers of coliform bacilli in their faeces, and according to W. C. Corwin¹ the effect in dogs and monkeys is not so much a reduction in total numbers of viable bacteria as an increase of Gram-positive cocci at the expense of Gram-negative bacilli. W. M. Firor and A. F. Jonas² found some diminution in faecal coliform bacilli in patients taking the drug, but the effect seems to have been neither consistent nor usually striking. These authors gave the drug for seven days before operations involving resection and anastomosis of the bowel, and obtained satisfactory union without peritonitis after complex and anxious proceedings involving gross contamination of the peritoneum. If this fortunate outcome is rightly to be attributed to the drug, then several kinds of intestinal bacteria other than the mere coliform bacilli and cocci which grow in ordinary aerobic culture must be severely curbed by its influence. It is clearly desirable to know more about the capacity of sulphanilylguanidine for restraining the growth of different types of intestinal bacteria before random clinical trial in the vast range of intestinal diseases gathers its inevitable momentum. The evidence of such an effect so far is scanty, and the bowel contents furnish so complex and apparently unfavourable a medium for chemotherapeutic action of this kind that success may well be partial and inconstant, or dependent on other factors which have yet to become known.

¹ *Johns Hopk. Hosp. Bull.*, 1941, 69, 39.
² *Ann. Surg.*, 1941, 114, 19.

THE AQUEOUS AND GLAUCOMA

Only fifteen years ago standard textbooks in ophthalmology spoke of the aqueous as a filtrate or as a secretion formed by the ciliary epithelium and eliminated via Schlemm's canal. The cornea was thought to be impermeable and was expressly excluded as a drainage path. The intraocular pressure was considered to depend upon the secretory activity of the epithelial cells of the ciliary processes. The fact that the intraocular pressure is supported by the corneo-scleral envelope was ignored, and the impossible assumption was made that the sclera was a rigid inextensible structure. Glaucoma was believed to result from the back pressure occasioned by blocking of Schlemm's canal, or from the mechanical consequences of increase in size of the lens with age, or from swelling of the vitreous. To-day no one would support all these statements and assumptions, and it may be of interest to summarize the views that are the outcome of modern research, although it cannot be claimed that finality has been reached.

The aqueous is a dialysate of the blood plasma, modified to a slight and as yet undefined extent by the activity of the epithelium of the ciliary body and perhaps of the iris; in addition there are the products of metabolism of the lens, vitreous, and lining membranes. Throughout the eye interchange of substances takes place in both directions across the capillary walls, particularly in the ciliary body and iris. In articles on the nature of the aqueous Friedenwald,¹ and Duke-Elder, Quillian, and Davson² deplore the fact that recent writers have again started calling it a secretion. In using this term most ophthalmologists have taken it to imply that intraocular pressure is the result of secretory activity, although this meaning need not be attached to the simple statement that the aqueous is a secretion. Friedenwald denies that the composition of the aqueous shows that water is transferred across the ciliary membrane to produce an accumulation of fluid on the aqueous side. The secreted fluid so transferred can be taken only from the lymph of the ciliary body and processes, and this lymph is certainly at intraocular pressure. The transposition of fluid across the ciliary membrane could not cause a change in pressure, as there is no change in the total volume of the fluid. It is precisely this total volume of the contents of the globe which determines the distension of the corneo-scleral envelope, of which the intraocular pressure is an expression. It is thought that fluid is drained out of the eye in the region of the angle of the anterior chamber, that fluid may then pass into the cornea or into Schlemm's canal, and that obstruction of the angle is associated with some forms of glaucoma. The cornea is certainly permeable, and evidence that it is a normal drainage path is growing. The significance of Schlemm's canal as a drainage path is not thought to be great.

The intraocular pressure is derived from the capillary blood pressure, with which it is in constant equilibrium. It is less than this pressure by an amount which is attributable to the difference between the osmotic pressure of the aqueous and the blood plasma; it may be quite small or be as much as 20 mm. Hg. The pressure within the eye, as in any other container, is a function of the distensibility of the walls—in this case of the cornea and sclera, which behave very much as an artery does when distended. At normal pressures the corneo-scleral envelope exhibits perfect elasticity, expanding and contracting with every pulse wave and responding to lid closure and other external pressure, as would a rubber ball. When exposed to abnormally high pressure, however, the envelope stretches and subsequently is much less distensible, so that it acts as a contributory factor predisposing to a recurrence of such raised pressure. This fact, and the increase in the rigidity of the sclera with age, are important to any consideration of the problem of glaucoma. Changes in volume of the lens and vitreous have no bearing on the problems: the former theory has no supporters to-day, and it has been shown conclusively that the vitreous cannot swell under conditions compatible with life. Workers are now almost unanimous in regarding the blood pressure, particularly the capillary blood pressure, as the source of the intraocular pressure in health and disease. The internal pressure in all the blood vessels within the eye is necessarily in equilibrium with the support accorded by the vessel walls plus the intraocular pressure. This equilibrium is modified to only a slight extent by changes in systolic pressure, since in the eye (as throughout the body) the expanding force of the blood pressure is precisely balanced by the ever-varying tone of the muscular elements in the vessel walls. Glaucoma is thus attributed to the transmission of an abnormal proportion of the available blood pressure within the intraocular vessels to the extravascular contents of the globe. Since the volume of the extravascular fluid contents—the aqueous—is rapidly adjusted by passage either into or out of the capillaries, the intraocular pressure must be related to the capillary pressure over any prolonged period. This equilibrium will not be modified by drainage of aqueous out of the eye via the angle of the anterior chamber. The intraocular pressure may be further modified, however, by a change in the osmotic pressure difference between aqueous and blood plasma; but this change is probably small and cannot exceed 20 mm. Hg. Research is thus directed to a study of those factors, nervous and chemical, which may modify the tone of the capillaries and arterioles in the eye and their permeability. Much progress has been made, and much is now known about these agencies. There is evidence that vasodilator or vaso-toxic substances liberated by nerve action, formed locally as metabolites or entering the eye by the blood stream or via the cornea, may be the cause of clinical glaucoma.

¹ *Arch. Ophthalmol.*, Chicago, 1940, 24, 107.

² *Brit. J. Ophthalmol.*, 1940, 24, 421.

THE NUTRITION SOCIETY

Elsewhere in this issue we publish particulars of the newly formed Nutrition Society. In giving it, as we do, a whole-hearted welcome, we are not to be taken as either assenting to or dissenting from any general proposition about the desirability of forming new scientific societies—even in peacetime. For such projects to be praiseworthy at least two conditions must be satisfied. First, the subject of the new society's activity must be of importance—as the patent lawyers might say, it must have "content"; secondly, there must be no other existing society that can cover the whole of the same ground equally well. On the second issue the new society can claim general support. The scientific attack on nutrition is, indeed, made from many directions—by medical practitioners, biochemists and physiologists, agriculturists and veterinarians, dietitians and sociologists, economists, statisticians, food technologists, and probably others. In the specialized organizations to which these various experts belong questions of nutrition will be discussed with less or greater frequency. Indeed, in medical organization the attention given to dietary factors is certainly still on the increase. But even here, and in the excellent meetings arranged through its Nutrition Panel by the Food Group of the Society of Chemical Industry, it is obvious that there is a lack of integration. At the medical gathering the biochemist and laboratory worker are likely to be in the background, the agronomist and the practical dietitian probably entirely absent; at the Food Group meetings medical views are unlikely to be represented, and veterinarians are probably as invisible as statisticians. If the new society can bring together all the contributors to our growing knowledge of the relationship between food and health it will certainly achieve something not yet achieved—primarily, perhaps, because it has never been attempted, at all events in this country. And it has so far not been attempted because the importance of the subject is still too little appreciated in many of the most influential circles. It is doubtful if the emphasis given to-day to problems of feeding the community would have been nearly as marked but for the exigencies of wartime. In this sense, but we are sure in no other, the Nutrition Society may possibly be considered a child of Hitler. There can be little doubt to-day—least of all in the minds of medical practitioners—that nutrition has become a subject with "content." For the investigations of nutritional problems, special and other new techniques have been increasingly needed; for the discussion of problems and techniques alike a new organization has been found necessary.

That there are many gaps—some of them enormous—in our knowledge of human and animal nutrition would not be denied by the most craft-conscious nutritional scientist. The meetings or conferences to be organized by the new society—if one may judge by the proposed Cambridge meeting on "The Evaluation of Nutritional Status"—are just of the type calculated to reveal these gaps and therefore to point to ways of closing them. In that sense, if in no other, the foundation of the Nutrition Society may legitimately be regarded as a contribution to the national war effort, for it cannot fail to give support to all those forces that, by stimulating

investigation and helping to disseminate its results, make for improvements in the dietary of the people as a whole and therefore in their health, their vigour, and their democratic independence.

MALARIA IN OFFICERS AND MEN FROM OVER-SEAS

It is important to remember that malaria is likely to occur among officers and soldiers who have returned to this country from service over-seas in a malarious country. The attacks may be relapses of a previous recognized infection, or they may be primary, especially in those in whom infection has been kept in abeyance by prophylactic treatment while in the endemic area. In the latter event a history of a previous attack may not be obtained, and the onset may be delayed for months after the cessation of prophylaxis. The need for early recognition and adequate treatment of cases of malaria is very great, and the possibility of this infection should be borne in mind in the presence of pyrexia without obvious cause, especially if associated with shivering, vomiting, and subsequent sweating, where there is a history of recent service in a malarious area. A high proportion of cases may be of the malignant tertian variety, in which severe symptoms may suddenly appear at the onset or later in the attack. If a patient shows clinical symptoms of malaria the lack of facilities for microscopical demonstration of the parasites in the blood should never cause delay in treatment, but before beginning anti-malarial remedies blood slides should be made for later confirmation of the diagnosis by microscopy. The War Office has issued a pamphlet, "Notes on the Treatment of Malaria occurring in Individuals returning from Service in Malarious Areas" (H.M. Stationery Office, 1d.), which will be of value to civilian medical practitioners as well as to Army medical officers. The lines of treatment concisely set out are grounded on Army experience, and they have been framed for the guidance of all who may be concerned. While the standard treatment detailed is that found to be best in the alleviation of symptoms and in prevention of relapse, and is the course recommended wherever possible, alternative lines of therapy are offered to meet circumstances in which certain drugs are not available. Precise instructions are given for the employment of anti-malarial drugs, Group A (quinine salts, and mepacrine hydrochloride) being anti-symptomatic and antipyretic and for treatment of the acute attack, Group B (pamaquin) being anti-infective and anti-relapse, for administration after the acute attack. Mepacrine is the British equivalent of atebirin and quinacrine; pamaquin is the British equivalent of plasmoquine; these two drugs must never be taken concurrently. There are brief directions for general treatment and for the handling of special symptoms. A section is devoted to intramuscular injection of quinine for heavy infections and severe symptoms. Another section prescribes the dosage and technique of intravenous injection of quinine for cases of great urgency, or for heavy infection with malignant tertian malaria, in which it may be the only means of saving life; it is fraught with danger and should never be used as a routine.

SCIENTISTS AND POST-WAR RELIEF

The British Association conference on "Science and the World Order," which was held in London during the last week of September, was a much larger affair than its promoters had looked for. The plan was to have a few papers to be discussed by British scientists among themselves, but men of science of other nationalities—some

of them exiles—proffered contributions, resulting in an amorphous conference, with sixty or seventy papers crowded into six sessions, with little or no time for general discussion or even effective presentation. The remarkable thing about the affair was its post-war spirit. So far as Albemarle Street was concerned during those three crowded days the war was already over, and all the hives were buzzing with reconstruction and relief after Armageddon. The problem was tackled from the point of view of the apparatus of government, of world planning, of technological advance, of biological teaching, and of social order and humanitarian aid. On this last subject Dr. Anni Noll struck a needed note when she begged the men of science not to forget, among much other reconstruction, the reconstruction of the family, already sadly disintegrated by evacuation and national service. One of the conditions of such reconstruction, she said, was the establishment of means of healthy living, from the point of view not only of medical attention but of housing, transport, food distribution, and facilities for education and leisure. She urged periodical overhauls of the family unit such as the Pioneer Health Centre at Peckham had sought to establish. A dark picture of nutritional deficiency in Europe, west as well as east, after the war was painted by a Continental medical man, Dr. Kodicek, who said that to prevent a major disaster plans for food distribution, the growing of food, and care of mothers, children, and sick would have to be organized with all speed. The help of separate Governments would be necessary, but they must work in collaboration under an international organization. Immediate help needed after the war would include medical supplies of all kinds, such as therapeutic sera and vitamin concentrates, also the training of doctors for service in distressed areas. An interesting statement was made to the conference by Mr. R. Allen of the American Red Cross, who has recently spent eighteen months in France, and has also been in Switzerland, Belgium, and part of Germany. In France since the German occupation the hospitals had been completely denuded of supplies and equipment, and the French had been left to set up hospitals in churches and schools, and to use surgical instruments purchased at hardware stores instead of through medical supply houses. The American Red Cross distributed hospital supplies alongside the German Army, from whom they had good co-operation. In non-occupied France children were being supplied with one pint of milk a day in the form of a specially reinforced powder, with added fat content and vitamins. He mentioned that the American Red Cross was now setting up in Geneva a reservoir of medicines and drugs for use in case of the development of any serious epidemics in Europe, of which there was a very real threat. It was trying to send medical and hospital supplies into Norway, Holland, Belgium, Yugoslavia, Greece, and occupied France. Among the less sombre notes struck in the conference was the plea of Mr. Philip Noel-Baker, M.P., for a sound food policy, with what Sir John Orr had called the minimum standard of maximum health as the starting-point in plans for post-war relief.

VITAMIN P AND CAPILLARY RESISTANCE

Manwaring and his co-workers¹ believed that "increased specific capillary permeability will be shown to be the dominant fundamental physiologic change in protein sensitization to which all other anaphylactic reactions are secondary." More recently Rapaport and Klein² have found forty-nine out of a hundred allergic children to have abnormal capillary fragility as determined by the Wright

modification of the Rumpel-Leede test, using Wright's standard of ten or fewer petechiae as normal, from ten to twenty as borderline, and twenty or more as evidence of excessive fragility. In a previous study of 110 normal children only twenty-six, or 23.6%, had been found to show excessive capillary fragility as induced by a positive pressure test. Twelve of the forty-nine allergic children were found in subsequent capillary tests to be consistently abnormal. Vitamin P was administered and the tests gave normal results in all twelve. Ten of the twelve required only 100 mg. of vitamin P (as calcium eriodictate) daily, but the other two required 150 mg. daily, to bring about the "cure." Brown and Wasson³ have measured the capillary resistance by the minimal amount of suction needed to produce one petechia or more when applied for one minute to the skin of the forearm just below the antecubital fossa. They found the average capillary resistance of 150 rheumatic children to be low, that it was subject to seasonal and climatic variations, and that the decrease in resistance which normally occurs with increasing age does not exist in rheumatic children. They also thought that severe reactions to injections of streptococcus filtrate might be related to low capillary resistance and to weather. They found a slight increase in capillary resistance in the treated over the untreated rheumatic children. They did not experiment with vitamin P therapy. Vacek,⁴ using citrin prepared by two commercial firms, confirmed its influence on capillary permeability, its shortening of blood-clotting time, and its lack of influence on the thrombocyte count and bleeding time.

RHEUMATIC FEVER AND STREPTOCOCCAL ANTIBODIES

After some sixty years of more or less intensive research there are now few infectious diseases of which the cause is entirely unknown. The great exception is rheumatic fever, where viruses, pleuropneumonia-like organisms, and bacteria have all from time to time been incriminated. In considering the aetiology of rheumatic fever, however, it is impossible to get far away from the haemolytic streptococci, although their exact relationship to acute rheumatism has never yet been accurately determined. The latest effort to arrive at some definite conclusion in regard to this relationship has been made by Mote and Duckett-Jones,⁵ who have intensively studied the antibody responses to haemolytic streptococci in patients with acute rheumatic fever.

The characteristics of the sera investigated were their antistreptolytic and antifibrinolytic powers and the amount of precipitins against the C species-specific Group A substance of Lancefield,⁶ the D, E, and K protein fractions of Heidelberger and Kendall,⁷ and the P nucleoprotein fraction of Lancefield.⁸ Before sera from rheumatic fever were studied investigations were made on sera from apparently normal persons. It was found that both the incidence and titre of streptococcal antibodies varied in the general population with age, general health, general economic environment, and the season of the year. Thus antibodies were highest in age groups 5 to 15 years, suggesting that numerous subclinical haemolytic streptococcal infections occur in this decade. As might have been expected, the occurrence of the several antibodies decreased as the economic level and the general standard of living

¹ *J. Pediatr.*, 1941, 18, 328.

² *Schweiz. med. Wochs.*, 1941, 71, 155.

³ *J. Immunol.*, 1941, 41, 25, 61, 87.

⁴ *J. exp. Med.*, 1928, 47, 431.

⁵ *Ibid.*, 1931, 54, 515.

⁶ *Ibid.*, 1925, 42, 377.

¹ *J. Amer. med. Ass.*, 1923, 80, 303.

² *J. Pediatr.*, 1941, 18, 321.

increased, while the evidence showed that in the winter months there was a significant increase in streptococcal antibodies. It is thus not easy to arrive at any absolute value for the "normal" incidence of haemolytic streptococcal antibodies in a population. The normal level of antistreptolysin "O" in the control group, however, was concluded to be 150 combining units or less per c.c.m. of serum, during the period of investigation. The antibody response was then studied in groups of patients with scarlet fever and with acute streptococcal pharyngitis; in both groups about 90% developed antibodies, frequently in high concentration, to one or more of the haemolytic streptococcal products tested. These antibodies could be detected in the blood for considerable periods of time. Analyses of similarly collected data from eighty-seven primary attacks of rheumatic fever revealed an equally high incidence of haemolytic streptococcal antibodies, whether or not there was a history of a preceding or an associated respiratory infection. Comparable data from 179 cases of recurrent rheumatic fever showed that in 73% antibodies to one or more of the streptococcal antigens appeared in the blood, often in high concentration, during the course of the illness. These antibodies persisted, sometimes for months after the onset of the infection, but finally returned to normal levels, even in the face of continuously active, sometimes even fatal, rheumatic infections. Mild or even severe recurrent rheumatic fever may, it seems, occur in rheumatic subjects without detectable clinical or serological evidence of a preceding or associated haemolytic streptococcal infection. On the other hand—and this is a subject which requires much further study—acute haemolytic infections may occur in known rheumatic subjects apart from recurrent rheumatic attacks. Both the rheumatic and the non-rheumatic subject, so far as antibody response is concerned, respond alike to infection with acute haemolytic streptococci.

The data brought forward by Mote and Duckett-Jones undoubtedly show that haemolytic streptococcal infection is often associated with acute rheumatic fever, but the essential mechanism responsible for producing rheumatic fever still remains unexplained.

BIOTIN, CO-ENZYME R, AND VITAMIN H

Biotin is an organic substance necessary for the growth of yeast. Co-enzyme R is necessary for the respiration of the root-nodule bacteria *Rhizobium* sp. Vitamin H is the substance which counteracts the ill effects of egg-white as a dietary constituent. It is almost certain that these three are one and the same substance. The unsuitability of dried egg-white as the sole source of protein in the diet of young rats has long been recognized and ascribed by various workers to the development of some toxic substance or to the destruction during the drying process of some hitherto unrecognized dietary essential.¹ In a series of papers during the last nine years H. T. Parsons and her colleagues^{2,11} have shown that the toxic substance of dried egg-white, whatever it may be, is present also in the fresh substance; hence it is not generated during the drying

process. They have also shown that the toxic effect can be neutralized by giving 20% of beef liver or various other foodstuffs. The curative substance in beef liver is partially destroyed by autoclaving at pH 8.0 for five hours, and it is entirely destroyed by ashing. Moreover, the ill effect of eating egg-white was not due to its antitryptic property. Kögl and his colleagues^{12,13} have made crystalline preparations of biotin from egg-yolk, and have found that it is contained in watery extracts of various organs and tissues of dogs, cows, a male calf, and a laying hen. The liver, spleen, kidney, and adrenals were the best sources of the factor. Williams and his colleagues^{14,15} have used the influence of biotin on the growth of yeast as the criterion for a quantitative determination of biotin. They used a thermocouple galvanometer for measuring the concentration of yeast cells in the medium at seeding and after growing with different additions of biotin. The medium found to be most suitable for the yeast contained sucrose, various salts, L-aspartic acid, inositol, β -alanine, thiamin (aneurin), and vitamin B₆. The method proved to be quantitative within a concentration range from 0.00002 to about 0.001 μ g. (microgramme) of biotin. The following values of the biotin content (μ g. per g.) of foods were determined: cane molasses 2.1 and 1.7, beet molasses 0.06 and 0.7, liquid whey 0.12, whey solids 2.5, fresh egg-white 0.05, fresh egg-yolk 0.37, autolysed egg-yolk 0.35, moist autolysed yeast 0.13, fresh potato 0.01, autolysed liver solids 3.89. Biotin is some fraction of "bios." Many of its chemical properties have been determined. It is destroyed by nitrous acid at a rate which indicates that it may be an α -amino acid. György and his colleagues¹⁶ have found that both biotin and vitamin H are inactivated by benzoylation and acetylation and by the action of nitric acid. They have lately¹⁷ identified a sample of crystalline biotin methyl ester prepared by themselves from a liver concentrate with one prepared by Kögl from egg-yolk, and by various methods of comparison have found them to have equal potencies with regard to vitamin H, biotin, and co-enzyme R activities. They therefore decided that the three factors are the same substance. Williams and his co-workers¹⁸ have recently measured the biotin intake and excretion of chicks fed on egg-white injury diets and the biotin content of their tissues. They have concluded that biotin is useful to the chick and that egg-white is harmful in that it destroys the biotin normally present in the chick's food. Only when biotin is given in amounts more than sufficient to satisfy the egg-white will there be any available for the chick. More recently¹⁹ the Cleveland workers (György *et al.*) and the Texas workers (Williams *et al.*) have collaboratively shown that the "toxic" substance in egg-white has albumin-like properties, and they have named it "avidalbumin." They concluded that it combines with the biotin, not destroying it, and that the compound so formed is excreted with the faeces. It has not yet been shown that biotin, vitamin H, or co-enzyme R is necessary for the human being.

On October 1 Sir Alexander Macgregor of Glasgow took office as President of the Society of Medical Officers of Health for the session 1941-2. He succeeds Dr. F. T. H. Wood of Bootle, who was elected for a second term of office last year.

¹ *Science*, 1933, 78, 217.

² *J. biol. Chem.*, 1931, 80, 351.

³ *Ibid.*, 1931, 82, Proc. lxiv.

⁴ *Amer. J. Physiol.*, 1933, 104, 150.

⁵ *J. biol. Chem.*, 1933, 100, 645.

⁶ *Ibid.*, 1934, 105, Proc. l.

⁷ *Ibid.*, 1934, 105, Proc. lxvii.

⁸ *J. Nutrit.*, 1934, 8, 57.

⁹ *Biochem. J.*, 1934, 28, 2109.

¹⁰ *J. Home Econ.*, 1934, 26, 523.

¹¹ *J. biol. Chem.*, 1936, 116, 685.

¹² *Hoppe Seylers Z.*, 1936, 242, 43.

¹³ *Ibid.*, 1936, 243, 189.

¹⁴ *J. Amer. chem. Soc.*, 1940, 62, 175.

¹⁵ *J. biol. Chem.*, 1939, 128, Proc. xxiii.

¹⁶ *Science*, 1940, 91, 243.

¹⁷ *Ibid.*, 1940, 92, 609.

¹⁸ *Ibid.*, 1940, 92, 224.

¹⁹ *Ibid.*, 1941, 93, 477.

THE ORGANIZATION OF AN EAR, NOSE, AND THROAT DEPARTMENT IN THE EMERGENCY MEDICAL SERVICE

BY

V. E. NEGUS, M.S., F.R.C.S.

Of all patients treated in the Emergency Medical Service a considerable proportion suffer from complaints affecting the ear, nose, and throat. A recent census taken at Horton Emergency Hospital showed that there were 114 patients in the wards set aside for the special department out of a total population of 1,500, the proportion thus being roughly one-thirteenth. Among the patients were 14 suffering from acute and chronic otitis media, 18 recovering from cortical and radical mastoid operations, and 2 on whom labyrinthotomy had been performed; 12 were in hospital for operations to correct deviation of the nasal septum, 21 were suffering from various forms of sinusitis, and 2 from carcinoma of the maxillary sinus; and 23 had been admitted for tonsillectomy. A variety of complaints were included in the remainder of the 114. This hospital has large orthopaedic and thoracic units; in hospitals with a smaller concentration of selected cases the proportion in the ear, nose, and throat wards would in all probability be higher.

The patients are divided into four categories, the relative numbers varying from time to time. There are civilian sick and civilian air-raid casualties, and Service sick and Service casualties. Among the Service cases are included Navy, Army, and Air Force personnel of both sexes, together with members of Allied Forces.

Segregation of Patients and Allocation of Special Wards

The specialized nature of the work and the inability to carry it out satisfactorily with patients scattered throughout the hospital, were in the early days of the war reasons for urging the necessity for segregation in wards set aside for the purpose. This request was met generously and with all possible collaboration by the medical superintendent of Horton Emergency Hospital, with the approval of the group officer. Similar assistance has been given by the superintendents of other hospitals in the sector, where special departments have been developed.

At Horton there are now two civilian wards, male and female, and two wards for Service cases, reserved for the head and neck unit; in them are housed all cases of disease affecting the ear, nose, and throat, together with patients suffering from injuries of these regions and of other parts of the head, including the eye. Two hundred beds are available out of a total accommodation of 2,000. The proportion of sick to wounded naturally varies from time to time. There are, however, at all times a large number of Service cases suffering from disease of the regions under question; they are admitted from a wide area.

Distribution of Special Clinics

In addition to Horton, there are in the sector other centres for ear, nose, and throat cases—at King's College and Dulwich Hospitals in London, at Sutton Emergency Hospital, the Blind School Hospital, Leatherhead, Cuckfield Emergency Hospital, and Horsham Base Hospital. Out-patients are seen at all these centres, and those requiring admission are taken into the appropriate hospital. Although the greater proportion of in-patients are treated at Horton, there is yet a considerable number at the other hospitals. It has been desired to develop efficient departments at each, with provision for medical and operative treatment, both for purposes of decentralization and to provide facilities for the immediate treatment of urgent cases of disease or injury. Certain types of case are transferred from the other hospitals to the main centre at Horton.

Medical Staff

A staff of part-time surgeons and whole-time assistants with special knowledge of the ear, nose, and throat has been allotted by the group officer, on whose co-operation the efficient treat-

ment of cases depends. The senior surgeon is director of the unit at Horton and is in general charge of the work of the sector; he is also consultant to the department at Sutton and visits other subsidiary hospitals as occasion arises. There is a second surgeon in charge of two wards at Horton, acting also as consultant to the E.M.S. hospitals at Leatherhead and Horsham. A third surgeon, whose time is occupied mainly with administrative work, deals with certain cases at Horton and other hospitals, including Haywards Heath and Dulwich. Another consultant has charge of work at King's College Hospital and at Cuckfield. Whole-time registrars, each with considerable specialized experience, carry out much of the routine work under the direction of the consultants. Two are at Horton, one at Sutton, and one at Leatherhead. Of resident medical officers, two are attached exclusively to the department at Horton, while at the other hospitals work is carried out by residents, with additional duties. The variety and the amount of the material afford excellent opportunities for the higher education of resident medical officers and registrars.

Desirability of Special Treatment

It is thus seen that an organization is provided in the form of out-patient clinics and in-patient wards, with a staff adequate to deal with the large number of patients requiring attention. From the civilian economic view and also from the military aspect, this organization appears to be desirable. The effects of diseases and injuries of the regions under question are in the main temporarily disabling but amenable to treatment; the great majority of patients are returned to full efficiency if given appropriate care. The civilian is enabled to return to his work in full health and the soldier to his unit as a fit man, except in a very small proportion of cases. From the utilitarian point of view, both civilian and military, a patient with an infection or an injury involving, for example, a nasal air sinus is deserving of greater consideration than an air-raid or military casualty with fractured skull and laceration of the brain. The former should be cured, while the latter will in all probability be invalidated out of his Service or civilian occupation.

Nursing

The nursing has been maintained at a high level of efficiency in spite of shortage of staff and other difficulties; and surgical results have been up to pre-war standards. The segregation of ear, nose, and throat and other head cases, under the charge of sisters accustomed to the work, has been of great benefit in every respect. The design of most of the wards at Horton is excellent for the purposes required. The subdivision of wards into sections and the provision of numerous small side-rooms allow separation of seriously ill from convalescent patients, while potentially infectious cases are readily isolated. Large galleries also are available to patients able to get out of bed, for meals and recreation.

Injuries and Diseases

The term "head injury" is often used to indicate cranio-cerebral conditions. If, however, a record is kept of all injuries to the head and neck admitted in unselected convoys it will be found that a large proportion concern parts of the head other than the cranium. Thus, of 577 head and neck cases out of a total of 3,917 casualties admitted to Horton between September 2, 1939, and May 1, 1941, 283 had injuries of the face, eye, nose, ear, neck, jaws, pharynx, larynx, and trachea. Injuries of the eye were most numerous, there being 126 cases, the face coming next with 87, and after that the ear with 74 cases. There were 14 wounds of the neck and 15 of the nose and sinuses, and 12 fractures of the mandible. The pharynx and larynx were each involved in one instance only, and the trachea in 3 cases. Wounds of all these regions present considerable difficulties and require the attention of specialists conversant with the surgical technique; the team must include not only ear, nose, and throat surgeons, but also ophthalmic and dental surgeons. Many patients have, in addition, injuries of other parts of the body, which must be looked after by general or orthopaedic surgeons; this applied to 82 out of the 577 cases under review.

Cranio-cerebral injuries are themselves often complicated by wounds of other regions of the head and neck, or of other parts of the body. It has been found desirable, therefore, to accom-

moderate all cases of head and neck injury in the wards specially set aside, and subsequently to transfer elsewhere those requiring specialized treatment.

At the centres other than Horton the immediate care of the injuries referred to has been carried out by the special registrar, if available, or by other members of the staff, in consultation with the visiting ear, nose, and throat surgeon.

Instructions for the systematic treatment of ear and nose casualties have been circulated, with special reference to the prevention of inflammatory complications. Large mixed convoys invariably contain cases of injury or disease of these special regions, either alone or associated with other complaints. It is essential to have available an organization for their immediate and efficient care.

Of injuries to the ear, rupture of the tympanic membrane is the most common, and is of considerable importance. Precise notes were kept of 55 such cases at Horton; a considerable number occurred also at other hospitals in the sector. Antiseptic precautions, carried out early, combined with lack of interference with the deeper meninges, are the methods designed to prevent infection in the middle ear. Of the considerable number of such cases seen at Horton and other sector hospitals three have required subsequent cortical mastoid operation.

Attempts have been made to avoid secondary infection in surgical cases by the routine wearing of masks by all members of the staff when treating patients or carrying out dressings. Masks are worn during all attendances on such infectious cases as those with sore throats; nurses and others with colds wear masks whenever in contact with patients.

Diseases.—The emergency hospitals care not only for air-raided casualties and a proportion of the civilian sick, but also for large numbers of Service patients suffering from diseases of the ear, nose, and throat. A considerable number of Service out-patients have also been examined and treated at each of the five clinics. It is thus apparent that the organization set up for the treatment of casualties is turned to good use for the care of the sick of the Services, the great majority of whom are returned fit to their units.

Records of Work.—Tabulation of all cases admitted provides a ready means of reviewing the work done. Figures can rapidly be compiled to show the numbers admitted suffering from the various types of disease or from the results of injury. The indexing carried out by the registrars has proved of considerable value in compiling this and other reports.

Operations

At the beginning of the war the necessity for a specially equipped operating theatre, in charge of a sister with previous experience of this type of work, was impressed on the authorities concerned. Such a theatre was provided at Horton, and in it not only all the ear, nose, and throat work has been carried out, but also operations for various types of head injury. At the other sector hospitals the amount of specialized work has so far been insufficient to justify the setting aside of a separate theatre, even if such were available; the requirements of the work, differing from that of other branches of surgery, are, however, only to be fully satisfied in a specially designed theatre. The wisdom, at the beginning of the war, of admitting civilian cases of disease for operation in the emergency hospitals outside London was demonstrated by the development of an efficient organization during the months preceding the admission of casualties.

The large numbers of operations performed for disease have been of great benefit in perfecting arrangements for dealing with casualties. At Horton two operating tables can be used in times of stress, the theatre staff being sufficient to deal with many consecutive cases, both by day and by night. By co-operation with the hospital authorities various alterations have been carried out in fitting up the theatre, thereby raising it to the standard of efficiency required before the war.

The number of operations for injury, excluding cranio-cerebral and eye cases, performed between September 2, 1939, and May 1, 1941, is somewhat meagre. A certain number of patients had been operated on before admission, while many others, including those with traumatic rupture of the ear, luckily were saved from operation by careful treatment. A total of 66 patients required operation, including 15 on the ear, 13 on the nose and sinuses, and 5 on the neck.

Of diseases the variety is considerable, and is equal to pre-war standards. It says much for the efficiency of the theatre staff that operations such as labyrinthotomy, laryngectomy, and laryngofissure for malignant disease or stenosis have been carried out with satisfactory results. Of cortical mastoid operations, 12 were performed on civilian and 15 on Service cases, while 26 radical operations were required for civilian and 31 for Service patients. A total of 124 submucous resections of the nasal septum are included in the list, and 179 operations on the sinuses for inflammatory diseases and 15 for neoplasms. Tonsillectomy was necessary in 304 cases. Other operations brought the total performed on the ear, nose, and throat to 920 in the period September 2, 1939, to May 1, 1941.

Equipment

It has been made clear, in the preceding pages, that a large number of sick and injured patients require treatment in the hospitals of the sector and that ample accommodation and a trained staff are available for their care. Unfortunately the equipment which I consider necessary has not been provided. That supplied is insufficient in quantity for the many patients who must be examined, treated, and operated upon in this sector, and is in many instances of a different pattern from that to which my colleagues, my assistants, and I have been habituated. The return of civilians to their war work and of soldiers to their units should not be impeded by lack of equipment. We have had to improvise instruments and use privately owned ones to fill the gap. It is to be hoped that the importance of the ear, nose, and throat department in the Emergency Hospital Service will be recognized and that it will be equipped more satisfactorily in the near future.

TEMPORARY REGISTRATION OF OVERSEA DOCTORS

A new Defence Regulation and a new Order made under it by the Minister of Health and the Secretaries of State acting for Scotland and Northern Ireland extend the classes of doctors who may be registered by the General Medical Council for the period of the war. Under the Regulation formerly in force it was necessary for a doctor to be by law entitled to practise in a territory to which the Regulation was applied by Order, and this precluded a doctor from registration if he had passed the necessary examinations for a diploma but was debarred from practice by racial legislation or otherwise. The new Regulation applies to all territories without limitation, and puts persons who have passed the necessary examination in the same position as if they had obtained the diploma and become entitled to practise.

The combined effect of the new Defence Regulation and the Order is that a doctor who does not possess any United Kingdom qualification may now be registered temporarily if he satisfies the General Medical Council that he fulfils the following conditions: (1) that he is of good character; (2) that he holds a medical diploma (or has passed the examinations for a medical diploma) recognized as sufficient by the General Medical Council; and (3) that he has been selected for employment as a medical officer in an approved hospital, institution, or service, or as an assistant to a doctor on the permanent Register. Special provisions apply to persons selected for medical commissions in the British or Allied Armed Forces. The fact of registration does not affect the obligation of an alien to comply with the provisions of the Aliens Acts and Orders.

Further reference will be made to this new regulation in the *Supplement* next week.

W. N. Sarker and B. P. Tribedi (*Ind. med. Gaz.*, 1941, 76, 257), who record five illustrative cases and emphasize the difficulties of diagnosis between uterine carcinoma and tuberculosis, have collected 3,744 unselected gynaecological biopsy specimens and 430 unselected necropsies in females between 1920 and 1940 for evidence of tuberculous lesions in the genital tract. The biopsy material showed an incidence of genital tuberculosis in 0.69%, while the necropsies showed an incidence of 8.9% in unselected deaths in females, and in 1.1% where death occurred from tuberculosis.

FOUNDATION OF A NUTRITION SOCIETY

Workers engaged on research on nutrition in this country have been feeling the need for a scientific society devoted specifically to their subject. In the past no organization has existed to enable investigators in the many and varied branches of the science—clinical, physiological, agricultural, and sociological—to find a common meeting ground for discussion and the exchange of views. Representative workers in all these fields accordingly decided to form a Nutrition Society. The new venture owed its inception to the following circular letter signed by the heads of some of the better-known centres for research on nutrition in this country.

Just before the outbreak of war a suggestion was made by several people interested in research on nutrition that a Nutrition Society should be formed. Owing to the outbreak of war the idea was abandoned. The question has, however, again been raised, and there are a considerable number of research workers and others in favour of holding meetings to discuss nutritional problems. Such meetings would serve a useful purpose, especially in enabling workers studying different aspects of the same problem in agricultural and medical institutions to meet and help each other with information and constructive criticism.

If there is a sufficient number of workers who wish to hold meetings for discussion of nutritional problems, the best procedure would be to form a society on the lines of the Physiological and the Biochemical Societies, although there would be no question of publishing a journal in the meantime.

In view of the difficulty of travelling it might be convenient to form separate English and Scottish branches, which would meet independently but which might maintain contact during the war by exchanging short notes on the papers and discussions at meetings.

Sir Joseph Barcroft, F.R.S. (Chairman, Food Investigation Board).

Dr. Harriette Chick (Head of Division of Nutrition, Lister Institute).

Prof. J. C. Drummond (Scientific Adviser to Ministry of Food, and Professor of Biochemistry, University College, London).

Dr. John Hammond, F.R.S. (Superintendent of Animal Research Station, Cambridge).

Dr. Leslie J. Harris (Director of Nutritional Laboratory, Cambridge).

Sir Frederick Gowland Hopkins, O.M., F.R.S. (Professor of Biochemistry, Cambridge).

Prof. H. D. Kay (Director of National Institute for Research in Dairying).

Sir Charles J. Martin, F.R.S. (Roebuck House, Cambridge).

Sir Edward Mellanby, F.R.S. (Secretary, Medical Research Council).

Sir J. B. Orr, F.R.S. (Director, Rowett Research Institute).

Prof. R. A. Peters, F.R.S. (Professor of Biochemistry, Oxford).

Subsequently a meeting was held at the Royal Institution attended by representatives from the various institutes, and the following provisional committee was formed: Sir John Orr, chairman; Dr. John Hammond, vice-chairman; Dr. Leslie Harris, honorary secretary; Mr. A. L. Bacharach, honorary treasurer; Dr. Harriette Chick; Dr. E. M. Cruickshank, Cambridge; Dr. H. H. Green, Veterinary Laboratory, Weybridge; Prof. H. P. Himsforth, University College Hospital; Prof. A. St. G. Huggett, St. Mary's Hospital; Dr. Franklin Kidd, Food Investigation Board; Dr. S. K. Koon, National Institute for Research in Dairying; Dr. B. S. Platt, Medical Research Council; Dr. H. M. Sinclair, Department of Biochemistry, Oxford.

It is, of course, not intended that the new society should compete in any way with existing scientific societies: its functions would be complementary to theirs, and would cover a more general and in some ways less specialized field. The main activity of the society at the start would be to hold meetings at various research institutes, at each of which some specific topic could be discussed: several main papers would first be read and would be followed by a general discussion. Arrangements have been made to hold the first conference of this kind at Cambridge on October 18, when the theme will be "The Evaluation of Nutritional Status." Contributions have been promised by Sir Frederick Hopkins (introductory address), Dr. Leslie Harris (Assessment of Level of Nutrition in Man), Dr. B. S. Platt (Clinical Signs of Dietary Deficiency), Dr. C. Crowther (Nutrition of Farm Animals). Among those who have promised to take part in the discussion are Dr. H. M. Sinclair, Dr. John Yudkin, Dr. G. W. Robertson, Dr. R. H. Dobbs, Dr. W. C. W. Nixon, Dr. H. H. Green, Dr. John Hammond.

Further particulars of the society can be obtained from the Honorary Secretary, Dunn Nutritional Laboratory, Field Laboratories, Milton Road, Cambridge.

Local News

ENGLAND AND WALES

Bristol Hospitals Commission

The Nuffield Provincial Hospitals Trust, having accepted an invitation from the Bristol and District Divisional Hospitals Council to make a survey of municipal and voluntary hospitals and ancillary services in Bristol and district, has appointed the following survey committee, to be known as the Bristol Hospitals Commission: Sir Farquhar Buzzard, Bt., Regius Professor of Medicine in the University of Oxford, and chairman, Medical Advisory Council of the Trust; Alderman Sir George Martin, vice-chairman, Provincial Hospitals Regionalization Council of the Trust; Prof. G. E. Gask, F.R.C.S., president, Medical Society of London, member of the Medical Research Council; Dr. M. T. Morgan, medical officer of health, Port of London Authority; Dr. John Buchan, medical officer of health, City of Bradford; Dr. J. P. Candler, late medical officer, Ministry of Health; Dr. A. Q. Wells, medical secretary, Medical Advisory Council of the Trust; Alderman W. Hyde, secretary, Nuffield Provincial Hospitals Trust; and Mr. S. Clayton Fryers, house governor and secretary, General Infirmary at Leeds. The terms of reference of the Commission are: "To take into consideration the present position of the voluntary and municipal hospitals and ancillary hospital and teaching services operating within the area of the Bristol and District Divisional Hospitals Council; inquire whether it is desirable that any steps be taken to promote further co-ordination or extension; consider how the existing and future services may best be financed and administered; and frame such recommendations as may be thought expedient and acceptable without prejudice to developments which subsequent inquiry may find to be desirable in other divisions in the projected West of England Region." The Commission has visited Bristol this week, with headquarters at the Council House. Preliminary work was undertaken by the Trust's officers. Each hospital has been invited to reply to a questionnaire, and the Lord Mayor has sent a letter to all contributory schemes in Bristol inviting them: (1) To submit observations on the present hospital accommodation and to make recommendations in regard to the future adequate maintenance and expansion of the hospitals and their progressive developments adequately to cater for the needs of the community. (2) To explain how, in their opinion, their organization can best help to solve the present financial problem of the Bristol voluntary hospitals, having regard to the principles on which the contributory scheme movement operates in the large cities, and how they can best help to implement the recommendations they have made under (1), assuming such recommendations to be acceptable to the hospitals.

dary schools have to the tradition and prestige of the oldest of our public schools. Similarly, the religious spirit and charity so emotionally described in Dr. Geoffrey Evans's letter are hard to reconcile with the economic conditions which we all know to-day compel medical and nursing and all other hospital staff to think, and to think hard and realistically, in terms of salaries and wages, and to press their demands with no uncertain meaning upon their employers, whether national, municipal, or voluntary. Likewise it is surely inaccurate to say that the voluntary system depends to an extent upon charity, when "charity" in the proper sense of that word in actual practice means that every hospital chairman and secretary is racking his brains for some new method of raising money to supply the essential needs for the proper care of their patients. Bridge parties, matinees, students' clownish processions, nurses in uniform with collecting boxes at street corners, disfiguring advertisements on the walls of hospitals setting forth the virtues of some proprietary food or drink, and so forth, do not seem to me to breathe the real spirit of charity.

Personal service, whether it be exemplified by the governors or the nursing and medical staff, without immediate reward, is not a virtue peculiar to the governing boards of voluntary hospitals, and is certainly untrue of both the nursing and medical staff, inasmuch as the nursing staff are paid like any other staff and the medical staff have in their capacity as members of the hospital staff their biggest asset in creating a remunerative private practice. The term "honorary" staff is to-day a misleading description, but useful as one of the items included in appeals for subscriptions, donations, and legacies. Independence and self-reliance, properly practised, are admirable virtues, but who is there to-day who is prepared to deny that the independence of voluntary hospitals, as hitherto understood, has been carried to such an extreme that it has almost precipitated their downfall? Indeed, is it not true to say that this very independence has almost succeeded in destroying democracy? Nor do I agree with the wholesale condemnation of the medical superintendents of municipal hospitals. If I were challenged to do so I could without the least difficulty recite the names of many medical superintendents who during the last forty years have done magnificent work in their hospitals and whose example of high devotion to duty is among the treasured memories of many scores of those younger members of our profession whose good fortune and privilege it was to work with them. The simple truth is, of course, that just as there are voluntary hospitals and voluntary hospitals, so there are medical superintendents and medical superintendents; and therefore generalized "boosting" of the voluntary hospitals as if every one of them possessed even those features which we all agree are "their best features" is just as silly as general condemnation of all medical superintendents and the attribution to them of those bad features which we all wish to remove from the municipal hospitals. In this connexion here are very brief extracts from a memorandum recently written by a distinguished member of our profession which should give Dr. Geoffrey Evans and his friends pause to think realistically and not emotionally.

"The weakness of the present system of staffing voluntary hospitals lies in the fact that the services rendered by the medical man to the hospital are not his primary concern. They are essentially secondary, a means to an end, the end being the development of an adequately remunerative private practice. . . . The voluntary hospital system at present suffers in so far as its service is subordinated, consciously or unconsciously, to the influence of private practice."

These words, and many more like them, severely condemning present conditions in our voluntary hospitals were recently written by an eminent voluntary hospital man and endorsed by a number of equally eminent members of the staffs of our voluntary hospitals throughout the country. What about tradition, the religious spirit, charity, personal service, etc., after all that? And here I would remind your readers that there are a large number of lay men and women in this country who devote themselves whole-heartedly, and often at great personal sacrifice, to the direction and management of the heavy duties and responsibilities of local government, including the public health and hospital services, and also that if Dr. Geoffrey Evans and his friends really wish to see the best example in this country of the "Florence Nightingale" nursing spirit they should go and spend a week or two in one of our large municipal hospitals for the care of the chronic sick.

Dr. Malcolm Donaldson is right when he says he hopes "to see very drastic reforms in the near future in the voluntary hospitals." So do I when I think of the grossly overcrowded out-patient departments, with patients waiting for hours to be seen and more often than not ultimately examined superficially by a junior and quite inexperienced member of the medical staff and sent away with a bottle of medicine or a lotion or bottle of lozenges, or again when I think of the pride with which one is told that there are some hundreds of patients on the waiting list for admission, many of whom will have no chance of a bed for weeks or even months, and so forth. It would be easy to extend the catalogue of the worst features of the voluntary hospitals, but that is not the question to which one wished for an answer, any more than one asked for abuse of the medical superintendent. It appears to me that the nearest approach so far to an intelligent reply to my questions is contained in the admirable letter of Mr. Lang Stevenson (September 27, p. 456). The third paragraph of his letter gives a brief but excellent exposition of the "best features of the voluntary hospital system," but I think it is probably true to say that they are only to be found in most of our teaching hospitals and in a very limited number of non-teaching hospitals. I do not suppose that Mr. Lang Stevenson means to suggest that his description is characteristic of the voluntary hospital system generally, but only of the best of the voluntary hospitals. Nevertheless, they are the features we want to preserve. I find myself wholly in agreement with the eight suggestions he makes for removing some of the defects of the municipal hospital system, and I am happy to think that practically all of them were actually introduced into the L.C.C. hospital service between 1930 and 1939, as well as quite a number of other county hospital services within my personal knowledge. It would scarcely be possible to point to a hospital, voluntary or municipal, in this country which more nearly approximates to the ideals of the best type of hospital than the British Postgraduate Hospital and Medical School at Hammersmith. Before war broke out that hospital was characterized by the unique combination of a medical staff devoted entirely to clinical work and research and an L.C.C. medical staff which took over the entire control of the administrative work of the hospital.

Finally, may I add that in this matter of the best features of the voluntary hospital system there is too great a tendency on the part of voluntary hospital supporters to think of voluntary hospitals in terms of the best of our teaching hospitals, and to assume that what is true of our teaching hospitals is equally true of all of our voluntary hospitals. Similarly there is still a tendency among voluntary hospital supporters to think of the municipal hospitals of to-day in terms of the old Poor Law infirmaries of pre-1930. This is a profound mistake. Much has happened in the matter of improvement in the municipal hospital service since the Local Government Act, 1929, came into operation on April 1, 1930, and much more still would have happened in the next ten years had it not been for the outbreak of war. For the moment progress is arrested, but in due course progress will be resumed. The municipal hospital service is only a few years old; it has gone through a very difficult period of transition in 1930-9; it was well beyond its "teething troubles" before 1939. The voluntary hospital system has been in operation for centuries and has been fortunate in every respect in the support which it has attracted from all classes of society and all ranks of the medical profession. Hence one's desire to obtain a clear picture of what is meant by its best features, how far it would be practicable to introduce them into the new municipal hospital service which we all know has come to stay and which may indeed in the near future become the only hospital service. From that point of view the correspondence published up to now in the *Journal* has been helpful, but not, I confess, quite so helpful as one had fondly hoped.—I am, etc.,

FREDERICK MENZIES.

Criccieth, Sept. 30.

Medical Education

SIR,—Those who have not had experience of teaching physiology will agree with your recent leader (September 6, p. 340) that clinical cases would be of benefit in teaching, say, the nervous system, but those who have tried this have been grievously disappointed in its results. Many years ago Halliburton, in conjunction with Mott, tried this and found it a failure, but finding

this difficult to understand I, too, have tried it, with similar results.

The difficulty is that the non-clinical student has not yet become accustomed to the sick man and takes such a great interest in his clothes and in the human side of the cases generally that he fails to pay attention to the reactions of the nervous system. There is no doubt that applied physiology should be taught, but it should be when the students have become accustomed to clinical examinations and preferably have had six months' medicine and surgery. Then, as has been my experience at St. George's Hospital, students become almost embarrassingly eager to learn the exact scientific explanation of signs and symptoms.—I am, etc.,

London, Sept. 27.

R. J. S. McDOWALL, M.D.

SIR.—I was greatly interested in your academic issue of September 6 and in the correspondence evoked by its contents so far. We are living in an age of change and transition, and in this may safely be included medical education. The articles by the teacher and the taught on the subject are very fraught with possibilities, and your leading article contains much good meat. Representing neither teacher nor taught, but working in the non-academic medical realm, I feel some things need to be said.

In teaching medicine and surgery, and their ancillary subjects, I feel it would be far better if those members of the staff who had a flair for teaching did the work. Clearly, in a hospital, some physicians and surgeons are obviously pure clinicians, whereas others are that and teachers as well. Lectures and ward rounds and out-patient sessions should be left to those who know how to teach and, as we say colloquially, "know how to put it across." In commerce good salesmen study window-dressing, so in medicine academic window-dressing is urgently needed. A man may be a specialist, for example, on cardiac disorders and yet may be a very poor exponent of his knowledge on that subject. The art of lecturing needs as skillful preparation as does, for example, the art of surgery. Lectures have fallen into disrepute, and deservedly so, because some lecturers do not present their material in an attractive and palatable form and usually have a very small background of classical training. The same principle holds good for writers of textbooks.

The curriculum, as constituted, is for the most part satisfactory, but needs to be more practical in some places. The main subjects of medicine, surgery, and pathology are well taught, but some of the special subjects need better arrangement—for example, diseases of the eye, ear, nose, and throat. Queuing up to see an optic disk or a tympanic membrane is unattractive. Gynaecology could be better dovetailed in with surgery, and obstetrics left to stand by itself. In view of its vital importance more time should be devoted to obstetrics, a subject combining medicine, pathology, and surgery. Another vital subject is anaesthetics, which is important in all medical spheres: one month's clerking and some six lectures are not good at enough. Public health problems deserve more stress than at present in maintaining the national health and in prophylaxis against infectious diseases and other grave scourges.

Psychological medicine is coming more and more into its own and deserves better treatment. My teacher, E. B. Strauss, teaches that "psychiatry is the other half of medicine itself." Organic disease is so often founded on the bedrock of mental stigmata, and few doctors leave hospitals with an adequate psychiatric background and recognize patients as human beings rather than cases. More attention should be given to dietetics and to applied pharmacology, the basis of all true rational therapeutics.—I am, etc.,

Norwich, Sept. 24.

J. B. GURNEY SMITH.

Carriers of Tuberculosis

SIR.—We were very interested in the article on carriers of tuberculosis by Dr. James Maxwell (May 3, p. 665). It is interesting to note that Pendrill Varrier-Jones, in a lecture delivered in 1919 to the Royal Institute of Public Health, entitled "The Future of the Tuberculosis Problem," stated:

"Is it a fact, for example, that just as there are carriers of the germ diphtheria so there are carriers of the tubercle bacillus, who go through life without any symptoms which might at any time draw attention, and yet are the means of handing on the disease to several, nay many, persons? I might illustrate the point by a con-

crete example. A Cambridge undergraduate, a fine athletic man, developed what was diagnosed as an attack of influenza. Its course was prolonged and there was cough and expectoration. The sputum was examined repeatedly with negative results. The patient recovered completely. Some months afterwards he suddenly coughed up a mass of sputum, and being of a curious turn of mind brought it to the pathological laboratory with a request that it should be examined. Under the microscope the specimen was almost a pure culture of tubercle bacilli, so numerous were the rod-shaped organisms. The patient was apparently in the best of health. It may be argued that such a case would be very difficult to discern, very difficult to isolate, and it may well be that, among the well-to-do, those who live under the best conditions, the disease is spread by such an individual as I have just discovered."

The late Sir Pendrill Varrier-Jones was always insistent on the fact that tuberculosis carriers were a source of great danger to the public health, and was, we think, the first individual to draw our attention to the presence of carriers of this disease.—We are, etc.,

Clinical Department,
King George V Hospital
Durban, Aug. 19.

B. A. DORMER.
J. FRIEDLANDER.
F. J. WILES.

Tuberculosis in Glasgow

SIR.—The paper by Dr. Stuart Laidlaw and Dr. Duncan Macfarlane on the recent increase in the incidence of and mortality from tuberculosis in Glasgow (September 27, p. 436) raises points of special interest at the present time. They attach chief importance to overwork, strain, and curtailed rest as factors responsible for the increase in the notifications and deaths which they record.

The conditions which predispose the human body to active invasion by tubercle bacilli are varied, and it is not always possible to attribute to any particular factor its true position of relative importance. Drs. Laidlaw and Duncan are no doubt correct in concluding that strain is one of the principal aetiological factors, more especially if we accept the definition of strain as a prolonged over-call on physical, mental, and nervous energy. One of the effects of war on the civil population which was observed during the years 1914-18 was loss in weight irrespective of whether the individual was doing heavy manual work or not. Such loss in weight is due to one of two causes, or to both—namely, diminished intake of fats and proteins and increased metabolism arising from physical, mental, or nervous strain, and when it affects members of the young adult age group it is usually associated with impaired nutrition and diminished resistance.

The relationship between strain and nutrition should receive special attention at the present time. Apart from specific protection, resistance to tuberculosis is governed by the standard of nutrition and the degree of local resistance. We are liable to view the state of nutrition as depending exclusively on the amount and character of the food taken, but the standard of nutrition may be seriously impaired by strain and overcrowding. Emerson (*Nutrition and Growth of Children*, 1922) has drawn attention to the importance of over-fatigue as a cause of malnutrition in children and, consequently, as a factor in the incidence of tuberculosis. In the report on tuberculosis in Wales (*Anti-tuberculosis Services in Wales and Monmouthshire*, Report of Ministry of Health Committee, 1939) reference is made to the possible influence of stress or strain in increasing the injurious results of dietary deficiency, or in causing them to appear in persons who previously had shown no evidence of such deficiency. In a recent publication (*Tuberculosis and National Health*, 1939) I have stated that "war, especially when prolonged, leads to increase in the incidence of tuberculosis. Resistance is impaired by strain, fatigue, trauma, and interference with the normal supply of food, while the risk of infection is increased by overcrowding and the mass movements of population."

One point of significance to which Drs. Laidlaw and Macfarlane draw attention in their paper is the influence of curtailed rest and ill-spent leisure in promoting strain. One hesitates to suggest any curtailment of reasonable amusement and recreation for young people doing exacting manual work, but it is obvious that late hours under conditions of overcrowding and with inadequate ventilation due to lighting restrictions cannot but induce added strain and lead to impaired nutrition. Rest and sleep are essential for the young

adult to counteract the effect of physical, mental, and nervous strain.

The Government has wisely taken action to make a fairly balanced diet available and to provide additional fat-forming foods for certain groups of the population. The greater the amount of strain to which any section of the population is exposed the greater the need for an adequate intake of balanced articles of food. The Government has recently taken further steps in this direction by increasing the quantity and improving the variety of food for those undertaking heavy manual work. It would appear desirable, however, that some guidance should be given, especially to those in the young adult female age group who are doing work involving much strain, as to the need for rest and sleep, and as to the character of the recreation which is least likely to be injurious to health.—I am, etc.,

Helensburgh, Oct. 2.

H. HYSLOP THOMSON.

Rehabilitation of Injured Air Crews

SIR,—I read with considerable interest Flight Lieutenant R. N. Houlding's article on the rehabilitation of injured air crews (September 27, p. 429), and while I congratulate him on the work that is being done, I do feel that he is missing quite a lot by not utilizing occupational therapy to a much greater extent. To quote from the article: "More improvement is made in the early stages of treatment by encouraging the patient to concentrate on overcoming his disability by working away at it all day long. In the later stages the patient's attention is diverted from his injured part by participation in competitive games."

I think here the author acknowledges that the patient's mind must be diverted from the injured part, and I am sure that the remedial measures adopted in the article do not do that. Even in the competitive games the patient's mind is still fixed on how much the injured limb or damaged joint will stand. The same is true of physiotherapy: the patient's whole attention is fixed on the injured part, whereas in occupational therapy his mind is guided away from his injuries by means of pleasurable occupations, constructive and absorbing, by no means boring or seemingly unnecessary, but actually with an additional educational value. And yet the very movements so necessary for rehabilitation are brought into repeated play in a way in which the patient is hardly conscious of the fact that they are being so used. In this way the patient reaches the same stage of rehabilitation, but reaches it by more pleasant pathways, and I am sure that by the addition of occupational therapy, properly employed by a qualified occupational therapist, to the means at the writer's disposal, he will be able to do away with the "notice" illustrated and quoted in full in the caption of Fig. 1.—I am, etc.,

ANDREW SHEPHERD.

Medical Superintendent of an E.M.S. Hospital
with a Special Department for Orthopaedic Cases.

Sept. 27.

Treatment of Haemorrhagic Disease of the Newborn

SIR,—The article on the treatment of haemorrhagic disease of the newborn (September 27, p. 433) is interesting, and the subject is one concerning which I should like to hear more.

It has not been my lot to deal with many of these cases, but chance observation led me to the application of a simple method which has been successful in my past five cases. Very early I came to the belief that simple transfusion of blood was by no means a certain method of therapy. Some factor other than mere quantity of fresh blood was required. I turned to the injection of blood into the child's back, and this happening followed. In my first two cases I injected the mother's blood, but with no effect. The father was not available in the first case, but his brother was found and his blood injected. Recovery followed immediately. In the second case the father's blood was also got, with the same pleasant result. Since then I have had three cases, in each of which I have used the father's blood, and each one has recovered. In the two most recent ones, because they were severe, blood running from mouth and rectum, I have also used hemoplastin (P. D. and Co.).

The method I use is to take 2 c.c. of 4% citrate to 20 c.c. of the father's blood and inject this subcutaneously and intramuscularly from the shoulders to the buttocks of the child. I have seen no bad effects either locally or generally from so doing. At the same time I now give 2 c.c. hemoplastin intramuscularly

into the thigh, and repeat this in twelve hours. Likewise I give from one to two drops of cod-liver-oil in each of frequent small feeds.

I quote this method, not to detract from the value of vitamin K treatment, but merely to record a method that appears in a small number of cases to be giving consistent good results. I should very much appreciate the criticism of those with a much wider experience of the treatment of these cases than I possess. I intend to replace hemoplastin by vitamin K, but should I omit the father's blood?—I am, etc.,

Dundee, Sept. '29.

JOHN J. ROBB.

Treatment of Impetigo

SIR,—I have followed with some interest recently the correspondence on the subject of the treatment of impetigo and scabies. During the last year I have been more than usually intimate with these two diseases, for I have been in charge of a reception station receiving such cases from at least a dozen different units spread about over an area of 400 square miles. Owing to the excellent sanitary and ablution arrangements (the building was erected to a pre-war reception station design) the treatment of the scabies patients, and the exceptionally satisfactory results obtained, cannot be fairly compared with what is possible in less well-equipped premises. Therefore I will confine these notes to the treatment of impetigo, for this can be carried out similarly in any normally equipped treatment centre.

The treatment, of course, varies with the widely different states of the patients on admission. It is noteworthy that very little attention has been paid to this polymorphism in the correspondence so far published. Roughly the impetigo cases may be grouped for treatment purposes as follows:

1. *Weeping Type*.—Large sero-rhœic areas, with perhaps a few isolated patches of scales, occurring on the neck, under the chin, on the face and ears (rarely on scalp and forehead), and usually associated with more or less thickening of the underlying corium with "bloated" appearance due to subacute inflammation.
2. *Encrusted Type*.—Dry, scaly, discrete, and itchy; chiefly on face, but, depending on severity, may extend on to the forehead, scalp, ears, and neck.
3. *Pustular*.—The secondarily infected type. Staphylococcal pustulation (Bockhart's impetigo) usually associated with dry encrusted type, and common after inefficient treatment; face, neck, and ears; often very resistant.
4. *Infiltrating Type*.—Corium infected: "ecthyma"; small areas usually on forehead or temporal regions, where burrowing infection has reached and penetrated the corium; often result of failure to receive early treatment, or of inadequate treatment of "encrusted" type.
5. *Fissured Type*.—Streptococcal fissures especially occurring at angles of the mouth ("perlèche") and behind and below auricles.

After much experimenting the principles I adopted were these: (a) First render the area entirely dry. (b) Remove crusts and scales only if this is possible without damaging the underlying epidermis. (c) Keep scalp clean by regular use of spirit soap. (d) Use suitable ointment, which must be massaged well into the affected areas with the finger-tips. (e) Use face-mask at night to prevent spread and contamination of healthy areas from pillow and fingers during sleep.

1. The weeping type needs to be rendered dry. I apply boric acid powder on lint directly to the sero-rhœic areas. If the powder is used freely enough there will be no adherence of the lint. These cases often show profuse subepidermal oedema, and the spread of infection reacts very favourably to M and B 696 2 grammes stat. and 1 gramme t.d.s. thereafter for two days. In about three days the areas are usually dry, the oedema has subsided, and the "creaking leather" feeling which the patient first noticed has disappeared. When hard crusts have formed and there is no further exudation I apply ung. hyd. nit. fort. night and morning, without removing the crusts, for two days. On the next day a compress of lint wrung out of hot 2% boric acid solution is applied to the whole crust-covered area, and repeated at intervals of fifteen minutes for one hour. The crusts dissolve away easily and a clean surface is left. An ointment ("two-in-one") made up of equal parts ung. hyd. nit. fort. and ung. zinci is then applied and well massaged into the skin for about ten minutes with the finger-tips by the patient himself under super-

vision. Thereafter this ointment is applied twice daily, and before the morning application the patient washes his hair, scalp, ears, face, and neck with spirit soap. After the evening application a face-mask is fitted (made of lint to cover the whole affected area). This routine is continued for three or four days, by which time the disease has usually disappeared. Occasionally, in very severe cases, the boric compresses have to be repeated about three days after the first application. The average time to cure these cases is eight to fourteen days.

2. The encrusted type (the average impetigo contagiosa of the textbooks) is already at the dry stage. The hair, scalp, ears, face, and neck are first washed with spirit soap and afterwards the "two-in-one" ointment is applied. This ointment is repeated at night as before. Most of the crusts are soaked off in the first wash with spirit soap, the remainder succumb to the second; on no account are any crusts "picked off." The complete routine is repeated daily and the patient is usually ready for discharge in seven to ten days.

3. In the pustular type the whole pustular area is first treated with the boric compress technique. Thereafter the "two-in-one" ointment is used as before (daily washing with spirit soap before the morning application). Usually one series of the boric compresses (over one hour) is sufficient; occasionally a second is required two or three days later. These cases are often resistant. They take about ten to fourteen days to clear.

4. The infiltrating type yields to hot boric compresses followed by application of tinct. benz. co. twice a day. The scabs must not be picked or scratched off, or the resulting scarring will be very unsightly, and also the infection will be encouraged to penetrate deeper.

5. The fissured type is often very resistant but decidedly less contagious than the other types. The fissures at the angles of the mouth usually yield to application of tinct. benz. co. and small strips of zinc plaster (about 1/4 inch wide and 3/4 inch long) placed vertically at the angles of the mouth to prevent stretching of the healing edges. The same applies to the ears.

It will be noticed that no mention has been made of shaving the head. The head is seldom affected initially, but becomes infected later on if treatment is not vigorous enough or if the patient twists a lot on his pillow at night without a mask over his face. I consider that it should never be necessary to shave the scalp. Occasionally it may become necessary to cut the hair moderately short (little more than the soldier's ordinary crop) for about 1 1/2 inches above the ears and round the back of the neck. I have never yet found it necessary to shave the head. Spread to the scalp is prevented by the frequent washing with spirit soap, and the few isolated patches that may occur can be adequately dealt with, after the crusts have been softened and removed in the usual way, by the "two-in-one" ointment. The very resistant patches can be saturated by painting with 5% silver nitrate solution in meth. I find it a great incentive to conscientious self-treatment by the patient to tell him that if the disease spreads to his scalp it may be necessary to have his hair shaved away; this usually results in redoubled efforts to limit the course of the complaint. I make, too, a particular point of the ritual of washing with spirit soap. It is important that the hair shall be free from scurf and any form of irritation, as this is a potent source of infection through scratching fingers. Also it is important to see that the washing is done in order from the least affected to the most affected parts: not all areas at the same time, as there is then greater risk of carrying infection. Also the spirit soap stimulates keratosis, which hastens the desquamation of diseased cells.

The average time taken to cure all cases is in the neighbourhood of ten to fourteen days. Only very rare cases will take longer, and then only because the treatment is not vigorous enough, not conscientiously enough supervised, or because the patient is purposely retarding his progress (I had one such patient who was found to be removing the ointment as soon as it was applied, dabbed himself freely with a proprietary poison with a prodigious name, and complained that the irritation of his face was so intense that he could not bear to continue treatment; he wasted many valuable days having soothing lotions and ointments in consequence). I have heard of cases taking fifty and sixty days to cure—one champion brand of streptococci sustained a combined attack (so I am led to believe from the notes) for 108 days. Such cases have not come my way. I have heard of cases of the weeping type treated over a long period by x rays at weekly

intervals: their improvement coincided with the intervals; others had been painted to resemble Early Britons by orderlies with artistic and possibly humorous tendencies; a few were part of a generalized sensitization dermatitis and were probably not impetiginous at all.

In conclusion it must be said that it is imperative that the nursing is of a high order. One must be sure that injunctions given to nursing orderlies are carried out to the letter. I was ably and faithfully assisted by a very conscientious team of orderlies, to whose efforts I attribute in very large part the excellent results obtained.—I am, etc.,

SEPT. 28.

JOHN W. W. JAY,
Captain R.A.M.C.

Technique of Relaxation

SIR.—As a psychotherapist, I agree more than heartily with Dr. W. Nunan's objection (September 20, p. 428) to "the airiness of the use, abuse, and ill use of the word 'relaxation' in the literature of psychotherapy." As he points out, telling a patient to relax is a most efficient way of making him self-conscious and tense. Direct suggestion is rarely, if ever, as effective as indirect implicit suggestion—certainly not so in inducing relaxation of mind or body.

A few practical pointers from long experience may help Dr. Nunan and others who want concrete advice. Much of the G.P.'s work is now concerned with "shell-shocked" men discharged from the Services: blitz-shocked and war-harassed and neurotic civilians generally. And relaxation induced by suggestion until it becomes a conditioned habit is about the simplest and most generally useful technique of minor psychotherapy for the G.P. (see Schulz's *Autogene Training*, Jacobsen, etc.).

Never use the word "relax"; suggestion should be implicit, not explicit.

Optimum conditions are: the patient lying on a couch, but an ordinary easy surgery chair is adequate and, better still, an old-fashioned straight-back with high-elbowed arms; a quiet room, and a natural chatty manner and voice on the part of the doctor; eschew the stage hypnotic voice or the monotonous repetitious sing-song that so many beginners affect—such hocus-pocus irritates, antagonizes, and arouses the suspicions of intelligent patients and confuses the dull ones. Walk about the room, do odd jobs, talk about other things, and even turn your back on him until he settles down. He will then not feel that he is being "influenced" or hypnotized, and any possible fear or distrust is disarmed; and don't be unctuous or over-persuasive.

My own technique varies but is often like this. At first let him sprawl in any position he finds comfortable. Then point out that every joint and limb has an optimum position which loosens the muscles most, and this varies with the patient and with his mood. Pick up his joints and adjust them in that position. The "healing hand" is a very real thing: the contact of one sympathetic human being with another has quite a magical effect which modern medicine need neither despise nor abuse. The patient's knees should be slightly everted and bent, or ankles crossed; palms loosely crossed or grasped across the abdomen or flexed by the side (some knowledge of surgical anatomy is helpful); head low on one cushion or none; or a neck pillow *à la Japonaise* and/or such pillows under the knees and small of the back, but this is an ultra-refinement hardly necessary.

Adjust, too, the neck and lumbar spine and facial muscles and tense mouth or eyes. Pick up the limbs and let them flop into the easiest position. Touch eyelids and forehead wrinkles and mouth, and very gently massage them into looseness with the balls of the fingers or thumbs. This causes the patient to look up and tires the ocular muscles into relaxation. I had a rather neutral Japanese kakemono picture on the otherwise blank wall facing him, to which his eyes would naturally stray; the design happened to be a greyish swirl of cloud or smoke which spiralled up to a point, and the rhythm and line of the picture seemed to lead the eyes irresistibly up to that point. Soon the eyes tire and tend to close. Then gently close the eyes and tell him to keep them shut if he feels like it. I have seen tense patients fall asleep, but this is no harm and means that the patient is certainly acquiring the technique.

Often I get him to cross palms on the abdomen, close his eyes and follow passively with his mind the rise and fall of the abdominal respiratory movements, without any attempt to con-

trol the breathing but merely to become increasingly aware of it. Let the emphasis be on expiration and the fall of the palms, because inspiration and breath-holding are normally conditioned and associated with effort, while expiration is associated with relaxation and sleep, and there is, I understand, a larger expiration/inspiration ratio during sleep and rest. Tirala's book on hyperpnea and its relation to breathing is worth reading. So are the empirical yoga axioms and advice: yoga (not the fake stuff so over-written, but its classics as translated by Indians) can teach Western medicine something in this respect. But words are at best a poor means of conveying and teaching muscular and kinaesthetic skills.

The technique is not difficult for doctor or patient as a rule. Many patients pick it up after a few sessions of five to twenty minutes; others can never learn it, even with major psychotherapy. Once acquired, it can be practised at odd moments, before sleeping, on a bus, or (paradoxically enough) while working efficiently and without energy-wasting fuss. A common-sensical sympathetic doctor can, by trial-and-error practice, soon acquire a technique that will actually save his time and temper with neurotic tense patients. He may have the gratification of seeing his patients "snap into" the habit of relaxing, once for all time.

Relaxation is not a radical but a symptomatic technique of psychotherapy. None the less, it may help to break the vicious circle which all neurosis at rock-bottom is; I have found it useful even with psychotics. The only danger I know of is that the patient might with faulty technique become too attached to his—or her—doctor. But then a doctor who cannot keep the patient-doctor relationship under control is surely not a good doctor.—I am, etc.,

Bridge of Earn, Perth, Sept. 29.

HENRY HARRIS, M.D., D.P.M.

Raspberry-leaf Extract

SIR,—When in general practice some years ago I had a patient whose first child was stillborn after a long labour. At 36 years she fell pregnant again. Believing that "raspberry tea" would influence her wish to have a daughter, she began at the third month to drink four pints daily of an infusion of raspberry leaves. The pulse rate rose from 86 to 106, and the blood pressure from 120/80 to 146/80 between the third and fourth months. Heart sounds were "pure"; there was no oedema; and the patient was active and well, although the rapid pulse and raised pressure persisted till term. Fourteen days past her time, after an easy labour of two hours, the baby (a girl) was born "in the caul."

Recent work on raspberry-leaf extract may explain some features of this case.—I am, etc.,

Worcester, Sept. 24.

J. GRAHAM SCOTT, M.D.

SIR,—I am extremely interested in Sir Beckwith Whitehouse's publication (September 13, p. 370), as I have so far been unable to discover in our literature any explanation of the action of raspberry leaf on the uterus.

When I was in general practice in London I heard about it through a patient, and thought it worth while trying in the case of a multipara whose previous confinements had all been very difficult. To my surprise the woman had an easy time. As it seemed a harmless enough prescription, I ordered it subsequently for a routine measure in all confinements, especially in elderly primigravidae, where I became convinced of its usefulness for avoiding perineal tears. Although the labour pains seemed less severe in themselves, the actual time was rather shorter than usual, dilatation more complete, and puerperium uneventful. For a fortnight before the calculated date the mother would take a wineglassful of the tea t.d.s., and a pint of it as soon as the pains set in.

Sir Beckwith makes me feel that I need no longer consider myself a quack for using a remedy at which some of my colleagues used to smile tolerantly when I mentioned it.—I am, etc.,

Redruth, Sept. 25.

W. E. R. MONS.

Thirst at Sea

SIR,—I wish to draw attention to the possibilities of ion exchange adsorbents in relation to the problem of obtaining a potable fluid from sea water.

The abstract (*Chem. and Ind.*, 1941, 60, 378) of a paper by R. J. Myers *et al.* claims that water treated first by a cation exchange adsorbent (phenol-aldehyde resin) and then by an anion exchange adsorbent (amine-aldehyde resin) is freed from all dissolved salts. This method is proposed as a practicable means of removing salts from various types of solution. Sea water, though not specifically mentioned, would apparently come within the scope of the claims made, and the possibility of devising equipment suitable for use in ships' boats might usefully be examined. The materials necessary for regenerating the adsorbents are, presumably strong acids and alkalis. These are inexpensive and can be carried in concentrated form.

I have found that zeolite of a type commonly used in domestic water softeners can be charged with silver ions, and that the product, shaken with 3% sodium chloride solution, yields pure water on filtration. By this device Dr. Hardy's objection (August 23, p. 286) to Sir Leonard Rogers's suggestion (August 9, p. 211) for the use of silver salts is avoided. The method would probably be impracticable at sea for various reasons connected with the high atomic weight of silver and mechanical clogging of the adsorbent by insoluble silver chloride. The idea might, however, be valuable in the laboratory as a means of removing soluble chlorides from some solutions.—I am, etc.,

Glaxo Laboratories, Greenford, Sept. 29.

W. J. HURRAN.

A Plea for Flexibility

SIR,—I write to inform your readers of an incident which illustrates a rather obvious, and surely remediable, discrepancy between the Army and the civilian medical services.

On the evening of a day filled with the usual daily struggle to keep abreast of the rapidly rising surgical waiting list, and during twelve hours of which six emergencies had already been admitted—50% being due to various navigational blunders on the part of military drivers—on this evening, at 9.30 o'clock, a telephone call from a large military hospital twenty miles away informs us that a N.A.A.F.I. worker has developed acute appendicitis. Further conversation on the telephone establishes the fact that, whereas the military hospital has plenty of beds, we have already filled the last bed even in the ophthalmic ward with a surgical case. Yet, in spite of this, and the fact that the patient is an acute surgical emergency, he must travel those twenty miles, to be put into a made-up bed, and to be operated upon by a tired surgeon.

In contrast with the above incident, I would like to point out that, although as a general rule we do not treat military patients at this hospital, in the event of an urgent military case being brought into our emergency ward that case is treated here until he is deemed fit for removal to a military or E.M.S. hospital. Must a little latitude of arrangement such as this in the saving of human life remain impossible in the R.A.M.C.?—I am, etc.,

Sept. 22.

"R.S.O."

RADIOLOGICAL HOUSE-SURGEONS IN THE E.M.S.

Hospitals are requested to bring the following information to the notice of their medical officers as soon as possible: (1) The Ministry of Health is prepared to enrol in the Emergency Medical Service radiology house-surgeons at selected hospitals in London and the Provinces. (2) Applicants must satisfy the deans of their medical faculties or schools that they intend to take up radiology and are prepared to enter for a diploma in medical radiology at the end of their course of study. The selected hospitals will be so situated that attendance at courses of instruction will be practicable, and successful applicants will be required to undergo the appropriate course of instruction, paying the necessary fees. Applicants must have held a house appointment at a hospital for at least six months, and preference will be given to those with longer clinical experience. (3) The salary will be at the rate of £200 a year, with an additional £100 for board and lodging if the officer is required to live outside the hospital. (4) Applications should be made as soon as possible to the Director of Establishments, Ministry of Health, Caxton House, Tothill Street, S.W.1, through deans of medical faculties or schools, or through regional hospital officers or group officers (London sectors).

Obituary

Dr. CHARLES LEONARD DIGBY ROBERTS, who remained in Guernsey to tend the needs of the civilian sick during the period of German occupation, died at St. Peter Port on April 21 soon after undergoing a major operation. He was born at Exmouth in 1882 and graduated M.B., Ch.B. at Edinburgh University in 1908. From there he proceeded to London to study for the English Fellowship at St. Bartholomew's Hospital. He passed the Primary Examination but became interested in tropical medicine and went out to India, where he spent the greater part of his professional life. In due course he took the D.T.M.&H. from the London School of Tropical Diseases and became a Fellow of the Royal Society of Tropical Medicine. For some years he was medical officer of the Charteris Hospital in Kalimpong, a remote outpost, chiefly noted as being the railhead for numerous Mount Everest Expeditions. After the outbreak of the war of 1914-18 he joined the I.M.S., seeing service in the Waziristan and Persian Gulf campaigns. After the war he practised for a short time in Darjeeling, and then went to Assam, where he was medical officer to the Mariana Tea Association for many years. Finally he retired from India and began practice in Guernsey, where he had hoped to retire and enjoy a well-earned rest. He was an active member of the B.M.A., and had been honorary secretary of the Assam Branch and chairman of the Guernsey and Alderney Division. His chief hobby was the study of natural history: butterflies, birds, flowers, trees, sea shells, and freshwater shells. In India he amassed a very fine collection of butterflies, and some of his specimens proved to be new discoveries and are preserved in the Natural History Museum in South Kensington and in Bombay. His knowledge of the flora of the Channel Isles was a source of wonder to those who accompanied him on his energetic walks along the cliffs and country lanes which were so dear to him. Dr. Roberts is survived by his wife, daughter, and three sons. The sympathy of all will go out to Mrs. Roberts in her lonely exile.

Dr. MATTHEW BRUCE died on September 20 at the age of 85. After graduating M.B., C.M. of the University of Edinburgh in 1885 he practised at Ashington, Northumberland, for half a century, and held the posts of medical officer of health, public assistance medical officer, and public vaccinator for many years. A past chairman of the Morpeth Division of the B.M.A., he was a regular attendant at Annual Meetings of the Association. He was keenly interested in first aid and home nursing, and lectured on these subjects over a long period. In spite of his advanced age he was actively in charge of a first-aid post until the day of his death. In the words of the honorary secretary of the Morpeth Division, "Dr. Matthew Bruce was liked by all his colleagues, and his bearded erect figure, always on a push cycle, will be missed by all who knew him."

Dr. ROBERT HAMILTON of Harrogate died on September 24 at the age of 63 as the result of a street accident at Beverley, where he was acting as wartime deputy for a local practitioner. Dr. Hamilton was the son of a Bradford medical man, and from Bradford Grammar School went to study medicine at the University of Edinburgh, graduating M.B., Ch.B. in 1901 and proceeding M.D. in 1909. He was for some years a member of the Colonial Medical Service, and in the last war served in the R.A.M.C. with the rank of captain, afterwards practising in Oxfordshire and Somerset before his retirement to Harrogate in 1935.

I read with great regret of the death of Dr. WILLIAM ROBERTSON (writes Mr. Lewis G. Cruickshank, F.R.C.S.). I had the privilege of studying under his guidance both as an undergraduate and later during the D.P.H. course. He was a fine teacher, and his long experience in the Public Health Service made him an excellent exponent of the practical problems of the service. He was a most approachable man, and always ready to discuss with his students the problem of their future career: he was much interested in medical education, and contributed articles on the subject of postgraduate study to the *Surgeon's Hall Journal*.

His passing will be mourned by many, and the loss to the Edinburgh School of Medicine is a great one, for he was a universal favourite with students and staff alike.

The following well-known foreign medical men have died: Prof. ANTON WALDMANN, head of the sanitary department of the German War Office, as the result of a motor-car accident last autumn, aged 63; Dr. ANTON HENRICHSEN, director of the cantonal sanatorium at Herisau, best known as the author of poems and plays under the pseudonym of Otto Hinnerk; Dr. WALTER VOGT, professor of anatomy at Zurich, aged 53; and Dr. ALBERT KOCHER, a Bernese surgeon, aged 45.

Medical Notes in Parliament

Lord Dawson on the Food Value of Eggs

In the House of Lords on September 30 Lord DAWSON spoke in a debate on livestock and feeding-stuffs. He laid particular emphasis on the nutritive value of the egg, and, making a comparison with milk, said that the egg was rich in protein and vitamins and, so far as vitamin C was concerned, it was even better than milk. Together, milk and eggs were a tower of nutritional strength. The egg was a very digestible and easily handled food. All authorities were agreed that without eggs and milk they could not make light food, which was especially important to workers who were beginning to get weary in mind and weak in their digestions. Although it was right that there should be a priority of eggs for children and some invalids from the point of view of preventive medicine, from the point of view of keeping the active population well and fit they could not neglect the fact that the availability of eggs played an important part. He hoped the Minister of Food would take no steps to ration eggs further, but would leave this matter to localities to be dealt with by voluntary efforts. The localities should look after the egg needs of the childless and ailing citizens, and as for the rest the requirements might be met by means of a pool. The health of the workers must be maintained on a high level.

Turning to the home production of eggs, Lord Dawson said that it was going down by about 20% per head. We could produce protein-rich foods suitable for our animals within the next two or three months. In the manufacture of acetone there was a by-product containing 50% of protein which was quite suitable for feeding poultry and animals. Castor-bean meal, now used as a fertilizer, contained an ingredient poisonous to animals, but by the ingenuity of our chemists this ingredient could be removed quite satisfactorily, leaving a protein-rich food available for animal feeding. A synthesized vegetable protein of high value had been discovered recently. It was made in part from yeast, and, he believed, was suitable for mass production. Could not large-scale production be expedited? There was even a prospect of the product being cheap, and it was going to be available for human beings. Experiments had shown that this added to the value of bread, and was extraordinarily good in the nourishment of children. Here was a product which would not only help human beings but would help in the protein feeding of animals. He urged the Minister of Food to hustle this thing on.

In conclusion, Lord Dawson appealed to the Government to postpone the reduction of poultry rations to one-sixth for a few weeks, in order to give a little more time. He said that the reduction of two-thirds which had already taken place was too great, and he did not want to see the poultry industry damaged beyond all recovery. The order which had been issued for the reduction of sales of tuberculin-tested milk by more than one-third by October 18 was a mistake, and it should be put right.

Defective Hearing in the Army

On September 30 Captain MARGESSON told Sir Francis Fremantle that he had no information about how many men and women had been invalided out of the Army or incapacitated on account of defective hearing. Sir FRANCIS FREMANTLE asked Captain Margesson to consider giving some instruction whereby men invalided out of the Army for deafness might be passed on

to the National Institute for the Deaf in order that good use might be made of these men, many of whom were extremely valuable although no longer of use for military service.

Food-poisoning on Board Ship

On September 30 Dr. MORGAN asked the Minister of Health whether, during 1938, 1939, and 1940, there were any further outbreaks of food-poisoning on board ships; whether any further outbreaks of toxic peripheral neuritis, similar to the outbreaks of Ginger or Jake paralysis in the United States, were observed and recorded; whether the fine medical work in this connexion of the medical officers of his Ministry, reported in the 1938 Annual Report of the Ministry's chief medical officer, had been repeated; whether special watch had since been kept for such outbreaks; and whether appropriate commendation had been made to the officers concerned. Mr. ERNEST BROWN said that no further outbreak of toxic polyneuritis or of other serious food-poisoning on board ship had come to his notice. He greatly appreciated Dr. Morgan's tribute to the work of his medical officers, and assured him that their watch for any serious outbreak of the kind to which he referred was a close one.

Employment of Alien Doctors

Miss RATHBONE asserted on October 2 that many general practitioners, especially in neutral and reception areas, were seriously overworked owing to the calling up of their medical colleagues, yet were debarred from securing the assistance of alien doctors in their private practices. She asked Mr. Ernest Brown to change the Regulations to permit alien doctors, accepted for the War Emergency Register, to engage in private practice under conditions thought necessary to protect British doctors, such as the limitation of the permit to the duration of the war, and, if necessary, the restriction of the permit to doctors required to work as assistants to, or partners of, British doctors. Mr. BROWN replied that under a recent Order an alien doctor who fulfilled the other necessary conditions could be placed temporarily on the *Medical Register* if he was to be employed as an assistant to a British doctor in private practice. The employment was in each case subject to the approval of the Home Secretary. A practitioner who desired to secure the services of an alien doctor could take the normal steps available to the profession, or, if in doubt, could write to the Ministry of Health.

Sir FRANCIS FREMANTLE remarked that the Central Medical War Committee would undertake these arrangements.

Medical Personnel Priority Committee

In a reply on October 2 to Sir Francis Fremantle, Mr. ERNEST BROWN said an interim report had been received from the committee presided over by the Under-Secretary of State for Dominion Affairs on the distribution of medical man-power. Action was being taken on the recommendations. These included suggestions for the establishment of regional committees to promote the maximum co-operation between civil and Service medical establishments, the continued recruitment for the time being of medical officers for the Forces at the present rate, the compilation of particulars of bed accommodation and staffing for all civil hospitals, and measures to secure greater mobility of resident medical staffs between one hospital and another.

Tuberculosis Increase: Special Inquiry

Dr. SUMMERSKILL inquired on October 2 to what cause Mr. Ernest Brown attributed the increase in tuberculosis. Mr. BROWN said he had arranged for a special inquiry, with the assistance of the Medical Research Council, into the causes of the wartime increase in tuberculosis. On June 30 last there were 1,763 persons in England and Wales who had been for upwards of ten days on local authority waiting lists for institutional treatment. Information was not available on the incidence of non-pulmonary tuberculosis in areas where pasteurized milk was unobtainable. The Ministry of Health was arranging to make available some E.M.S. beds.

Medical Examination of Miners.—On September 30 Mr. GRENFELL informed Miss Ward that to secure uniformity and speed in the urgently needed return of men to the pits under the registration scheme, the question of medical examination was determined in each case by officers of the Ministry of Labour and National Service on the facts brought to their notice at the interview.

The Services

NAVAL AWARD

Surgeon Commander George McCoull, R.N.V.R., and Acting Surgeon Commander Gerald Frederick Stavely Parker, R.N.V.R. have been awarded the Royal Naval Volunteer Reserve Officers Decoration.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Surgeon Lieut.-Commander CLAUD DENIS DELACOUR DE LABILLIERE, R.N., who was recorded as "Missing" in the *Journal* of June 21, is now posted as "Missing, Presumed Killed" in an Admiralty Casualty List published on October 1. He was serving in H.M.S. *Fiji*, which was sunk in the operation off Crete in May last. Qualifying M.R.C.S., L.R.C.P. in 1925, he entered the Royal Navy as surgeon lieutenant in the following year, and was promoted to surgeon lieutenant-commander in 1936. He had been a member of the British Medical Association since 1931.

ROYAL ARMY MEDICAL CORPS

Prisoners of War

Temporary Major Robert Harvey.
Temporary Major Patrick David Clifford Kinmont.
Temporary Major George Albert William Neill.
Captain Arthur Geoffrey Veasey Aldridge.
War Substantive Captain Charles Alan Hunt.
War Substantive Captain David Frew Wood.
Lieut. James Manson Knight.

DEATHS IN THE SERVICES

Lieut.-Colonel HENRY GEORGE LUTHER WORTABET, I.M.S. (retired at Bournemouth on September 19, aged 88. He was born in Syria on September 5, 1853, and was educated at the University of Edinburgh, where he graduated M.B., C.M. in 1871, proceeding M.D. in 1883. Entering the I.M.S. as surgeon in 1879; he became lieutenant-colonel after twenty years' service and retired in 1909. He served in Afghanistan in 1880, received the medal, and in the Burmese campaigns in 1886-8, taking part in the operations of the 4th and 6th Brigades, and gaining the Frontier medal with two clasps. He had been a member of the British Medical Association for fifty years.

Medical News

The activities of the Royal Medical Society of Edinburgh are proceeding as usual, though the war has necessitated the temporary abandonment of the annual dinner. The inaugural address for the forthcoming session will be delivered by Surge Rear-Admiral Sir W. I. de Courcy Wheeler on Friday, October 17, at 8 p.m. in the Hall of the Society. The title is to be "What Society has Gained by the Progress of Surgery." During the session addresses will be given by Colonel F. A. E. Croft, Prof. G. B. Fleming, Prof. A. T. Jurasz, Dr. J. Trueta, and Prof. Samson Wright.

The 1941 annual meeting of the National Society for the Prevention of Blindness (U.S.A.) will be held in New York City from December 4 to 6.

The Duchess of Portland has accepted the presidency of the London Ambulance Benevolent Fund. Founded less than three months ago, the Fund has already raised £2,500, and has been the means of help in over forty cases of distress among members of the regular and auxiliary Ambulance Service and their dependants.

Mr. Geoffrey Williams Carte, F.R.C.S., surgeon, London, has been commended for brave conduct in civil defence.

On September 11 the New Zealand House of Representatives passed the Crimes Amendment Act, substituting life imprisonment for the death penalty for murder and abolishing flogging.

Dr. H. D. Clementi-Smith has been elected a Warden of the Mercers' Company, the first, in order of civic precedence, of the twelve great Guilds of London.

The Department of Health of the City of New York is planning to establish an Institute of Scientific Research.

No 35

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended September 20.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	121	4	34	4	5	119	9	33	—	6
Deaths	—	—	1	—	—	—	1	1	—	—
Diphtheria	957	40	237	15	19	1,053	38	370	24	41
Deaths	23	1	7	2	—	37	1	10	2	5
Dysentery	102	9	68	—	—	46	1	57	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	6	—	—	—	—	6	1	1	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Enteric (typhoid) fever* ..	27	1	4	10	4	68	2	18	4	1
Deaths	—	—	—	—	—	1	—	—	—	—
Erysipelas	—	—	45	7	3	—	15	45	7	2
Deaths	—	—	—	—	—	—	1	—	—	—
Infective enteritis or diarrhoea under 2 years	—	—	—	—	—	—	—	—	—	—
Deaths	38	1	13	17	11	45	4	25	21	13
Measles	612	18	14	23	—	7,435	120	445	—	8
Deaths	1	—	—	—	—	9	2	4	—	—
Orchitis	—	—	—	—	—	—	—	—	—	—
Deaths	76	3	7	—	—	68	4	18	—	—
Paratyphoid A and B ..	125	6	11	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† ..	434	15	2	—	—	465	20	2	—	1
Deaths (from influenza) ..	8	—	—	—	1	7	1	3	—	1
Pneumonia, primary ..	—	—	140	3	—	—	104	3	—	5
Deaths	—	—	—	4	—	—	—	—	—	—
Poli-encephalitis, acute ..	3	—	—	—	—	2	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute ..	28	1	8	3	1	38	—	4	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	4	14	3	—	4	4	11	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	134	4	15	—	3	119	7	17	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	1	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,140	34	195	48	22	1,538	71	238	23	47
Deaths	1	—	—	—	—	1	—	1	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	2,289	196	106	45	30	1,245	9	67	1	18
Deaths	24	1	2	—	—	6	—	—	—	—
Deaths (0-1 year) ..	172	19	69	25	19	280	38	73	29	29
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths)	3,429	427	512	164	94	5,871	1,763	564	179	150
Annual death rate (per 1,000 persons living)	—	—	11.2	10.9	—	—	11.4	14.0	13.1	—
Live births	5,079	460	512	374	172	5,945	772	763	291	234
Annual rate per 1,000 persons living ..	—	—	16.5	24.8	—	—	15.4	19.4	20.4	—
Stillbirths	170	14	37	—	—	227	25	41	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	44	—	—	—	—	51	—	—

* Includes paratyphoid A and B for Northern Ireland.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, the birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In England and Wales the recent decrease in the incidence of measles and whooping-cough and the increase in the incidence of scarlet fever and diphtheria were continued in the week under review. In Scotland scarlet fever was the only one of these diseases which showed an increase compared with the preceding week. A large relative decrease of 25% (196 cases) was recorded in the notifications of measles in England and Wales. This rapid rate of decline has been a feature of the trend of measles during the past sixteen weeks. The total cases of measles recorded in the last four-week periods were 40,656, 19,916, 8,743, and 3,478, showing rates of decline of 50, 56, and 60% on the preceding monthly totals. The number of cases of measles notified during the week reviewed was one-twelfth of that recorded in the corresponding week of last year.

The number of notifications of whooping-cough in England and Wales was 421 less than in the previous week. This was the third consecutive week that a decrease has been recorded, the rates of decline being 4.5, 10.5, and 15.5%. In Scotland a decrease of 47 in the number of cases of whooping-cough occurred. The experience of Glasgow (67 cases out of a total of 106) still dominates the returns for this country.

The rising trend of the notifications of diphtheria in England and Wales resulted in an increase of 40 on the total of the previous week. A decrease of 17 was recorded in Scotland, following four consecutive increases. A small increase (10 cases) was recorded in the notifications of scarlet fever in Scotland for the ninth consecutive week. In England and Wales an increase of 135 was notified. The incidence of paratyphoid and typhoid diminished, and the total cases were the smallest number recorded since the first week of July.

Cerebrospinal Fever

With the exception of an increase of 10 cases in Warwickshire and 5 cases in Middlesex, the notifications of cerebrospinal fever in England and Wales, which exceeded last week's total by 3, did not show any special difference from the previous week's distribution. In Scotland a relatively large increase, from 23 to 34 cases, occurred. The increase was due to outbreaks in the counties of Angus, Fife, and Midlothian. Slightly more than half the total was contributed by the cities of Glasgow 12, Edinburgh 4, and Dundee 2 cases.

Dysentery

The slight increase of 8 was recorded in the notifications of dysentery in England and Wales. Small local outbreaks occurred in Shropshire (Wem R.D. 12); Cornwall (Bodmin M.B. 8); Warwickshire (Rugby M.B. 8); Yorkshire, West Riding (Halifax M.B. 6 and Brighouse M.B. 6). In Scotland, where the notifications exceeded last week's total by 1, the chief outbreaks were those of Dundee 19, Glasgow 10, Lanark County 10, and Edinburgh 6.

Poliomyelitis

Twenty-eight cases of poliomyelitis were notified in England and Wales, a decrease of 25% on the total of the previous week. The chief centres of infection were Middlesex with 5 (Edmonton M.B. 2), and Oxfordshire with 4 cases, which were all notified in Oxford C.B. In Buckinghamshire, where the most serious of the recent local outbreaks occurred, 2 cases were reported after an interval of a week without one. Both these cases were notified in Slough M.B., and this area had 4 cases during the week ending August 23. Two cases each were notified in the counties of Cornwall, Devonshire, Hampshire, and Surrey. Eight cases, compared with 2 in the preceding week, were notified in Scotland. Glasgow, with 4, was the only area with multiple notifications.

Week ending September 27

Cases notified in England and Wales during the week were: scarlet fever 1,258, whooping-cough 2,247, diphtheria 1,066, measles 745, cerebrospinal fever 94, acute poliomyelitis 38, dysentery 89, paratyphoid 100, typhoid 32.

Universities and Colleges

UNIVERSITY OF SHEFFIELD

The following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—*Parts II and III*: H. Barrada, Pauline M. Hardcastle, L. Ishnk, L. F. Q. McInlaine, Margaret E. Withers.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Arnott and Erasmus Wilson demonstrations and Museum lecture-demonstrations will be given at the College (Lincoln's Inn Fields, W.C.) as follows: October 13, Prof. A. J. E. Cave, the constitution of the skull; October 14, Mr. L. E. C. Norbury, benign neoplasms of the rectum; October 15, Prof. Cave, vascular arrangements of the head and neck; October 16, Mr. Norbury, malignant neoplasms of the rectum; October 17, Prof. Cave, lymphatics of the head and neck; October 20, Prof. Cave, surgical anatomy of the nasal fossa; October 21, Mr. R. Davies-Colley, diseases of the testicle; October 22, Prof. Cave, surgical anatomy of the mouth and jaws; Oct. 23, Mr. C. E. Shattock, tumours of the kidneys; October 24, Prof. Cave, surgical anatomy of the pharynx and larynx; October 27, Prof. Cave, surgical anatomy of the liver and bile ducts; October 28, Mr. Davies-Colley, tumours of the intestines; October 29, Prof. Cave, surgical anatomy of the kidney and ureter; October 30, Mr. Shattock, tumours of bone; October 31, Prof. Cave, surgical anatomy of certain nerves. All the demonstrations begin at 2.30 p.m., and are open to advanced students and medical practitioners.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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TELEPHONE No.—B.M.A. and B.M.J.: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Atiology Westcent*, London; SECRETARY, *Mediscra Westcent*, London.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Cancer in the Lower Animals

J. T. M. writes: I shall be glad if anyone can tell me what is the incidence of cancer among domesticated animals, particularly the cow, sheep, poultry; and fish. I have been told by an authority that cancer is rather common in poultry, affecting particularly their sexual organs.

Behaviour of Children and Adults under War Conditions

Miss EVELYN FOX, C.B.E., honorary secretary of the Mental Health Emergency Committee (24, Buckingham Palace Road, S.W.1), writes: This committee has been making an inquiry into the behaviour of children and adults under war conditions. Questionnaires have been sent out to child guidance clinics, mental treatment clinics, psychiatric wards of emergency hospitals, and to psychiatric social workers in the reception areas. This inquiry was intended to be only a preliminary survey, and before proceeding further the committee would be very interested to learn whether any similar investigations are being carried out, either by groups or by individuals, and if so would welcome opportunities of co-operation.

Income Tax

Expenditure on Books

"X. Y." refers to an answer in our issue of July 16, 1941, and asks for a note on the decision in *Simpson v. Tate*.

* The answer referred to was given on the understanding that the inquirer was in general practice and assessed under Schedule D; salaries, etc., are assessable under Schedule E, and the rule in that Schedule with regard to expenses is more stringent than the

corresponding Schedule D rule. Dr. Tate was a county M.O.H., and claimed to deduct subscriptions to certain professional societies. In his judgment Rowlett J. said that "taking in professional literature and all that sort of expense which enables a man to keep himself fit for what he is doing are things which can none of them be allowed." This decision seems to cover the purchase of books if the income is assessable under Schedule E.

LETTERS, NOTES, ETC.

Irrigation in Treatment of Diverticulosis

Dr. BERNARD MYERS (London, W.1) writes: Diverticulosis is not an infrequent condition in older adults, not difficult to diagnose from the train of symptoms and confirmation by x rays. Not only constipation but the tendency to attacks of diverticulitis with the accompanying discomfort and pain is apt to cause depression, especially in the more severe cases. From my experience of these cases I suggest that the essentials of treatment are a non-irritating diet free from pips, skins of fruit, or other indigestible material, the daily taking of liquid paraffin in sufficient but not in excessive doses, and irrigation of the colon from time to time. Cases that receive this treatment have, I suggest, not at all a bad time, and can enjoy life reasonably and play games. With regard to liquid paraffin, I find cases differ to some extent, but, generally speaking, a tablespoonful thrice daily suits many sufferers; but to some this would be excessive, and less must be taken, as too much causes too frequent action of the bowels with much discomfort and accidents in clothes. Others need more, and I know of a well-marked case in a man over 60, who takes two tablespoonfuls every morning before breakfast and the same quantity before the evening meal, and keeps free now from attacks of diverticulitis provided his colon is irrigated at least every two months. Irrigation must be done only by real experts, as those not properly initiated into the method may cause great discomfort or even danger. I believe that many bad cases need irrigation once a month and possibly more often. When it is properly done the patient complains of no pain or discomfort, but, on the other hand, a feeling of great relief and well-being. It is surprising to see the material removed from a diverticulum after a careful irrigation. Sufferers from diverticulosis should not strain at stool; indeed, there should be no need if the dose of paraffin be well regulated.

The Blunt Needle

Mr. A. P. BERTWISTLE, F.R.C.S.Ed. (London) writes: A blunt needle is at once a source of annoyance and danger. The chief danger is that the needle may break in the tissues, requiring operative removal. A second danger is that it must pass through the tissues more like a saw than a knife. If the needle is obviously rusty micro-organisms may lodge in the crevices untouched by antiseptics, save those of low surface tension, though not by boiling, of course. Hypodermic needles are now made of stainless steel; they become blunt very often by the tip bending backwards, usually over the lumen, and also from excessive use. They can be sharpened with the aid of an oil-stone. Gone are the days when a matchbox was, surreptitiously, used for removing rust. With regard to suture needles, I have the authority of Messrs. Thackray for stating that stainless steel has so far proved unsatisfactory, since it will not harden or temper as well as carbon steel. (In the present emergency they have been asked not to draw on supplies available.) Prof. John Hilton in a broadcast said that safety-razor blades became blunt as the result of an invisible rust forming on the cutting edge, it being impossible to dry the edge perfectly with a towel. If, however, the blade is finally cleaned with a rag moistened with a thin cycle oil it will keep its edge twice as long. Applying this principle to suture needles, if the needle be drawn through a piece of chamois leather impregnated with thin oil several times after use it will be found that the needle keeps sharp much longer, a point of value in these hard times.

Disclaimer

Drs. J. ROBINSON and M. STOCK write from Manchester: Our attention has been called to a recent newspaper article concerning the treatment of influenza and colds in which our names appeared. We desire to state clearly that we have given no interview to the writer of the article or any other person, and that we had no knowledge of its proposed preparation or publication. We desire further to state that we take no responsibility for the nature or accuracy of the statements made or the facts alleged.

Corrigendum

In the report supplied to us of the meeting of the Association of Clinical Pathologists held at Cambridge on July 19 and published in the *Journal* of August 30 (p. 315) Dr. S. C. Dyke is recorded as having made observations on eosinophilia in glandular fever. Dr. Dyke was in fact discussing trichiniasis and not glandular fever, and he asks that this correction may be notified to our readers.

THE SCOPE OF OPERATION IN TREATMENT OF VARICOSE VEINS

BY

REGINALD T. PAYNE, MS., M.D., F.R.C.S.

Surgical Assistant, British Postgraduate Medical School, Hammersmith; late Surgeon, Emergency Medical Service

The introduction of injection methods of treating varicose veins focused attention on an important and rather neglected disease which is responsible for much ill-health, disability, and inefficiency. During the past fifteen years or so not only has the stimulus of the newer methods shown the value of injection treatment but the experience gained has clearly indicated the place of operation in dealing with varicose veins. At the present time it is true to say that every case of primary uncomplicated varicosity, however severe, can be "cured." By "cure" is meant the obliteration of the entire varicose circulation either by injection or by operation, or by a combination of these two methods. Using the word "cure" in this restricted sense, then, there are few cases which cannot be "cured" relatively quickly and completely. This paper is based upon the personal experience gained in treating over 1,300 patients for varicose conditions of the lower limbs. An evaluation of the place of operation must not, however, be taken to imply any serious criticism of the efficiency of injection for the majority of cases. But time has shown that if *all* cases are to be treated efficiently, irrespective of the nature and extent of the disease, then operation must still have a place in the scheme of treatment.

Untreated varicosity is almost always a progressive condition. The speed of progress is determined by many factors: family history, build, age at onset, pregnancies, the nature of the veins themselves, the patient's occupation, etc. If the condition remains untreated, complications such as congestive phenomena, dermatitis, ulceration, bone involvement, the various types of phlebitis, and disabilities due to scarring, etc., may develop. With existing methods of treatment it should be possible to avoid all varicose complications. The cause of varicosity is still unknown, but the evidence suggests that hereditary and endocrine factors are probably the most important ones. The surgeon cannot cure or influence this innate tendency to varicosity, but by treatment he can bring about a cure of existing varicosities, and by obliterating the varicose circulation the progress of the disease can be slowed.

This paper is particularly concerned with the operative treatment of primary varicosity in the uncomplicated stage. Uncomplicated cases include all those up to the congestive stage but exclude those beyond this—namely, dermatitis, ulceration, phlebitis, etc. Surgical treatment may, of course, be required for some of these complicated cases, and although many of the principles which are described are also applicable, with modifications, to the advanced group of cases, the complicated ones are not considered here in detail. The term "primary varicosity" excludes all cases in which the varicosity develops secondarily to an obstruction of the deeper vessels—e.g., femoral thrombosis (Payne, 1938).

Varicose veins may be treated by injection in most cases, by operation alone in a few, and in some by operation and subsequent injection. The proportion of cases requiring either operation or operation and injection will, of course, be determined by the severity and nature of the condition.

Aim of Treatment

The *anatomical* aim of all forms of radical treatment, whether by injection or by operation, is to bring about obliteration of the varicose vessels either by thrombosis and organization or by actual removal. The *physiological* counterpart of this is the functional obliteration of the varicose circulation with its stagnation and congestive phenomena and the tendency to a to-and-fro movement of the blood. The *clinical* counterpart is the relief of symptoms, the removal of mechanical factors favouring the progress of the disease, and the elimination of the risks of possible complications. The anatomical, physiological, and clinical aims of treatment can be attained either by injection or by operation, or by a combination of operation and injection. No single method is suitable for all types of cases, but together they make it possible to treat every type of case that is met with clinically. Naturally the more severe or extensive cases are those which are likely to require operative treatment, but severity and extent are by no means the only criteria.

Indications for Operation

The indications for operative treatment may be absolute or they may be relative. Absolute indications are those conditions which offer no effective alternative to operation. Relative indications are those conditions in which operation may have advantages when compared with injection. In practice it will be found that cases fall into three groups from the point of view of treatment: first, those in which operation offers the only real prospect of cure; secondly, those in which operation offers better chances of more permanent cure; and, thirdly, those cases in which there are no indications for operation but which can be treated effectively by means of injections. The aim of operation is to obliterate all incompetent veins which are not likely to respond readily to subsequent injections. Throughout this paper the word "varicosity" is used to include all types of veins associated with valvular incompetence, irrespective of the presence or absence of tortuosity, gross dilatation, or thinning of the vein wall.

1. Absolute Indications

Anatomical Extent.—Involvement of the main internal saphenous vein above the level of the knee-joint is usually an indication for operative treatment, and the nearer the pathological change approaches the saphenous opening the stronger will be the indications for operation. This

assumes the presence of valvular incompetence in the affected vein, with reflux of blood on coughing, etc. Tortuosity and moderate size will in general be factors in favour of injection. Straight thick-walled veins (see Ectasia, below) or colossal tortuous veins will be factors in favour of operation.

Presence of Saphenous or Other Varices.—A large single varix or multiple varices do not give certain or permanent results with injection methods. All varices are commonest in the thigh, especially at the saphenous opening. A further point in favour of operation in these cases is that in many the dilatation is situated on veins which show mainly ectasia and are thick-walled, dilated, and straight, but incompetent.

Ectasia.—By ectasia is meant dilatation and increase in size of a vein associated with valvular incompetence, but the vein remains relatively straight and its walls are very thick. Ectasia thus differs from true varicosity, since in the latter the vein becomes tortuous and thin-walled; but valvular incompetence is just as pronounced in ectasia as in the case of tortuous veins, and the progress of the disease and the complications are common to both groups. Ectasia is especially likely to be found in young athletic males, but it is certainly not unknown in women. The condition may involve only the internal saphenous vein or it may involve all the superficial veins of the lower limbs. In practice ectasia is often found in the main saphenous vein in the thigh, while the calf veins show either a combination of ectasia and varicosity or pure varicosity. The presence of ectasia has important bearings upon the question of treatment. Veins which show ectasia do not respond at all well to injection methods; and I have had patients referred to me who have had twenty or more injections in such veins without producing any thrombotic response. Furthermore, if thrombosis does occur these ectatic veins are especially likely to recanalize during the course of a few months. And it is a fact of clinical observation that the more thin-walled and tortuous a vein the more certainly will it respond to injections and the more permanent will be the obliteration, whereas the thicker and straighter the vein the less likely is it to thrombose, and if thrombosis does occur it is much less likely to be as lasting as in the case of tortuous thin-walled vessels.

Size of Veins.—Huge masses of tortuous veins are often best treated by excision, especially when they are the size of the index finger or thumb. Thrombosis of such colossal veins occasionally produces considerable pain and discomfort, and the resolution of the huge thrombosed mass may take from four to six months to complete. Nevertheless, mere size is not necessarily a contraindication to injection treatment; but operative treatment has the advantages of being quicker and less painful and of giving a better cosmetic result.

Failure of Response to Injections.—From time to time cases are seen which have given no appreciable response to injection treatment. It is usually found that cases that have not responded to adequate amounts of injection fluids are examples of ectasia rather than of true varicosity. In a few cases colossal varicosities do not thrombose owing to the diluting effects on the injection solutions.

Recanalization after Injections.—There is no doubt that it is possible for recanalization of an injected and thrombosed vein to occur. Recanalization is particularly likely to develop when injection treatment has been carried out and patent proximal but incompetent veins are left untreated between the site of injection and the saphenous opening. It is also likely to develop in ectatic veins in which the thrombosis has been incomplete or transient, and it may occur when incomplete treatment has been given to a huge sponge-work of veins with large numbers of

collateral channels. In all cases this recanalization is due to the reflux of blood from above and to the opening up of the thrombosed or partially thrombosed veins. Thus recanalization means either that unsuitable veins have been injected or that injection treatment has been inadequate, and it is invariably associated with patent proximal and incompetent veins. An incompetent internal saphenous vein in the thigh, whether associated with ectasia or varicosity, is often overlooked by the patient and by his doctor, especially when much subcutaneous fat is present. The patient complains of the obvious varicosity in the calf, but the incompetent thigh veins may not have been noticed. Injections to the calf veins in such a case may be followed by recanalization.

2. Relative Indications

The presence of certain conditions or factors may be relative indications in favour of operation as opposed to injection.

Rapidity of Development.—In certain cases the varicose condition develops very rapidly and almost as an acute process. This may happen at any age, but some of the most rapid cases I have seen occurred in women at the time of the menopause. Injection treatment in such cases is little more than symptomatic, and there is really a contest between the therapeutic thrombosis and the development of fresh varicosities. Operation in such cases may be the only practicable solution.

Family History.—The family history of varicosity and its complications must be taken into consideration when weighing the advantages of injection and operation. A bad family history obviously favours the more radical method.

Age.—The age of the patient must of course be considered. Relatively rapid development at an early age will favour operative treatment.

Occupation.—Employment which involves a good deal of standing rather than rhythmical walking may have to be taken into account as a factor favouring operative treatment. But the question of employment will rarely be the only indication for operation.

Geographical Considerations.—If a patient is going to a part of the world where he cannot get skilled attention, operative treatment may give better prospects of prolonged and permanent freedom from recurrences and complications.

Congestive Phenomena.—The presence of purplish discoloration and distended varicules on the feet and over the internal malleolus or inner and lower part of the shin indicates a serious degree of reflux in the saphenous system. These congestive phenomena must be taken as warnings that the saphenous circulation is inefficient and that the next stage will be dermatitis or ulceration. Incompetence of the main saphenous vein in the thigh is present in many of these cases. On these grounds there are often strong indications for operative treatment.

Other Complications of Valvular Incompetence.—The other complications of valvular incompetence—dermatitis, ulceration, and phlebitis, etc.—are not considered in detail, but it is obvious that when dermatitis and ulceration occur the indications for operative treatment already given may apply with added force.

Future Pregnancies.—Patients sometimes come under observation who have had trouble with veins or with phlebitis in a previous pregnancy and are contemplating another. Others who are contemplating a first pregnancy have had similar trouble. In some cases operative treatment may offer the greatest freedom from varicose trouble during pregnancy and the puerperium and in the future.

The Aim of Surgery

Whatever method of treatment is employed its object is always the same—namely, to obliterate the whole varicose circulation. This object may be attained partly by ligation and section of veins, partly by excision, partly by thrombosis between ligatures or excisions, partly by subsequent injections, or by injections alone. The treatment of each patient must be assessed in the light of the clinical history and of clinical examination. If there are indications in favour of operative treatment an attempt must be made to determine both its scope and the part to be played by subsequent injections. At the close of any operation the surgeon should be satisfied that any remaining veins can be treated readily and effectively by means of injections. No case is too severe for a combined attack by operation and injection, and at the completion of treatment it should be possible to say that 100% or nearly 100% of the varicose circulation has been put out of action in one way or another.

Pre-operative Treatment

The patient is admitted to hospital the night before operation. In an extensive and bilateral case both lower limbs are shaved, as well as the abdomen below the level of the umbilicus. The patient then stands in a good light and the veins are marked in with skin ink, the composition of which is as follows:

R	Ac. pyrogall.	..	..	..	..	1 gr.
	Sp. vin. meth.	..	..	..	..	20 c.cm.
	Liq. ferri perchlor.	..	..	..	..	2 c.cm.
	Acetone	..	..	..	..	10 c.cm.
	Ac. hydrochlor.	..	..	..	..	1 drop
	Ft. sol.					

The main veins are inked in throughout their entire course, and all large varices and collaterals are indicated, as well as any other veins upon which it is decided to operate. The marking-in must include veins on both the front and the back of the lower limbs.

The whole region is prepared with spirit and iodine and wrapped in sterile towels. The skin preparation is repeated the following morning. The importance of careful preparation and asepsis in all operations on the subcutaneous veins cannot be too strongly stressed. Special attention must be directed to areas of skin showing atrophic change over underlying attached veins and to areas showing congestive phenomena. Areas of definite dermatitis or ulceration should be covered completely by sterile gauze rolls.

Anaesthesia

General anaesthesia is the method of choice, and gas-oxygen and ether are usually adequate. There are two objections to the use of local anaesthesia for multiple ligation or excision operations: first, in a bilateral case of average severity, in which operation has to be carried out at five or six sites in each limb, local anaesthesia takes considerably more time; secondly, although ligation can readily be performed under local anaesthesia, it is more difficult to use this method for the excision of an irregular mass of large tortuous veins in the thigh or calf.

Operative Technique

The nature of the operative procedures to be carried out will have been decided on at the time of examination and reviewed when marking in the veins. Whenever operative treatment is indicated I believe that minimal operations should be avoided. By "minimal" is meant a ligation at the saphenous opening and possibly at one other site. Operations of this type, even when combined with subsequent injections, rarely lead to complete obliteration of the varicose circulation. On the other hand, there is nothing

to suggest that surgery should be maximal. What should be aimed at in the individual case is a series of operations which will lead with subsequent injections to thrombosis and obliteration of the whole varicose circulation.

Position.—The patient is placed on the operating table in the dorsal position and the whole region below the umbilicus is again cleaned, and the feet or any other parts where operation is not required are covered with sterile towels. All anterior sites must be dealt with first, and if posterior veins are present the patient must be turned over on to his face.

Incisions.—It is preferable to start proximally and to work distally. The first ligation will be at the saphenous opening and the last in the lower third of the saphenous vein in the calf. Incisions must be planned in relation to the natural folds or creases, the nature of the local operation to be carried out, and the condition of the skin and subcutaneous tissues. Incisions in the line of the limb or in the line of the veins should be avoided.

The Affected Vein in Relation to Operation.—What is to be done at any particular site? This must be determined by the nature of the vein at that site. Ligation and division is indicated in the case of a straight or relatively straight vein, particularly if this is thick-walled, and in the case of a single large tortuous vessel. A single varix should be excised, the main vein ligatured above and below, and any collaterals also ligatured. A mass of tortuous veins with many anastomosing channels calls for a free excision. In many cases it will be found that ligation is required at the saphenous opening, in the mid-thigh, just above the level of the knee-joint, and in the lower third of the leg. In the upper third of the calf a more extensive excision is often required on account of anastomosing channels or multiple ectatic veins.

(a) **Ligation.**—The vein is exposed by an incision placed obliquely across its direction, the margins of the wound retracted, and the vein ligatured with No. 1 catgut at the upper and lower limits of its exposure. The intervening one to two inches of the vein is excised, and the amount of this depends upon the exposure. The operation is thus not merely a ligation, but is a ligation together with the removal of the exposed segment of vein. In the case of very thick and relatively straight incompetent veins, more rather than less should be excised. If a localized varix is present in association with a straight vein, this is an indication for local ligation above and below together with excision of the varix. At the same time any entering collateral vessels, often deep veins, must also be ligatured. The number of ligations must be determined by the nature of the veins, their extent, and the probability of response to injections of the remainder. Care is needed in planning incisions. An exposure which enables the main vein and two or three large collaterals to be ligatured at the same time is preferable to one which only allows ligation of the main trunk.

(b) **Excision.**—A more extensive excision will be required under the following conditions: (1) colossal and usually tortuous veins, especially if adherent to overlying atrophic skin; (2) a mesh-work or sponge-work of big tortuous veins with large numbers of collateral and anastomosing channels; (3) the presence of several parallel or anastomosing ectatic veins.

In planning each operation regard must be paid to the nature and extent of the veins, the condition of the skin, and the position of the resulting scar. The local exposure should be adequate, and any adherent skin should be included in an ellipse. All veins are ligatured at the upper and lower limits of the wound, and the intervening tissue, together with the skin and subcutaneous tissue, is excised.

Closure of Wounds.—Haemostasis must be perfect. Subcutaneous fat must be closed with interrupted catgut sutures and all dead space obliterated. The skin is closed with interrupted sutures of fine silk-worm-gut. In all cases care

must be taken to avoid having a ligatured vein stump immediately adjacent to the skin incision. This can always be secured by careful planning of the skin incisions.

Dressings.—The various wound sites are covered with gauze or towels at the close of each local operation. At the completion of the whole operation each wound site is painted with iodine. Gauze pads are placed over the inguinal wounds and the limbs firmly bandaged with roller gauze from the ankles to the groins. A thick layer of wool is applied and the limbs are bandaged upwards, ending in a spica at the groins.

Post-operative Care

Position.—As soon as the patient is returned to bed the limbs are placed on pillows and between towelled sandbags, and covered with a cradle. The dorsal position and the limited movement possible until the stitches are removed are usually the patient's most serious complaints during the post-operative period.

Pain.—The operation causes very little pain. Morphine is required on the first night but rarely afterwards, and after the second day the patient is usually very comfortable. Those with very large veins may get more discomfort from sites of intervening thrombosis than from the actual wounds themselves.

Dressings.—After all extensive operations dressings should be carried out on the third day. This is especially necessary where large excisions have been performed, and early dressings may avoid the risk of a collection of serum. The renewal of dressings and the reduction in bulk also add to the patient's comfort. Usually only one dressing is required before the removal of the stitches, but occasionally a second is necessary on the fifth or sixth day.

Stitches.—These are removed on the seventh or eighth day, depending on the number and size of the incisions. If a second dressing is carried out about the fifth or sixth day it is often possible to remove alternate stitches at this stage.

Subsequent Nursing.—Sandbags are not required after the removal of the stitches, and the patient is allowed to have the limbs off the pillows one to two hours daily, and this time is gradually increased. He is allowed up for half an hour on the ninth or tenth day, and by the twelfth to the fourteenth day he should be able to walk short distances and be ready to leave hospital. At this stage the various wound sites are dressed with gauze and covered with elastoplast, which encircles the limbs except in the region of the groins. These dressings are left on about a week, by which time all wounds are firmly healed. In order to get rid of the remains of skin paint, iodine, and desquamating epithelium the patient should have a warm soapy bath on two or three successive evenings. At the end of a month from the time of operation recovery from its effects is complete.

Post-operative Injections

Patients are seen three to four weeks after operation. By this time it is possible to tell which veins are thrombosed and which are still patent. It is probable also that only small tortuous veins will have been left for injection after a well-planned operation. Personally I prefer to use quinine urethane for this on account of the greater certainty of its thrombosing action. At this stage injections may be carried out daily, alternating the limbs, but longer intervals will be required when larger veins have to be treated. The details of injection treatment using quinine urethane solution have previously been described (Payne, 1936). Treatment on these lines can usually be completed in from two to four weeks.

In the few cases in which no injections are required the patient may return to work three to four weeks after opera-

tion. If injections have to be carried out subsequent to operation the question of resumption of work must be decided by the probable length of the treatment and the nature of the patient's work. It is usually possible for patients to carry on with other than very heavy work throughout the period of injections.

Subsequent Review of Patients

It is advisable, whenever possible, to see patients at intervals of three, six, and twelve months after completion of treatment. Even the most severe case of varicose veins can be treated by operation and injection and the whole varicose circulation obliterated in from six to eight weeks, with the certainty of at least many years' freedom from any important recurrence. But the *tendency* to varicosity is inherent and persisting, and the more severe the initial condition, and the younger the patient's age at onset, the greater will be the need for periodic review at intervals of a year or so. Once varicosity is established, mechanical factors also come into play and tend to involve adjacent veins. The obliteration of the varicose circulation not only gets rid of the affected veins but also slows or retards the progress of the condition by eliminating aggravating mechanical factors.

Prognosis

The cases which have been discussed in this paper are chiefly those in which a complete obliteration of the varicose circulation would have been impossible without operation, and they therefore represent the more severe types. The *tendency* to varicosity is inherent and persisting, and the most important factors attending the prognosis in the individual case are as follows:

1. A bad family history of varicosity and its complications.
2. The rapidity of development of the condition.
3. The age of onset. Rapid development during adolescence is usually a bad prognostic sign.
4. The actual age of the patient. In general the older the patient the slower the progress of the disease.
5. The nature of the veins. The sponge-like type of diffuse veins with little anatomical arrangement is one of the worst possible forms. Another bad type is extensive ectasia involving all the superficial veins. In these types extensive operative treatment is alone likely to cure the condition.
6. The period of onset in women, whether during adolescence, pregnancy, or the menopause.
7. The possibility of further pregnancies in women.
8. The nature of the subcutaneous tissues. A large amount of flabby lax subcutaneous fat is a bad prognostic sign when compared with a small amount of firm subcutaneous tissue.
9. Occupation. Employment involving a great deal of standing or irregular walking is much more harmful than that which involves regular rhythmical exercise.
10. Treatment. Obviously one of the most important factors governing the prognosis is the completeness of treatment. The tendency to varicosity cannot be eliminated; but by securing complete obliteration of the varicose circulation the progress of the disease is slowed and retarded by the elimination of aggravating mechanical factors.

Summary and Conclusions

The adequate treatment of primary uncomplicated varicose veins involves the complete obliteration of the varicose circulation.

Injection treatment will secure this in most cases; but operation, or more often a combination of operation and subsequent injections, is necessary for some cases, particularly the more advanced ones.

No case is too severe for the combined treatment.

The absolute and relative indications for operative treatment are given.

The details of pre-operative treatment, operation, and post-operative care are described, and subsequent injection treatment is outlined.

The whole varicose circulation can be completely obliterated in from six to eight weeks from the time of operation, and the patient rendered fit even for heavy work.

Patients with the severe type of varicosity should be reviewed at intervals of a year or so whenever possible.

The factors governing prognosis are outlined. Of the controllable factors the most important is the completeness of the obliteration of the varicose circulation.

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THROMBOSIS IN THE SUPERIOR LONGITUDINAL SINUS FOLLOWING CHILDBIRTH

BY

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Thrombosis in the superior longitudinal (sagittal) sinus has long been known to pathologists as one of the conditions that may give rise to fatal cerebral symptoms in the puerperium or after abortion. With the exception of a case reported by Symonds in 1937 little has been written in English on the subject for a good many years past, but five cases were published in the *Zeitschrift für Gynäkologie* between 1925 and 1928, and these and seven others were collected by Mondré (1928). Other verified instances are to be found among the numerous cases of paralysis associated with pregnancy collected by von Hösslin (1904, 1905). In none of these instances was the diagnosis made during life. Headache and gradually increasing coma were the outstanding symptoms; paralysis was not always observed; convulsions occurred in some cases; and amaurosis is mentioned by Zangemeister (1925) in his description.

Within the last few years cases in which the superior longitudinal sinus is obstructed have become subject to clinical diagnosis. This has resulted partly from observation of these puerperal cases, but chiefly it has been a consequence of Symonds's studies of "otic hydrocephalus"—another condition in which this sinus is thrombosed. Now that they can be recognized clinically it appears that puerperal cases of sagittal sinus thrombosis end more often in recovery than in death, but so far only one non-fatal case has been published (Symonds, 1940; Martin and Sheehan, 1941). Clinical accounts are given here of three cases which are believed to be of this nature: death ensued in one of them, but it was not due to the thrombosis in the sagittal sinus. In addition to these three I have seen during the last five years two cases in which similar symptoms were associated with stillbirth, a case following abortion in which the right cavernous sinus was evidently thrombosed, and a case of long-standing residual disabilities from a puerperal illness which must have involved very extensive thrombosis in the superior longitudinal sinus.

The moment is appropriate for consideration of these cases because Batson's work, recently published, has provided the probable explanation of the means by which thrombosis following childbirth or abortion is determined to this seemingly extraordinary site.

Applied Anatomy

The diagnosis of thrombosis in the superior longitudinal sinus depends on the signs of raised intracranial pressure and the signs of obstruction of superior cerebral veins.

Signs of Raised Intracranial Pressure.—It will be recalled that the sinus is triangular in cross-section (see diagram)

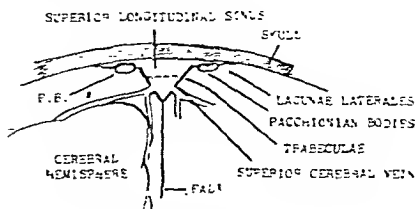


Diagram showing the superior longitudinal sinus in cross-section.

In many subjects numerous trabeculae cross it, and in some instances a continuous membrane divides it horizontally for a portion of its length (O'Connell, 1934). At its upper angles irregular lateral diverticulae—the lacunae laterales—contain within their walls numerous Pacchionian bodies through which the cerebrospinal fluid is absorbed into the blood stream. If the circulation in the sinus is obstructed, or if the upper story of the sinus becomes filled with clot, absorption of the cerebrospinal fluid is prevented and the intracranial pressure consequently rises, with the production of headaches, papilloedema, and perhaps vomiting. The significance of this hydrocephalus as an indication of sinus thrombosis was recognized by Symonds (1937).

Signs of Obstruction of Superior Cerebral Veins.—The sinus receives the superior cerebral veins, and these enter its walls near the inferior angle. If a thrombus occludes the whole cross-section of the sinus opposite the entrance of a vein, or if it is situated in the trough of the sinus or extends down into the trough, it may obstruct one (or more) of these veins. Thrombosis of the affected vein is then likely to occur. Many thrombi, however, are not so situated as to obstruct veins. Moreover, it seems that an obstructed vein does not invariably become thrombosed, and this is doubtless because of the easy collateral circulation. When thrombosis of an obstructed vein occurs it gives rise to paralysis corresponding to the area of cerebral cortex which the vein drains, and this paralysis may or may not be ushered in by a series of convulsions. Convulsions seem to be less usual when venous thrombosis is secondary to obstruction in the sinus than they are when a vein is thrombosed primarily. By no means all cases of thrombosis of the superior longitudinal sinus are recognizable in the present state of our knowledge, and it is certain that a large thrombus may exist in the sinus without giving rise to any clinical signs.

Case I

This is an instance of the most straightforward type of case.

Fits seventeen days after delivery; right hemiparesis; papilloedema; complete recovery.

An 8-para aged 40 was confined on June 25, 1936, labour being normal and the puerperium uneventful. During the night of July 12-13 she had four fits, and next day was admitted to hospital. She was then conscious, but in a stuporous state, was very drowsy, and barely understood what was said to her. She had paresis of the right arm and slight drooping of the right side of the face; there was also slight weakness of the right leg, and the right plantar reflex was extensor. The temperature on admission was 100° F. and the pulse rate 110. There was no neck rigidity. Examination of the heart disclosed nothing abnormal. The blood pressure and urine were normal, as were

the lungs and abdomen. Lochia had ceased. The C.S.F. was normal except that it contained a considerable number of red blood cells; but it was thought to be under increased pressure, and examination of the ocular fundi a few days later showed slight swelling (1 D) of both optic disks and a few small haemorrhages over the left one.

On the second morning after admission the patient had several more fits, with twitching beginning in and being chiefly confined to the right arm. The next day she was conscious enough to obey simple commands; her right arm was then found to be almost completely paralysed and the weakness of her face and leg had increased. Her pupils were unequal, the right being the greater. Her temperature was normal. A week later she was very much better. She was quite alert and clear mentally, her right arm had regained a great deal of its power, and her right leg was normal. Her papilloedema, however, remained, and fresh haemorrhages occurred, this time at the side of the right disk. A fortnight after the onset her right arm could be considered normal. As soon as she was well enough she complained of pain in the right leg, but nothing abnormal was seen on examination of it. Later, when after nearly eight weeks she began to get up, this leg swelled, and it is possible that there had been some thrombosis in the deep veins.

She was discharged from hospital, feeling well, after three months, but it was another six weeks before her ocular fundi were passed by the ophthalmologist as clear.

Comment.—This case showed symptoms of the two groups mentioned. The sudden onset of convulsions in the right side, followed by right hemiplegia and accompanied by the presence of a small quantity of blood in the C.S.F.; can be attributed to thrombosis of a vein on the surface of the left cerebral hemisphere. The symptoms and circumstances are identical with those in certain puerperal cases described by Martin and Sheehan (1941), in which such thrombosis of veins was verified post mortem. The co-existing papilloedema showed that the intracranial pressure was considerably raised, and this would not be caused by thrombosis of veins alone. It is, however, accounted for by prevention of the absorption of cerebrospinal fluid by clot in the superior longitudinal sinus. The differentiation from cerebral tumour could not be made with certainty in the early stage, but the blood cells in the C.S.F. and the association with childbirth were points greatly in favour of thrombosis, while the normal protein content of the C.S.F. was a point against tumour. With cerebral arterial embolism, thrombosis, or haemorrhage there would have been no papilloedema.

Case II

Femoral thrombosis seven days after delivery. Two weeks later, abrupt onset of visual disturbance and headache, followed by left hemiplegia; papilloedema; considerable recovery, but death in consequence of a spinal lesion.

The patient, aged 43, was delivered of her seventh child on June 12, 1938. On June 19 she had thrombosis in her left thigh; this was treated with hot fomentations, and she got up on June 25. On July 3 she went to church, and on returning home "felt a blackness behind the eyes" and had a headache. She went to bed and slept. The next morning on waking she could not see, and could not move her left arm and leg satisfactorily.

The patient was admitted to hospital the same day. She was then unable to see light and her pupils were dilated and did not react to light. She had weakness of the left arm and slight weakness of the left side of the face. The tendon reflexes were exaggerated on the left side; the left plantar reflex was extensor and the right one was weakly extensor also. Nothing abnormal was found in the heart, lungs, abdomen, or urine. The lochia had ceased. On July 8 she developed signs of a spinal lesion at the sixth dorsal segment, with complete paralysis of both legs, loss of sensation up to the lower ribs, and incontinence of urine and faeces. Meanwhile some vision had returned, but her optic disks were swollen and there were haemorrhages on the right

one. Paralysis of the left arm had become almost complete. Mentally she was rational and fairly alert. A week later her sight was much better and the visual fields seemed full, but the papilloedema remained. During the next few weeks the condition of the patient's left arm improved greatly, but as a result of the spinal paralysis her general condition gradually deteriorated, and she died on September 28, 1940. No post-mortem examination was made.

Comment.—Signs of intracranial pressure (papilloedema and headache) and hemiplegia indicated thrombosis of the superior longitudinal sinus. The sequence of events suggests that a clot present in the sinus had suddenly occluded it and that extension of the clot had afterwards gradually obstructed the mouth of a vein which drained the motor area of the right cerebral hemisphere.

The severe disturbance of vision at the onset of the illness calls for some comment. A somewhat similar disturbance will be described in the next case also, and, as has already been mentioned, amaurosis occurred in at least one of the German cases in which massive thrombosis of the superior longitudinal sinus was found post mortem. It seems most likely that this amaurosis is due to acute venous congestion of the optic disks consequent upon the abrupt rise of intracranial pressure which results from occlusion of the longitudinal sinus. There is no reason to suppose that the ophthalmic veins are affected more directly by thrombosis in this sinus: the disturbance cannot be satisfactorily explained by postulating venous lesions or congestion in the occipital lobes, nor would such a supposition account for the loss of the pupillary reaction to light which was observed in this case. Here and in Case III the sight was largely restored within a week or two while papilloedema was still present. I have encountered similar, though less severe, amaurosis in another case of sinus thrombosis in which the intracranial pressure was 200 mm., and in that instance also the vision quickly improved, although the intracranial pressure remained high and papilloedema persisted. We must suppose that after the sudden onset circulatory conditions within the nerve head adapt themselves in spite of the continuance of a high intracranial pressure.

In nearly all the cases of primary venous thrombosis described by Martin and Sheehan convulsions marked the onset of the illness and ushered in the paralysis, but in this case the hemiplegia developed without convulsions. There is some reason to believe that convulsions are less common if the sinus is occluded before the vein. An explanation of this may possibly be found in the fact that obstruction in the sinus leads to opening up of the collateral venous circulation, so that when the mouth of a vein becomes blocked at the sinus the vein itself may not become thrombosed and venous congestion in its drainage area may be much less intense. The absence of convulsions may, however, simply be due to the gradualness of the onset of the paralysis and of the obstruction causing it.

The diagnosis in Case II admits few alternative suggestions. The suddenness of the onset strongly indicates a vascular lesion, and there are not many that would cause papilloedema. In particular, arterial embolism would not account for it.

The spinal lesion is an unusual complication on which I do not wish to comment here, beyond stating that it, too, was probably due to venous thrombosis, and its occurrence does not modify the diagnosis of the cerebral condition.

Case III

In this case the signs of cerebral venous thrombosis were not at first evident. Some clinically similar cases that were fatal are recorded in the literature.

Sudden onset of stupor. Amaurosis, headache, vomiting, papilloedema. Word-blindness. Recovery with residual symptoms.

This patient was confined on August 28, 1938, and ten days later one leg (? which) became painful and remained so until her admission to hospital on January 1, 1939. Both legs were then greatly swollen, and there were tender veins in the right thigh and in the left calf.

On January 12 she was found in a stuporous condition. When roused she carried out simple commands but "rambled." No paresis of her limbs was found. The next day she was still more drowsy and could not be made to understand what was said to her. She had no paralysis. The drowsy and stuporous state lasted for more than a week. Occasionally she mumbled incoherently. Eight days after the onset she was more sensible and said she had a headache. She complained that her sight was "faint" and that she could not recognize the ward sister. She vomited twice on that day (? before), and the margins of her optic disks were blurred. The drowsiness gradually passed off in the course of another week; but headache continued, and she still complained that her sight was misty, though it had improved. Her general condition and her sight gradually became better, and by the end of another month she seemed very well, but was unable to read; she could write, but could not read what she had written (word-blindness). Her acuity of vision was about normal and she could recognize small objects at a distance; her visual fields were full. When she left hospital after a stay of twelve weeks her papilloedema had entirely subsided.

Eighteen months later she was readmitted, having had two fits and become weak in her legs. Her word-blindness was still present. Her legs were slightly weak and spastic, with typical reflex signs, and her abdominal reflexes were absent. She was discharged much improved after a fortnight.

Comment.—In this case the connexion with childbirth is less immediate, but the series of events is continuous. During the first admission her superior longitudinal sinus was probably obstructed by clot, and hydrocephalus was thus caused; to this obstruction her prolonged drowsiness or stupor must be attributed. Her earliest visual disturbance was probably due, as has been said, to venous congestion of the optic nerve heads. It would seem that about the same time at least one superior cerebral vein was blocked, thereby giving rise to her word-blindness. In this case also the absence of convulsions is to be noted. Eighteen months later further thrombosis evidently occurred, causing some venous obstruction more anteriorly, with consequent temporary weakness of the legs. Two features of interest are the presence of a permanent residual disability and the occurrence, after a prolonged interval, of signs suggestive of further thrombosis. I have seen two other probable cases with severe residual disabilities, and in both of them the history indicated that there had been more than one acute attack.

Pathology

The form of the clot in the longitudinal sinus which may give rise to such symptoms is subject to great variation. In a number of the fatal cases a massive clot has been found filling the whole sagittal sinus and even the lateral sinuses as well (Mondré, 1928), but we can exclude such conditions in considering these less severe cases. There may, however, be a massive clot filling a portion of the sinus. Alternatively there may be multiple mural thrombi, some becoming large enough to obliterate the lumen, as in Symonds's (1937) case and in several of the older instances (Collier, 1891). Martin and Sheehan described a long "rat-tail" thrombus swimming free in the blood stream, except for an attachment to the wall of the sinus at one point, and such a clot might enlarge until it occluded the sinus. Other conditions which may occur have been described in non-puerperal cases—e.g., a continuous clot along the roof of the sinus, leaving the trough unobstructed (Bailey and Hass, 1937), and a layer of

clot on the walls, with a channel for blood persisting in the centre (Gowers, 1892-3).

The primary thrombus is usually in the longitudinal sinus, but it may be in one of the lateral sinuses, or clot may extend into the longitudinal sinus from a vein (Virchow).

Diagnosis and Clinical Variations

The principles for the diagnosis of clot on the superior longitudinal sinus have already been given, and if signs of raised intracranial pressure and signs of cerebral venous thrombosis coexist its presence may be assumed. Granted that there is no severe heart disease to provide a source of emboli and that the blood pressure is within normal limits, venous thrombosis is the most probable cause of hemiplegia occurring during the puerperium (von Hösslin). If this be remembered, and if papilloedema be looked for, the diagnosis will seldom be missed. Cerebral tumour is the most likely condition to cause confusion, and it may not always be possible to exclude it from the diagnosis at the beginning. A little blood in the cerebrospinal fluid on microscopical examination is strongly in favour of thrombosis, while with tumour an increase of the protein content is usual. Meningitis may have to be considered, and this can be excluded by examination of the cerebrospinal fluid.

It is not necessary for the diagnosis that both the principal groups of signs should be present. As with otitic hydrocephalus, there must be cases in which no thrombosis of veins occurs. The sudden onset in the puerperium of signs and symptoms of increased intracranial pressure should therefore arouse a strong suspicion of thrombosis in the longitudinal sinus, especially if they are accompanied by a drowsy or stuporous state. In a severe case of this kind the symptoms would be the same as in Case III without the residual word-blindness—namely, drowsiness or stupor, headache, amaurosis, and papilloedema. On the other hand, there are cases in which the intracranial pressure is not raised and the symptoms are exclusively those of venous thrombosis. If the symptoms merely indicate thrombosis of a single vein it is impossible to carry the diagnosis further, although clot may be present in the sinus; but if there is evidence of two or more superior cerebral veins becoming thrombosed, and especially if they are on opposite sides of the brain, there is a strong presumption that the veins are being obstructed by clot in the sinus. The validity of this deduction is illustrated by the fatal case described by Symonds (1937), in which there was paralysis first of the left arm, then of the right side of the face, and later complete left hemiplegia; there was no papilloedema; the cerebrospinal fluid was slightly bloodstained but its pressure was normal; post mortem there were mural thrombi of different ages in the longitudinal and lateral sinuses.

In cases with less extensive clot there may be neither any severe rise of intracranial pressure nor venous obstruction, and in the present state of our knowledge such cases are not recognizable. Some impairment of C.S.F. absorption may cause headache and nothing else, but there must be a number of cases in which relatively small clots on the walls or roof of the sinus give rise to no symptoms at all.

Treatment

When symptoms have appeared the treatment that is indicated is (1) to allay convulsions if they are present, (2) to reduce intracranial pressure, and (3) to prevent further thrombosis.

To allay convulsions a dose of three grains of luminal should be given, by mouth or by injection according to whether the patient is conscious or not. It may be repeated

as required at intervals of six hours. For the reduction of intracranial pressure the same palliative measures may be used as in cases of cerebral tumour—namely, the intravenous injection of glucose solution (50 to 100 c.cm. 50%) or an enema of concentrated magnesium sulphate solution (3ij-3iv). Symonds (1937) used frequent lumbar punctures in cases of sagittal sinus thrombosis resulting from ear disease; and in the first few days, especially if amaurosis is present, this is perhaps the most advisable procedure, because the pressure of the cerebrospinal fluid can be measured at the time of the puncture and can definitely be reduced temporarily to a normal level; it should be brought down to 100 mm. To prevent the thrombosis spreading the only means at our disposal is the administration of heparin, and of this I have no personal experience. In recent articles Dockeray and Kawerau (1940) and others have described the giving of this drug by the method of continuous intravenous drip, but if this method is not available repeated injections may be used.

Aetiology

In the active period of life cases such as these are extremely rare apart from child-bearing, and the association with child-bearing is so constant that it cannot be mere coincidence. Difficult labour, manual removal of the placenta, post-partum haemorrhage, uterine sepsis, and other complications of delivery can be exonerated as causes except in so far as they may give rise to pelvic or femoral thrombosis. In nearly all the obstetrical cases of longitudinal sinus thrombosis that I have seen there has been evidence of venous thrombosis elsewhere in the body, and the same has applied in many, if not all, of the fatal cases that have been described. Can it be that the clot in the longitudinal sinus is in some way "metastatic"—that some fragment transmitted from elsewhere forms the nucleus of a new clot? The superior longitudinal sinus would be a likely place for any element carried in the blood stream to settle, because the flow of the blood there is so slow that it would probably be deposited, and because the walls of the sinus are rough and irregular, with many small depressions in which it might lodge.

I had written this paper and stopped baffled at this question when I became acquainted through an annotation in the *British Medical Journal* with certain findings of Batson (1940). This worker, interested in the distribution of metastases from prostatic carcinoma, investigated the connexions of the pelvic veins by injecting radio-opaque material into them. He found that in addition to their known connexions with the caval system, these veins had free anastomosis with the veins in the vertebral canal and around the vertebral column, and that when material was injected into the veins in the pelvis of the cadaver this vertebral plexus of veins provided a free pathway for it right up to the dural sinuses. "We . . . expect to find fairly well filled such veins and sinuses of the cranial cavity as the superior longitudinal sinus, the cavernous sinus, Trolard's anastomotic vein, and others." Carrying this investigation further, Batson injected radio-opaque material into the dorsal veins of the penis of a monkey and showed that it followed the same paths as in the cadaver. If the flow to and in the inferior vena cava was obstructed by compression of the abdomen by means of a towel tied round the animal, some of the thorium medium passed into the vertebral system of veins, and could be followed in the x-ray films upwards past the zone of compression. Batson deduced from his experiments that during coughing and straining blood was actually squeezed out of the abdominal (and pelvic—J. P. M.) veins into the vertebral vein system. In the parturient woman the conditions for the upward passage of any blood-borne fragment are still more favourable than in Batson's monkeys. In

fact, when she strains on the bed-pan they seem to be simply ideal. Because of the movements of the bowel and bladder and her active straining, that is the time when a fragment of clot is most likely to be dislodged; because of her straining, to which is added compression of her abdomen by a firm binder, such a fragment would be directed into the vertebral vein system and propelled upward by the movements of blood induced by her repeated straining. As if those factors were not enough, her posture on the bed-pan calls in gravity to aid the process. It is well known that fragments of clot are liberated from thrombosed pelvic or femoral veins and give rise to pulmonary embolism, and it would be remarkable, under the conditions prevailing, if they did not sometimes pass into the vertebral venous system, and occasionally reach the cranial cavity.

In a cerebral vein a fragment of clot might cause actual embolism (plugging), but in the longitudinal sinus it obviously cannot do so, since all the means of entrance into the sinus are narrower than the channel itself. It is therefore necessary to suppose that a deposited fragment would serve as the nucleus of a new clot. Batson's work, however, obviously provides an explanation also of those puerperal cases in which thrombosis is limited to cerebral veins and those in which sinuses other than the superior longitudinal are involved.

The occurrence of a spinal lesion in my second case receives its explanation, too, from the hypothesis that fragments are transmitted by way of the vertebral veins if we suppose that thrombosis first took place in the extrathecal veins at the affected level and consequently spread into the spinal veins.

The prophylactic measures which these considerations suggest are obvious. When a patient is suspected of having pelvic thrombosis every precaution should be taken to avoid straining, the binder should not be tight, and the patient should be kept well propped up in bed.

Summary

Thrombosis in the superior longitudinal sinus occurs in the puerperium and after abortion.

The clinical diagnosis depends on signs of raised intracranial pressure and signs of obstruction of superior cerebral veins. Under certain conditions the diagnosis may be made in the presence of only one of these groups of signs.

Clinical accounts are given of three cases which are believed to be of this nature.

It is suggested that a fragment of clot carried up to the superior longitudinal sinus from the pelvic veins by way of the vertebral venous system acts as the nucleus for the clot which forms in the sinus.

All the cases described in this paper were seen at Whipps Cross Hospital, and I am indebted to the medical superintendent, Mr. O. R. M. Kelly, for permission to describe them.

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J. H. Levy (*Tri-State med. J.*, 1941, 13, 2642) states that diabetic neuritis, the incidence of which according to different observers ranges from 0.6 to 57.3% of the total number of diabetics, is probably not dependent upon vitamin B₁ lack. Supplementary or properly organized diet with the vitamin in pure chemical form is therefore not indicated.

ORAL MEDICATION BY SOBISMINOL IN THE TREATMENT OF SYPHILIS

BY

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Towards the end of the era of mercurial therapy in the treatment of syphilis there was entertained and freely expressed a decided preference for the parenteral rather than the oral route of administering the drug. It was insisted that with the oral method there was no uniformity of absorption and that gastro-intestinal disturbance was more often encountered. The prejudice thus established against the oral administration of antisyphilitic remedies still persists. Although there has been no backward swing of the pendulum, an inclination towards further exploration of the possibilities of the oral route has certainly been manifested recently. Nabarro (1941) has strongly advocated the use of ingested stovarsol, a pentavalent organic arsenical, in the treatment of congenital syphilis in infants; and several American publications have described experiences with an orally applied bismuthial—sobisminol—in the treatment of acquired syphilis in adults. The present article deals with a small series of cases treated with sobisminol (sodium bismuthate soluble), "a complex organic bismuth compound the chemical structure of which has not been established."

Methods of Administration Compared

The advantages and disadvantages of the oral treatment of syphilitic infections may here be briefly recapitulated. Only a small proportion of patients fail to become accustomed to "the needle" after the first few injections. Efficient injection technique is attended with very little immediate pain, but when several injections a week are given (e.g., two or three intravenous arsenicals and two intramuscular bismuthials), and especially when the intramuscular injections cause tenderness and stiffness, as occurs with oil-soluble bismuth, then many patients would appreciate a period of relief from "that pincushion feeling." Also, especially in women with fat-infiltrated hips, it may be difficult to prevent the bismuth forming pockets, from which absorption is slow, or seeping back along the needle track to form tender subcutaneous nodules. Moreover, some women are averse to receiving hip injections during a menstrual period. Also, especially at the present time, seafaring men on long voyages may be delayed in reaching a port where injection treatment could be continued, and may find regular visits to V.D. clinics impossible. In these and similar cases a potent drug for oral administration would satisfy a real need in antisyphilitic therapy. In the present emergency an important consideration is the saving of time, and the taking of a drug by mouth exacts but a small fraction of the time required for visits to a clinic or a doctor.

On the other hand an oral medicament may vary in its degree of absorption, and therefore of potency, in different individuals and in the same individual under different conditions—e.g., of bowel activity. The use of this route may cause gastro-intestinal irritation, leading to nausea, anorexia, vomiting, and diarrhoea, with, of course, lessened absorption or enforced cessation of administration. The regular use of an oral medicine, too, depends upon the mentality and co-operation of the patient, and carelessness

and forgetfulness are special attributes of V.D. patients. A simple and easy treatment is regarded as much less important than the injection visit, and may lead to an erroneous impression as to the seriousness of the disease. The major disaster to be avoided is that the patient should come to believe that the control of treatment is within his or her own competence: oral medication tends to propagate this fallacy, and self-treatment by the patient is absolutely inadmissible. All orally administered antisyphilitic remedies should be scheduled at once and be obtainable on prescription only.

The manufacturers state that, given orally, sobisminol is reputed to have an antisyphilitic effect comparable to that produced by other soluble compounds of bismuth given intramuscularly. It is further averred that a daily dose of from six to nine 0.75-gramme capsules (each representing 150 mg. of bismuth) will produce a satisfactory concentration in the blood stream in most patients, and that probably the optimum dose is six capsules a day.

The small series of cases now to be discussed comprised twelve male and three female patients, all of whom were admitted to hospital in order to facilitate close observation.

Sobisminol Treatment: Male Cases

Of the male patients eleven had primary genital chancres and one had a primary chancre of the lower lip. In all cases before starting treatment *Spirochaeta pallida* was demonstrated in serum from the primary lesion and a blood Wassermann test was made. Thereafter treatment with sobisminol was begun and the chancre dressed with saline, serum from it being examined daily for *S. pallida*. The blood Wassermann test was repeated at the end of the course. Immediately the administration of sobisminol orally was stopped intensive routine antisyphilitic treatment with intravenous "914" or stabilarsan and intramuscular bismuth was begun.

Particulars of the eleven primary genital cases are given in Table I.

TABLE I

Case No.	Blood Wassermann at Outset	No. of Capsules per Day	Total No. of Capsules given before Arsenicals Started	<i>S. pallida</i> Absent After	Blood Wassermann at End of Course
1	++	6	42	4 days	+++
2	++	6	38	3 "	+++
3	++	6	54	3 "	+++
4	+	6	67	8 "	+++
5	+	6	66	8 "	++
6	++	9	33	3 "	+++
7	++	9	36	3 "	+++
8	++	9	45	<i>S. pallida</i> present at end of 5 days	+++
9	—	9	51	3 days	+
10	—	9	54	4 "	—
11	—	9	39	4 "	—

In the twelfth case dark-field examination of serum showed dead *S. pallida* only, as this patient had been applying antiseptics to the erosion. His wife, however, was admitted to hospital with a lip primary chancre, less well developed, which showed living and active *S. pallida* on dark-field examination. The husband's blood Wassermann reaction was strongly positive. Treatment with six capsules of sobisminol daily was started, and was continued for twelve days, during which time the lesion increased in size and was covered with a crust. On the twelfth day an early macular rash was visible on the trunk; thereupon sobisminol was stopped and intravenous "914" begun.

Commentary.—The average number of days before the dark-field serum tests became free of spirochaetes was 4.2. At the end of the course three cases which at the outset of treatment showed a negative blood Wassermann reaction became seropositive, and in two other cases the intensity

of the blood Wassermann reaction was increased. One patient developed a secondary macular eruption after eleven days of treatment. These last clinical findings may seem to infer that the undoubted antagonistic influence of oral sobisminol on primary syphilis is yet not strong enough to prevent the generalized systemic extension of the disease. Nevertheless it is commonly observed in the routine treatment of early syphilis that a positive blood Wassermann reaction may increase in intensity after each injection of "914" ("provocative" effect), and the first injections may accentuate or accelerate the appearance of an early rash.

Female Cases

Particulars of the three female patients are given in Table II.

TABLE II

Case No.	Blood Wassermann at Outset	No. of Capsules per Day	Total No. of Capsules given before Arsenicals Started	S. pallida Absent After	Blood Wassermann at End of Course	Bismuth Excretion
1	+++	6	108	6 days	+++	11.52 mg. per day after 18 days
2	+++	6	68	3 days (serum from condylomata)	+++	
3	+++	6	88	6 days (serum from condylomata)	+++	12.5 mg. (5th day); 5.04 mg. (10th day); 4.29 mg. (12th day)

Clinical Observations.—The oral sobisminol, given alone, achieved rapid resolution of the syphilitic manifestations, whether primary sore, condylomata lata, or mucous patches. In the first two cases an early examination of the cerebrospinal fluid was carried out, on the twelfth and the sixteenth day respectively, and in both cases all the tests, including the cell count, globulin estimation, Wassermann, and gold sol, were negative. In all three cases the sobisminol was continued after an arsenical (stabilarsan) had been introduced, and altogether totals of 212, 512, and 142 capsules were given. In the first case, an early secondary, the blood Wassermann reaction became negative after only three intravenous injections, each of 0.2 gramme, of stabilarsan. In the second case, a late secondary with condylomata lata, the Wassermann reaction was negative after eight intravenous injections of stabilarsan (2 of 0.15 gramme and 6 of 0.3 gramme), given twice weekly. If any deduction were permissible, it would be that the oral sobisminol had acted as a powerful adjuvant of the injected arsenical.

Toxic Effects

Only two of the male patients complained of any upset. In both cases the symptoms were "indigestion" and nausea, which were relieved by a sedative powder.

Two of the female patients experienced untoward effects before the arsenical injections were started. The first had severe abdominal pains during the fifth night, but they were not accompanied by nausea or diarrhoea. The following day she complained of a sore tongue, but the abdominal pains subsided and the glossitis gradually abated, although the capsules were continued in unredacted dosage. Later there was some soreness of the throat and the fauces were slightly red, but the gums remained healthy. The second patient developed a stomatitis on the eighth day and sobisminol was withheld for one day. Thereafter it was found possible to resume the capsules, although slight gingivitis and blue

discoloration of the gums persisted. This patient received a total of 512 capsules in less than three and a half months. The third patient received 88 capsules before the arsenical was started, and without untoward incident; but after three small intravenous injections of stabilarsan (two of 0.2 gramme and one of 0.1 gramme) she had nausea and vomiting: these symptoms passed off in a few days and the capsules were continued until a total of 142 had been taken.

In general the toxic manifestations were not severe; they were mainly referable to the alimentary system, and sometimes subsided when the drug was continued. There was no evidence of cumulative toxic effects after the drug had been administered every day for many weeks.

Summary and Conclusions

The results are reviewed of the oral exhibition of sobisminol in twelve male and three female cases of early syphilis. Suggestions are made as to the province of sobisminol in antisiphilitic therapy.

Deductions from such a limited experience as is afforded by this small series may not be regarded as acceptable, but the object of this paper is to suggest a sphere of usefulness for oral sobisminol without attempting to draw hard-and-fast conclusions.

Our results do not justify the use of oral sobisminol alone in cases of early syphilis, particularly in wartime, when it is essential to render the patient non-contagious as soon as possible. It would appear, however, that sobisminol can and should have a place in the treatment of the following classes of patients: (1) those who cannot attend regularly for injection therapy—e.g., long-distance seamen; (2) those who are intolerant of arsenic and in whom for any reason injection therapy is contraindicated; (3) those who show persistently positive serological tests in spite of long-continued parenteral treatment: in these cases oral sobisminol might be a logical and valuable alternative to the time-honoured mercury pills. One of us (R. C. L. B.) has in mind a tertiary case in which sobisminol provided a most useful stopgap during a long voyage from the East. This female patient realized that regular visits to the ship doctor might excite comment and inquiry.

We are indebted to Messrs. Eli Lilly and Co. for supplies of their product, Pulvules Sobisminol Mass.

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MENTAL HEALTH IN WARTIME

The subject of mental health, states the annual report of the National Council of Mental Hygiene, has received an impetus denied to it in the leisurely times of peace. The war has not so far produced any appreciable increase in nervous disorders, but the great changes in national life are bringing to the fore persons suffering from nervous and emotional reactions. Many such cases are encountered in shelters, rest centres, and first-aid posts. Evacuation has also brought its own problems, especially among nervous and difficult children, the subnormal, epileptics, and neurotics of old standing, and a good deal of emergency psychiatry has become necessary. The Council, now in its eighteenth year, has organized lectures on practical methods of dealing with nervous manifestations under war conditions, has produced a film on the prevention and treatment of fear, has compiled a directory of out-patient clinics for functional mental and nervous disorders, and has given attention to mental testing in the Services, psychological problems among enlisted women, and wartime mental health propaganda, among other subjects. Lord Alness, who has been associated for some time past with the Tavistock Clinic, has accepted the chairmanship of the Council, vacant by the resignation of Mr. Walter Roth, and Dr. H. Crichton-Miller the treasurership.

RADIOGRAPHS AND DISPROPORTION

BY

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WITH AN ADDENDUM

BY

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Disproportion is one of the most worrying abnormalities in midwifery. Particularly is this so in medium and minor degrees of contracted pelvis, in which diminished reserve capacity of the pelvis is so difficult to assess. Marked overlap, of course, renders the diagnosis easy. It is in the type of case usually treated by a test labour that radiographs are of the greatest importance. The method employed in this series of cases is simple, and can be carried out by any radiologist using the ordinary apparatus.

A New Method of Estimating Disproportion

Dr. J. W. McLaren, radiologist to Queen Mary's Hospital for the East End, first drew my attention to a method which I was soon convinced was of great value as a visual aid in test labour cases. I conduct no test labour now without taking special films of the case. At the outbreak of war the Lyle Maternity Wing of Queen Mary's Hospital was closed and I continued the method at the Kingston County Hospital, where Dr. Crawshaw, the E.M.S. radiologist, has given every co-operation and has further developed the method. All cases analysed in this paper were cases of disproportion. The diagonal conjugates varied between $3\frac{1}{2}$ and $4\frac{1}{2}$ inches, the great majority lying between 4 and $4\frac{1}{2}$ inches. The foetal heads in all cases remained above the brim at ante-natal visits and could not be "pushed in" by the usual manoeuvre of pressure downwards and backwards into the pelvis or by sitting the patient up. Overlap was present in several cases, as shown by ordinary palpation and by Munro Kerr's method. All these women were examined weekly towards the end of pregnancy, and on each occasion attempts to make the head engage failed.

I would like to add one clinical finding most helpful in giving an opinion; it is that in those cases in which the position remained constant—i.e., L.O.A. or R.O.A. at the last three or four visits—the patients delivered themselves spontaneously.

Patients were radiographed in the last two weeks of pregnancy, and the usual method of calculating the expectant date (adding seven days to the L.M.P. and going forward nine months) was adopted. Some of the radiographs were taken when the patient was actually in the first stage of labour. Dr. Crawshaw gives in the Addendum the technical details of the method used in taking the radiographs. I would like, however, to emphasize that the antero-posterior film should be large enough to show the whole foetus and the brim of the pelvis. This will enable the radiologist to exclude abnormalities in the foetus; also to show the lie, position, presentation, and degree of flexion of the head, and the relation of the head to the conjugate diameter of the brim. If the head lies centrally the antero-posterior diameter of the brim and of the head are magnified proportionately when a true lateral film is taken. If

the head is lying obliquely at the brim an oblique diameter is of course projected, and this diameter is always greater than the hiparietal.

Interpreting the Films

It will be remembered that the foetus during its progress through the pelvis traverses the obstetrical pelvic axis. This axis at its commencement corresponds with the first part of the curve of Carus and may be represented at the brim by a line drawn upwards at right angles to the mid-point of the plane of the brim. Making use of this knowledge, I found the best way to read the lateral radiographs was to draw a line on the films between the promontory of the sacrum and the upper posterior margin of the symphysis pubis, and from each extremity of this antero-posterior diameter of the brim to erect perpendicular lines, thus forming the sides of a "box" (see diagram). This plan has

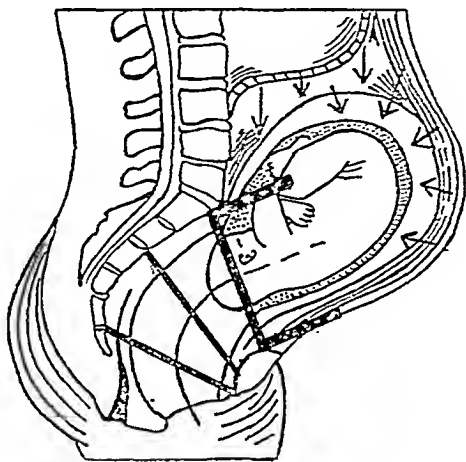


Diagram showing perpendicular lines erected at extremities of true conjugate to form sides of box.

been followed in the reading of all the films, and wherever the foetal head fitted easily between the perpendicular lines it could be safely assumed that it would go through the brim. The erection of these perpendicular lines makes the reading of the films simple and accurate. It is self-evident that if the hiparietal diameter does not fit into the "box" no other diameter can, and Caesarean section is advisable.

In our opinion a good lateral film is the radiological counterpart of Munro Kerr's clinical method. Originally we took the lateral films with the patient lying on her side on the x-ray table, being careful that the thighs were not flexed sufficiently to obscure the top of the symphysis. Recently, however, Dr. Crawshaw has taken the lateral view with the patient standing up and leaning forward with her hands grasping the back of a chair. It will be recalled that this is the natural position for a patient to assume when she is seized with a pain while walking about during the first stage of labour. This position hings the uterus, and with it the foetus, at right angles to the "position of entry."

Results

I have analysed 102 cases over the last three years and find that the radiologist's report was wrong in only six instances. In three of these the report said the head would not pass, and it moulded through, with the aid of forceps, in one case; in one the report said the head would pass, and it did not; while in the remaining two the report said the heads might pass, and Caesarean section was necessary.

I have had cases in which, though the head could not be pushed in clinically, the film showed that it would pass. In one case I was so doubtful that a week after the expectant date I took the patient to the theatre for examination under anaesthesia and probably for Caesarean section. Under the anaesthetic the head would partially enter the brim. In view of this and the definite radiological report I ruptured the membranes with a Drew Smythe catheter, and spontaneous delivery of a living child followed during the next twenty-four hours. There were other very doubtful cases in which this simple radiological aid was of the greatest help to me.

I am convinced that this method is of great value in cases of disproportion. The films should be taken as near the expectant date as possible if the fullest aid is to be obtained from them.

ADDENDUM

The method of estimating disproportion described in this paper depends upon the fact that if any diameter of the head and the true conjugate of the pelvis are equidistant from the film the magnification of these is the same. Hence it can only be of use in vertex presentations with the head central in the pelvis. It gives no information in any other presentation or in cases of outlet contraction. In spite of these limitations it is of considerable value to the obstetrician, because it is in the true conjugate diameter that disproportion is most often encountered.

Examination of the antero-posterior and lateral views of the pelvis enables the radiologist to see if the head is lying transversely or obliquely: as already stated, if the foetal head lies obliquely in the pelvis a diameter larger than the biparietal is projected. In a high percentage of cases clinically suspected of disproportion the lateral radiograph shows that there is a large clearance between the size of the foetal skull and the true conjugate, and disproportion can be excluded. The question of what relation between the foetal skull and the true conjugate constitutes disproportion is a real difficulty. Mere direct comparison of the size of the bony parts is clearly not sufficient, because there are always unknown factors—e.g., the degree of moulding and the thickness of the soft parts—to be considered. The radiologist must therefore make his rules of interpretation from experience of what happens in labour.

In the above series of cases the rule has been used that where the biparietal diameter is greater than the true conjugate disproportion exists; where it is equal to the true conjugate the head will only go through with moulding; and where it is less than the true conjugate no difficulty from disproportion need be anticipated. It may be that this rule will have to be altered as a result of further experience, but enough has been learnt to show that it is not far from the truth. In those cases in which the head is lying obliquely and in which the oblique diameter of the skull projected is greater than the true conjugate it is not possible to be certain whether disproportion exists or not.

As to the actual radiography, the lateral films may be taken with the patient lying on her side or, if a vertical Potter-Bucky is available, standing with the arms supported on the back of a chair. The hips should not be flexed, as this may cause the shadow of the symphysis to be hidden by the shadows of the femora. To be of use the film should not be far from a true lateral as judged by the superimposition of the shadows of the femoral heads.

Our grateful thanks are due to Dr. McLaren (who would have collaborated with us but for his absence on active service). Our thanks are also due to Mr. Kidd, superintendent of Kingston County Hospital; to Mr. A. McAlister of Queen Mary's Hospital, Stratford; and to the resident and the radiological staffs of the two hospitals.

SULPHANILAMIDE IN LOCAL TREATMENT OF SKIN INFECTIONS

BY

A. G. MARSHALL, M.B., B.Chir.

Flight Lieutenant, R.A.F.V.R.

Localized infections of the skin such as sycosis and impetigo contagiosa have been found difficult to heal, especially when established for some time. In the Services, although these conditions are not common, the time factor and the prevention of cross-infection combine to make the problem an important one. Older methods of treatment, such as the application of ointments after bathing the lesions, are tedious and in many cases ineffective. Gentian-violet paint was not used in the following series of cases. The recent satisfactory reports of the treatment of wounds by the local application of sulphanilamide powder suggested the extension of this method to such conditions. The results have been most gratifying.

The usefulness of sulphanilamide therapy in skin diseases has been the subject of much discussion, and its value is stated by Smith (1940) to be far from understood. He reports good results in the local application of solutions and ointments to ulcers and infected burns and refers to the advantages of economy and atoxicity. Jaeger (1936) and Merz (1937) have treated skin lesions with the drugs given orally, and locally as solutions in water and glycerin: the latter applied his methods to impetigo. Buchanan (1940) points out the value of crushed tablets of sulphapyridine as a dressing for a pneumococcal ulcer, a treatment which is often of use in varicose ulceration. Under present war conditions I have been able to trace only one author who specifically mentions the use of the powder for infections of the skin: MacKenna (1940) employed it under a dressing of zinc paste for impetigo, and stated that it is often successful.

Method

The patients were treated in hospital as ambulant but isolated cases. The scabs were bathed off three or four times daily with a warm 2% solution of sodium bicarbonate. The sulphanilamide powder (streptocide) was applied direct to the raw surface, where it sticks well, and was left with no dressing. The treatment was usually carried out by the patient after the first few times, and he used more powder when required. It was of course essential to continue regular shaving in the healthy areas, and the hair was clipped short elsewhere. Frequent shampoos were given. In cases with thick masses of exudate which did not separate easily a gauze pad soaked in liquid paraffin was applied for twelve hours, and the treatment then continued, the old exudate separating readily with this application. Other oily dressings were rigidly avoided, as they were found to spread the infection. In certain cases, described below, ascorbic acid was prescribed by mouth, starting with 500 mg. daily, the dose, after saturation, being reduced progressively to 50 mg. daily.

Results

All the cases had already been treated with bathing and ointments. There was immediate and decided improvement after the application of sulphanilamide powder. The surrounding inflammation and the exudation rapidly decreased, and in three days the lesions were sterile and remained so. Case 4 (see below) was at first treated with sulphanilamide ointment, but after a week the lesions had not become sterile nor apparently had they improved. It is therefore suggested that a high concentration is necessary to destroy the staphylococcus. This is unlikely to

occur to an adequate degree when the drug is given by mouth only. There was much drying of the surface, but it was found better to ignore this and to maintain sterility. In the old-standing cases healing of the deep granulating areas was slow, and in these ascorbic acid was given. In comparison with similar cases without this addition healing was more rapid. Further stimulation of healing by ray treatment was not found necessary in any of this series. Sulphapyridine and sulphathiazole powders were not used: results were satisfactory with sulphanilamide powder, which was more readily obtainable.

Illustrative Cases

Case 1.—This patient had severe staphylococcal infection of a large part of the face, which had been treated for seven days before admission with acriflavine dressings and then with eau d'Alibour. As the condition became much worse the areas were cleaned with olive oil, and ung. hydrarg. ammon. dil. was applied. There still being no improvement, the patient was admitted to hospital and treated with sulphanilamide powder. Three days later the areas were clean and almost sterile. Healing was complete ten days after admission.

Case 2.—This case was complicated by submaxillary suppurative adenitis, the organism being *Staphylococcus albus*. There were large infected areas on the lips and chin, and the patient had been treated with bathing and ointments for ten days. The abscess was drained and local sulphanilamide treatment for the face started. He would have been fit for discharge after twelve days had he not developed measles shortly after admission.

Case 3.—This patient first began to have suppurative lesions of the face in February, 1940. He had been treated with bathing, oils, and ointments, but states that he was never entirely free. His left eye began to be painful in September, 1940, and the right eye soon followed suit. He was admitted on November 1 with severe ulceration over the upper lip and chin, with a hard exudate and deep fissures. Both eyes showed purulent blepharitis. After bathing and application of the powder the inflammation around the lesions decreased, and the eyes, for which boric lotion was used, had healed. The central parts of the lesions, which were deeply crusted with adherent exudate, were cleared with packs of liquid paraffin. Further powder was applied, and shaving or close clipping of the beard was continued throughout. On November 19 the whole area was clean and so nearly healed that the man was returned to duty. In this case ascorbic acid was given from the time of admission.

Case 4.—This was an early case of impetigo contagiosa that had been treated with ointments for four days. The affected areas were bathed and streptocide ointment was applied. After three days the lesions gave a massive growth of staphylococci: this was maintained for a week. On the seventh day treatment was changed to the powder, following which the lesions rapidly became sterile and remained so. After seven days' slow progress ascorbic acid was given; healing was then rapid and the patient was discharged five days later.

Summary

A method of treating local skin infections with sulphanilamide powder is described.

Progress was rapid in comparison with older methods.

Ascorbic acid by mouth and ray treatment are suggested for accelerating healing after the infection has been cured.

My thanks are due to Wing Commander J. M. A. Costello for permission to publish these cases and for his advice and interest.

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A Rockefeller Foundation grant of \$25,000 for research in endocrinology for five years under the direction of Dr. J. S. L. Browne, assistant professor of medicine, McGill University, and lecturer in pathological chemistry, is among recent gifts to the university.

Medical Memoranda

Traumatic Asphyxia

It would seem that traumatic asphyxia is rare enough to warrant a typical case being put on record.

CASE REPORT

An errand-boy aged 14, after being knocked off his bicycle by a lorry, was admitted with bruising of the left hip and cuts around both knees. The most striking features, however, were his dusky complexion, his cyanosed lips, and the numerous tiny petechial haemorrhages on his face, conjunctivae, neck, and upper part of chest to the level of the second rib; they were more prominent on the left side, and it was observed that the area of skin underlying his collar and braces was unaffected. He complained bitterly of inability to swallow and of difficulty in breathing: although his respiration rate was not much increased, the depth was irregular and less than normal. He had no pain or tenderness in the chest, and physical signs were normal. His condition at the time was that of shock and asphyxia. His minor injuries were duly treated, and morphine and warmth soon relieved the shock; nasal oxygen was given for the asphyxia with the patient in a sitting position.

Two hours after admission his general condition was slightly better, though the dyspnoea and cyanosis showed no improvement; he was still unable to swallow. The petechiae in the skin were more pronounced, while those in the conjunctivae were beginning to coalesce. Oedema of the eyelids, face, and lips was noticed at this time. The dysphagia and cyanosis were slowly passing off and the breathing was a little easier twelve hours after admission. There was no white to be seen in the eyes at all. Physical signs in the chest were normal, and rib tenderness was absent. The oedema and petechial rash were rapidly subsiding twenty-four hours later, the oxygen being discontinued after a period of thirty-six hours.

Early in convalescence his chest was radiographed, but showed no abnormality. Except for a small residual quantity of blood in the conjunctivae, complete recovery had taken place, and the patient was discharged three weeks after the accident. He constantly affirmed that he did not lose consciousness, and that the lorry did not run over or even touch any part of his head, chest, or abdomen.

DISCUSSION

Cause.—It seems reasonably certain that asphyxia is due to a sudden distension of the superior vena cava and its tributaries by a sudden compression of either the thoracic or the abdominal veins. The sudden distension causes a capillary paralysis with or without rupture and extravasation of blood. The areas draining via the jugulars into the innominate veins are affected, as these vessels are deficient of valves: the same is true of the subclavian veins, when the arms also show the characteristic changes. The lack of cerebral symptoms is presumably due to the baffling effect of the large blood sinuses at the base of the brain.

Diagnosis.—The characteristic picture is seen in the case described above. The extremely clear line of demarcation of the dusky blue areas soon to be covered with petechiae calls for special attention. The upper chest, neck, shoulders, and face are the parts affected. The dyspnoea and dysphagia are typical.

Treatment.—Morphine and warmth soon relieve the patient's apprehension, but the administration of oxygen brings ease almost immediately. The latter should be continued until the patient fails to derive benefit from it.

Prognosis.—Traumatic asphyxia itself does not terminate in death. The outlook as to life is good in all cases; but as to sight the prognosis should be guarded, for atrophy of the optic nerve has been recorded.

I wish to thank Dr. J. M. Christie for permission to publish this case and for his helpful criticism.

St. Margaret's Hospital, Epping. ERIC K. GARDNER, M.B., B.Ch.

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Reviews

RADIOGRAPHY OF SILICOSIS

An X-Ray Atlas of Silicosis. By Arthur J. Amor, M.D., M.Sc. Translation of the legends into French by Robert E. Horne, M.A. With a foreword by Sir Wilson Jameson, M.D., F.R.C.P. (30s. net.) Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd. 1941.

In compiling *An X-Ray Atlas of Silicosis* Dr. Arthur J. Amor aims at setting out the essential features of silicosis for senior students, factory surgeons, and others working in industrial diseases. The book consists of 28 pages of text, followed by the atlas itself of 72 plates. An excellent introductory chapter outlines the problem and discusses the aetiology of silicosis. There follows an account of the pathology of the condition and then of the radiological manifestations. These are well described, although exception may be taken to the statement that "if a calcification of the hilum glands occurs, that is almost specific of silicosis." An interesting point brought out by the author is that cavitation is not commonly seen when tuberculosis supervenes on silicosis, and that other signs, such as fluffy outline of the nodules and coalescence into large opacities, must be relied upon in diagnosing this complication. The problem is made more difficult by the large number of cases with negative sputum. The text finishes with two short chapters on the clinical and prognostic aspects.

The atlas proper is divided into three sections. The first section deals with the various stages of silicosis. These 37 radiographs are well chosen, and give a clear picture of the evolution of the disease from a slight reticular fibrosis, through the stages of nodulation, coalescence, and development of silico-tuberculosis. The second section is devoted to a comparison of the appearances of silicosis as it is seen in the various industries in this country. The 24 plates in this section make an admirable record of the variations met with; of particular interest are the four radiographs illustrating the evolution of the condition in a haematite miner, a tin-miner, a potter, and a sand-blaster. This section ends with pictures of such complications as gross calcification, bullous emphysema, and pneumothorax. The last section deals with the differential diagnosis, and includes samples of miliary tuberculosis, carcinomatosis, and asbestosis. If one were seeking to find a fault it would be that the subject of asbestosis is not discussed in greater detail.

The author is to be congratulated on producing a monograph of great merit, and one that is warmly to be recommended to those who are interested in the subject.

CUSHING'S LIFE OF OSLER

The Life of Sir William Osler. By Harvey Cushing. Complete in one volume. (Pp. 1417. 21s. net.) London, New York, Toronto: Oxford University Press. 1940.

"Some men command admiration by their intellectual gifts, others, perhaps fewer, attract by the magnetic charm of their personality. When these characteristics are combined in the same individual his influence is irresistible. Such a man was William Osler." So wrote Sir Walter Langdon-Brown in his biographical note for a new edition of Osler's famous collection of addresses entitled *Aequanimitas*. We quote these apt words in making known to our readers the republication of another favourite book, Harvey Cushing's *Life of Sir William Osler*, which first appeared in 1925 in two volumes, within four and a half years of the beloved physician's death. Cushing was Osler's pupil, colleague, and friend. The book was reviewed at length in these columns by another friend—Sir Humphry Rolleston—who

described it as a suitable memorial to "a wonderful personality, the like of whom we shall not look upon again." It won the Pulitzer prize for biography in the year of publication and has since continued to attract thousands of new readers. This one-volume unabridged edition makes it possible for many more to have the book "for keeps." Drs. J. F. Fulton and W. W. Francis have written a short foreword in which they recall a few facts about the distinguished author of the biography. Harvey Cushing, they say, "has now joined the Oslerian ranks of those who, though no longer with us, still shape our lives." During his days in Baltimore in the surgical service of William Halsted at Johns Hopkins, Cushing came into close contact with Osler, and for some years he lived next door. In Sir William's phrase, he became a "latch-keyer," and we now learn that many of the anonymous allusions in the text of this biography to "those privileged neighbours" have reference to Cushing himself; the two men were on terms of the closest intimacy for nearly twenty-five years. "Osler's love of books and his almost phenomenal capacity for work stirred in Cushing a whole-hearted admiration that made him immediately respond when Lady Osler invited him to prepare her husband's *Life*."

All but eleven of the original forty-seven illustrations have had to be omitted from the new edition, but apart from this and minor corrections there are no changes. It has been well printed in the United States for the Oxford University Press of New York, and is published in this country by Sir Humphrey Milford as one of the productions of the Oxford University Press. Many will be grateful for this pious enterprise and think the result wonderfully good value for a guinea.

A TEXTBOOK OF SKIN DISEASES

Essentials of Dermatology. By Norman Tobias, M.D. (Pp. 497; illustrated. 28s.) Philadelphia, London, Montreal: J. B. Lippincott Company. 1941.

This work emanates from the University of St. Louis, where the author is the senior instructor in dermatology under a veteran professor, to whom it is dedicated on the occasion of his eighty-second birthday. Is there no professorial age limit at St. Louis? The book bears a strong resemblance to many other American textbooks of dermatology. It is quite sound and devoid of startling features. It is well illustrated, mostly by photographs, but there are no coloured plates. The chief criticism we have to make on it is that the author has attempted to include too many rare disorders and has not quite rationed his space in accordance with the relative importance of the conditions dealt with. But he has reduced to a minimum histological descriptions and theoretical considerations in view of the fact that the volume is intended for students, and he has done his best to discuss the various diseases from the standpoint of internal medicine. This is a common statement in prefaces to dermatological textbooks, and the impression is often given that almost all of dermatological conditions are merely the external expression of internal derangement. No doubt there are diseases of which this is undoubtedly true. The rashes of the exanthemata and drug eruptions are salient examples. But to a large extent the skin is an independent organ and develops independent diseases which in their turn affect the remainder of the patient. This aspect of dermatology has to a large degree been neglected and deserves more attention. However, this is not the place for an essay on it. The preface also throws a light on the real reasons that make doctors write books. It is, of course, well known that no member of the profession ever bursts into print in order to demonstrate to the world that he is an authority on the subject and ought to be consulted thereon, for this would be a form of advertisement and

therefore reprehensible in the extreme; but it is not often divulged that the compilation of a textbook is undertaken in order that the author may himself acquire a better knowledge of his subject. Dr. Tobias admits this very creditable motive (which has no doubt often actuated others), and we may hope that he has been successful in improving himself as a dermatologist.

MEDICAL PROBLEMS OF WAR

Wartime Health and Democracy. By Hugh Clegg, M.A., M.B., M.R.C.P. (Pp. 64. 1s. net.) London: J. M. Dent and Sons, Ltd., 1941.

For the information of the general public Dr. Clegg has written a straightforward non-technical account of the ways in which the medical profession prepared for and has met the problems created by the war. In the past, wars were often brought to an abrupt conclusion by epidemic diseases, and a cynic might remark that while physics and chemistry have increased man's homicidal capacity, the biological sciences have enabled him to exercise it without so much interference from the superior killing power of germs. As things are, however, the medical profession may be proud of their contribution, as here detailed, to the mitigation of inevitable suffering. The facts about food are clearly set forth, classified under foods for warmth and energy, foods for building and repair, and protective foods. Attention is drawn to the shortage of animal proteins, and it might be added that to make this good by low-grade vegetable proteins involves a great increase in the total bulk of food consumed, as shown by McCance and Widdowson. The verminous condition of many evacuated children has come as a real shock and surprise to the community, and Dr. Clegg is of opinion that the reports of a steady decline in the infestation of school children since 1915 did not represent the true state of affairs, which calls for rigid investigation and drastic remedies. He points out the real danger of the reintroduction of typhus into this country through lice. Many of the other difficulties with evacuated children he refers to the severance from parents and familiar surroundings, and calls attention to the remarkable conclusion of the psychologists that the mental strain is greater among the children sent to the reception areas than among those left behind in the bombed cities.

Dr. Clegg's remarks on the post-war planning of medicine are timely and well worth consideration. He is clear that the individual doctor will have to work in closer co-operation with his fellow doctors, but whatever the final outcome the relationship between the family doctor and his patient must not be impaired by officious intervention; bureaucratic medicine is not democratic medicine. "Like other workers the doctor wants security so that he can work unhampered by economic fear; but let us hope that he does not get this by handing himself over to a heavily paternal State." Here in this little book is much wisdom in a small compass.

W. L.-B.

Notes on Books

The book entitled *Anus-Rectum-Sigmoid Colon: Diagnosis and Treatment*, by Dr. HARRY E. BACON of Philadelphia, appeared first in 1938 and was welcomed in these columns as an encyclopaedia for the proctologist, excellently systematized, readable, beautifully printed, and profusely illustrated. It has already been translated into Spanish and Portuguese, and a second edition is now published by the J. B. Lippincott Company at 50s. The author has included descriptions of new operative procedures for rectal prolapse, and for haemorrhoids, both external and internal, and he pays much attention to the means for avoiding post-operative pain. A method by which the dosage of lumbar analgesia can be calibrated in ano-rectal

surgery is described; also a means for controlling blood pressure during spinal analgesia. There are other additions too numerous to mention here, but it may be noted that almost every chapter is now wound up with a summary of the procedure of choice, so that the reader in need of practical guidance may come quickly to the point.

The new edition of Dr. W. A. BREND's *Handbook of Medical Jurisprudence and Toxicology* has been revised throughout and partly rewritten, especially the chapter on medical evidence. The author has been impressed by the great increase during the last two decades in the demands made by the courts for medical evidence, and by the unhappily large number of general practitioners who come to court with inadequate preparation and little knowledge of what the procedure requires of them. He has therefore paid special attention to the needs of the occasional medical witness. It would have been useful if he had said more about the fees which may be paid to witnesses; he gives only those allowed by the Coroners Act, 1926. His book contains more legal information than most similar works, and this is selected with a view to giving practical help to the doctor. Dr. Brend deals particularly fully with the traumatic neuroses—a subject of which he has special knowledge. Nearly half the book is devoted to poisons. The volume is a neat pocket size, and the print, though somewhat small, is easily legible. It is published by Charles Griffin and Co. at 10s. 6d.

MR. MAURICE WHITTING's book *Ophthalmic Nursing*, which has been favourably reviewed in these columns, now appears in a third edition (J. and A. Churchill, 6s.). It remains a very practical work, based for the most part on the well-tried methods of nursing at Moorfields Eye Hospital. The author covers a wide field clearly and concisely, and preserves a due sense of proportion. The application of treatment by the sulphonamide drugs to diseases of the eye is indicated in this edition, and there is a new short section on gas burns of the conjunctiva and eyeball. This small book should prove useful not only to the nurses for whom it was written, but also to medical students and house-surgeons, and to practitioners having but slight acquaintance with a specialized branch of nursing.

Modern Marriage: A Handbook for Men. by Dr. PAUL POPENOE, is a book to pick out from the many of its kind. It is paternal and persuasive in tone, but not pontifical. Straightforward advice is given, based on statements of biological facts and on statistics, mostly Californian. It is neither sentimental nor aridly scientific, and is attractively practical. The importance of emotional maturity for marriage, and the fact that wedded life should be a continuous development in the dynamic experience of living, are wisely emphasized; so is the value of premarital examination. The format is pleasant and the style clear. The book should certainly be useful as a gift to the young "college man." It is published by the Macmillan Company at 8s. 6d., or 52.50.

Little more than a year ago we commended Dr. BERNARD J. CONROD's *Arthritis and Allied Conditions* to all general practitioners, and especially to physicians interested in joint diseases. It is a book particularly strong on treatment, and deals very fully and clearly with physical methods and the prevention of deformity. The demand for this work has been so great in America that a second edition now appears (Henry Kimpton, 42s.). The author has rewritten much of the text and added several new chapters, notable among these being a discussion of the sulphonamides, and there are forty new photographic illustrations. It will be observed that the price is high, which is a pity, because general practitioners would find the book valuable in the management of conditions that are all too common.

No. 3 of volume IX of the *Bulletin of the Health Organisation of the League of Nations* is obtainable in this country through Allen and Unwin, Ltd., price 4s. The contents include an account of anti-epidemic work in China in 1939; a critical review of the preventive vaccination of dogs against rabies, by Dr. R. Gautier of the Health Section of the League Secretariat; a paper on nutritional research in the Union of South Africa by Dr. E. H. Cluver; and three papers on the rice problem, one of them by Dr. W. R. Aykroyd, who deals comprehensively with the poor rice-eater's diet.

Preparations and Appliances

METAL GUIDES FOR RUBBER CATHETERS FOR USE IN REPAIRING RUPTURED URETHRA

Mr. H. P. WINSBURY-WHITE, F.R.C.S., writes:

Each guide differs from a metal catheter in the two essentials that in the former the tip screws on and off and the curve is more pronounced.

The length of each guide is such that both ends of a rubber catheter passed along its lumen can project from the two ends at the same time. This feature is essential in certain circumstances. The guides have been made to take the four following sizes (French scale) of rubber catheter: 22, 18, 14, 10. The rubber catheters supplied, not having funnel ends, will readily pass right through the guides. The range of sizes meets the requirements with regard to the different ages of the patients. The curves and lengths of the instruments have been varied in relation to their size (Figs. 1 to 4). These guides are serviceable equally in repairing the two principal types of urethral rupture:

1. Associated with fractured pelvis, in which the urethra is torn across on the proximal side of the triangular ligament (Fig. 8).

2. Resulting from falling astride an object, in which the urethra is torn across on the distal side of the triangular ligament.

In dealing with No. 1, after adequate treatment of shock and haemorrhage, surgical intervention will be necessary for at least the following purposes: to approximate and maintain in apposition the divided ends of the urethra; to provide drainage for the bladder and the prevesical space.

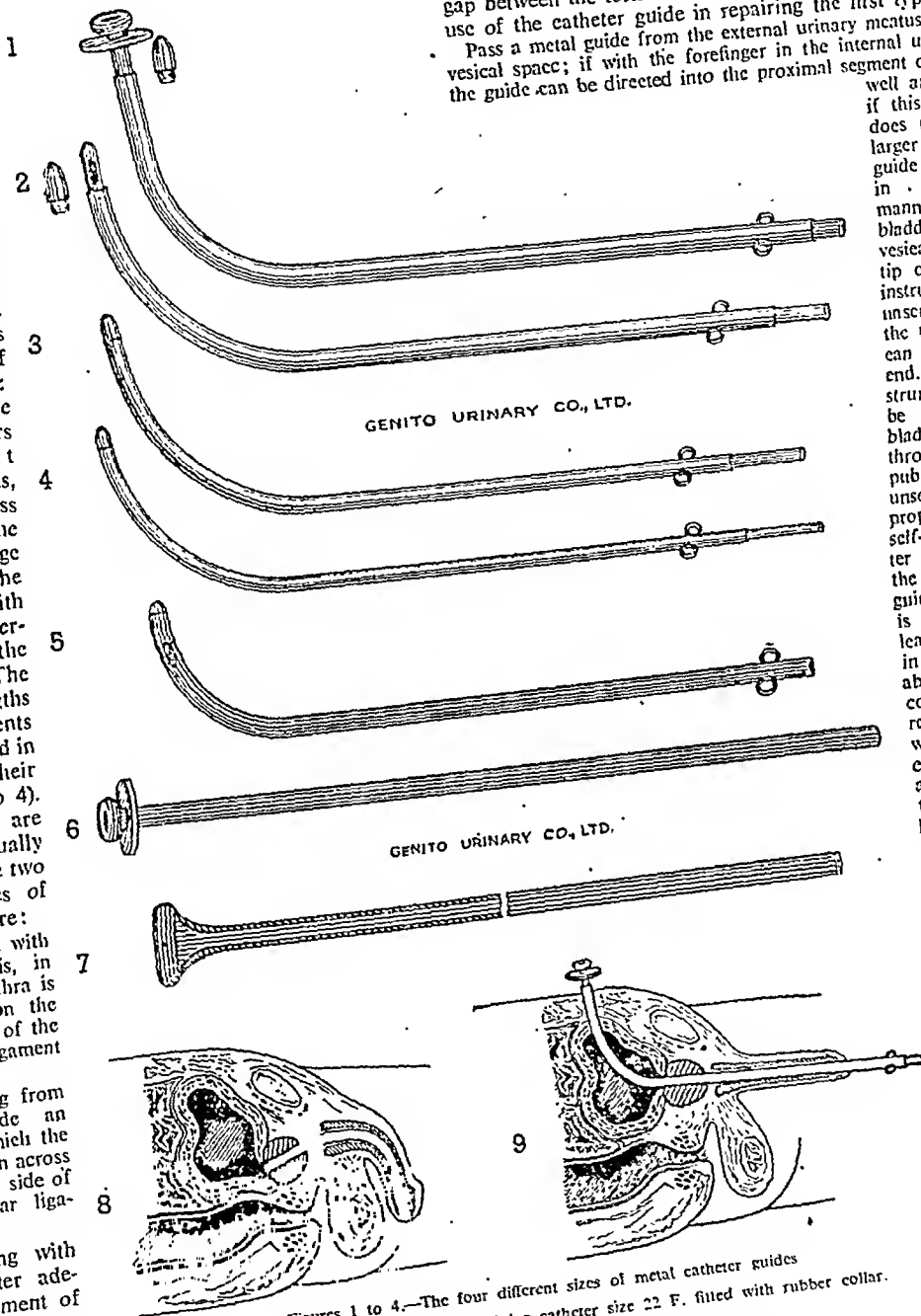
Because of the ordeal through which the patient has already passed, the surgeon before he takes up his knife will wisely make what preparations he can to assure that the purposes of the operation will be fulfilled as rapidly as possible. The gap

between the severed ends of the urethra may be of several inches, but complete apposition of the two segments can be established by employing gentle traction through a self-retaining catheter which has been adapted for this purpose and passed along the whole length of the urethra so as to bridge the gap between the torn ends. There are several variations in the use of the catheter guide in repairing the first type of injury:

Pass a metal guide from the external urinary meatus into the prevesical space; if with the forefinger in the internal segment of the urethra, the guide can be directed into the proximal segment of the urethra.

well and good; but if this manipulation does not succeed a larger metal catheter guide can be passed in a retrograde manner from the bladder into the prevesical space. The tip of the proximal instrument is then unscrewed so that the tip of the other can engage its open end. The distal instrument can now be drawn into the bladder, projected through the suprapubic wound, the tip unscrewed, and a properly prepared self-retaining catheter threaded along the lumen of the guide (Fig. 9), which is then withdrawn, leaving the catheter in position. In the absence of a specially constructed self-retaining catheter—which will in due course be available—a rubber collar of the dimensions of a half-crown is threaded on to the catheter and fitted snugly to the neck of any pattern of suprapubic self-retaining tube or catheter of the appropriate size. The collar must be firmly fixed to the catheter by two silkworm-gut threads which are knotted and left long and drawn through the suprapubic wound. It means of a silkworm-gut thread are afterwards fitted to the skin near to the wound edge, and in due course used for withdrawing the catheter through the suprapubic wound. If the catheter employed has a funnel-shaped outer end, this can be cut obliquely so that it will pass smoothly along the lumen of the metal guide.

Alternatively a Malecot or a de Pezzer catheter may be used instead of a self-retaining catheter. Alternatively a Malecot or a de Pezzer catheter may be passed from the external urinary meatus on a curved stylet may be passed from the external urinary meatus and thus used instead of the distal metal guide. When this has entered the bladder, and while the stylet is still in the catheter,



Figures 1 to 4.—The four different sizes of metal catheter guides
1. With tip unscrewed and bearing self-retaining catheter size 22 F. fitted with rubber collar.
2. With tip unscrewed and threaded with rubber catheter size 18.
3 & 4. The two smallest sizes threaded with sizes 14 and 10 F. rubber catheters.

5. An ordinary metal catheter for contrast with the curves of the metal guides.
6. A self-retaining catheter fitted with rubber collar.
7. A self-retaining catheter specially constructed with a reinforced neck, for traction.
8. Sagittal section of pelvis showing ruptured urethra above triangular ligament.
9. Urethral segments brought into alignment with metal catheter guide threaded with self-retaining catheter ready to be brought into position.

vesical end of the latter is projected through the suprapubic wound so that the rubber disk and silk-worm-gut sutures may be placed in position.

Yet another method is the following: Cut obliquely the outer end of a suitably prepared self-retaining catheter and pass it in a retrograde manner into the prevesical space, where it can then be threaded into the catheter guide which has been passed into the same locality from the external urinary meatus.

Whichever method of passing the catheter has been employed, before the patient leaves the table three longitudinal strips of elastoplast are fixed to the catheter immediately distal to the external urinary meatus, one on the dorsal and one on each lateral aspect. Through these, gentle traction is applied by means of a light weight and a pulley after raising the foot of the bed. By arranging the adhesive on the catheter in the way described several inches of the latter are left free, so that drainage can be instituted in a convenient manner. Ten days of such traction should result in the proximal part of the urethra being fixed in its proper position, so that at the end of this period the catheter may be safely withdrawn, in the manner previously indicated. When the tear through the posterior urethra is incomplete, traction on a self-retaining catheter is

unnecessary, but it is wise to have an indwelling rubber catheter in position for seven days to encourage healing with as little encroachment on the lumen as possible. If an obstruction prevents the passage of the rubber catheter the difficulty may possibly be overcome by passing a metal guide from the external urinary meatus into the bladder. With the tip of the guide projecting from the suprapubic wound the tip of the catheter is seized and held as the guide is withdrawn.

In dealing with a rupture of the urethra in front of the triangular ligament, after opening the bladder suprapubically and exposing the urethral tear through a perineal incision a metal guide is passed in a retrograde manner from the internal urinary meatus till it presents in the perineum. A rubber catheter is then passed from the external urinary meatus into the perineal incision, where it is made to engage the metal guide from which the tip has been removed. Then the guide is withdrawn and the repair carried out over the catheter. When this is accomplished I prefer to withdraw the catheter, for I am of the opinion that an indwelling catheter is not only unnecessary in the presence of the suprapubic drainage which has been provided, but is harmful to the suture line by encouraging sepsis.

A NEW DIRECTOR FOR THE INSERTION OF SMITH-PETERSEN NAILS

MR. JAMES PATRICK, F.R.C.S., orthopaedic surgeon, Glasgow Royal Infirmary, writes:

The principle of using a protractor type of director to estimate the correct line of insertion of the guide-wire along the neck of the femur is well known. The instrument described here was devised with the object of simplifying the construction and assembly of the apparatus and so reducing its cost.

The instrument consists of a sector-shaped piece of metal in which slots are cut lying along the radii of the sector (Fig. 1). On the edge of the circumference is fixed a strip of metal at right angles to the sector plate. On one side of this strip is a series of holes just large enough to take the guide-wire and corresponding in position to the slots. A guide-wire passed through any one of these holes lies exactly over the corresponding slot and enters a

horizontally and the locking screw tightened; an antero-posterior radiograph is then taken (Fig. 2). Should the x-ray film show that the wire is not central a straight line drawn from the centre of the head through the apex of the instrument will lie along one of the slots. This slot is noted and a second guide-wire introduced through the appropriate hole and pushed up along the femoral neck. The first wire is then removed, leaving the second wire in the required line so far as the antero-posterior view is concerned. This wire, of course, may be pointing too far forwards or too far back.

Next the director is removed and rethreaded with the wire along the hollow rod. The instrument is now rotated so that it lies in the vertical plane, and a lateral radiograph is taken (Fig. 2). The appropriate slot in line with the central axis is

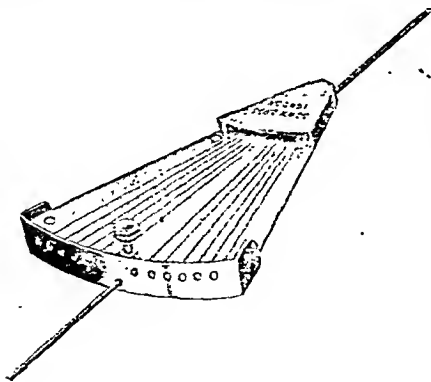


FIG. 1.—The director (half-scale).

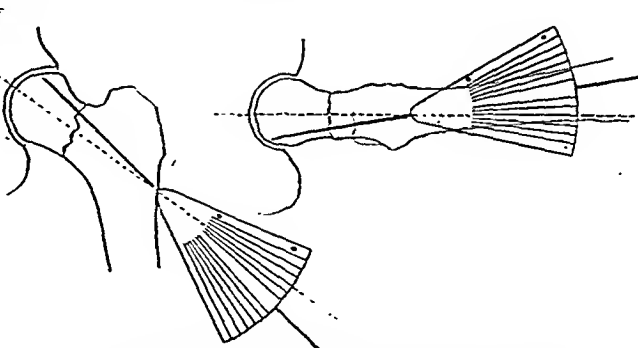


FIG. 2.—Diagram to show appearance in A-P. and lateral radiograph respectively: central axis marked by dotted line shows which slot the second guide-wire must follow.

space between the main sector plate and a small plate fixed near the apex of the instrument. This latter guides the wire so that it crosses exactly over the apex of the instrument.

On the other aspect of the instrument is a hollow rod fixed so as to lie along the central radius. This rod will allow a guide-wire to pass along it, and there is a locking screw to grip the wire.

In the operation an incision is made over the greater trochanter and the bone exposed. The ridge across the base of the trochanter to which the vastus lateralis is attached is identified and a small hole is made in the cortex about one inch below the ridge. A guide-wire is then inserted as near as can be judged along the central axis of the neck of the femur and the director is threaded on to the wire along the hollow rod. The instrument is adjusted

estimated as before and a wire passed along the neck through the corresponding hole in the director. The other wire is then removed, leaving the final wire in the correct position ready for the insertion of the Smith-Petersen nail. The two holes on the edge of the sector plate of the instrument leave no doubt as to which is anterior or posterior in the lateral x-ray film. Should one hole be inadvertently covered by a metal instrument the other hole will still be visible.

I have used this instrument for the past eighteen months, and so far as the mechanical aspect of the Smith-Petersen operation is concerned it appears to have entirely solved the difficulty of placing the nail in the exact direction desired.

The manufacture of the instrument is in the hands of Down Bros., Ltd.

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GAS INJURIES TO THE LUNGS

Faced as we are with the possibility that once again poisonous gases may be used as weapons of warfare, there should be no need to stress the importance of the injuries to the lungs that may result. While many gases and vapours are extremely toxic, it would be wrong to assume that all such gases will necessarily affect the lungs materially. The inhalation of arseniuretted hydrogen, for instance, with its intense haemolytic effect on the erythrocytes; of carbon monoxide, which combines with haemoglobin and so interferes with oxygen transport by the blood; of chlorinated hydrocarbons, which produce intense degenerative changes in the liver and kidneys, may cause death without changes of any significance in the respiratory organs. There is, however, a large group of poisonous gases which includes not only chlorine, phosgene, and chloropicrin, which figured so largely in the last war, but also such gases as ammonia, sulphur dioxide, and the so-called nitrous fumes or higher oxides of nitrogen. These gases have this feature in common, that they are all capable of causing acute pulmonary oedema, and though they may cause in addition inflammatory and necrotic changes in the mucous membrane of the trachea and bronchial tubes, as well as some degree of bronchial spasm, it is in the oedema that the real danger lies, with the threat of death from sheer asphyxia. On the whole it is those gases which have the highest sensory irritant power—for example, ammonia, chlorine, or chloropicrin—which are most liable to affect the bronchial tubes; while those such as phosgene or nitrous fumes, whose sensory irritant power is less, can cause death from pulmonary oedema with but trifling inflammation of the bronchi or bronchioles. The main site of action of these gases is therefore the alveoli of the lung.

Experience in the last war showed that with the development of the oedema two types of case can be distinguished: the one whose suffused and deeply cyanotic facies and distended veins in the neck show that anoxaemia is accompanied by venous congestion; and the other whose leaden-hued pallor and running thready pulse bear witness to an even graver condition of oxygen shortage and collapse or "shock." Venesection was valuable in the first type; it was dangerous in the second. Oxygen administration did good in both types; it was imperative in the state of pallor and collapse. But if the outstanding pathological changes are obvious, and two main lines of treatment—oxygen to combat asphyxia and venesection in suitable cases to relieve venous congestion—are firmly founded on experience, there is much that is still obscure. To what precise factors is the oedema attributable? That the alveolar walls and capillary endothelium must be injured seems certain, but

this damage is not irreparable. Many cases of grave pulmonary oedema did, in fact, recover completely without sequelae in the last war, though broncho-pneumonia might sometimes ensue. Death in the acute stage usually occurs within the first thirty-six hours; when once this critical period is past the exudation seems to be steadily reabsorbed from the lungs. The lungs are engorged with blood during the development of the oedema, and it is probable that, apart from cellular damage, the dilatation of the capillaries is itself a contributory factor in increasing the permeability of the capillary walls, while cardiac failure, should it ensue, will make matters worse. Nothing seems to be known about the lymphatic drainage in these cases of acute pulmonary oedema; there may be some interference with this, and possibly the shallow rapid respiration which usually results from irritation of the vagal nerve endings in the lungs by these gases may not favour lymph flow so much as the more extensive movements of the chest in normal breathing. Attempts to diminish the permeability of the lung capillaries by calcium chloride proved useless in the last war, and it is doubtful whether modern calcium therapy will give any better result.

Heart muscle is very sensitive to oxygen deficiency, and cardiac failure is to be anticipated from this cause in severe cases of pulmonary oedema. But there is another factor that must be taken into account—the haemoconcentration which accompanies the exudation of fluid into the lungs and is most evident in the worst type of pallid cyanosis. The analogy with other conditions of "shock" is clear. How far increased viscosity of the blood due to this haemoconcentration, coupled perhaps with increased resistance in the damaged lung capillaries, imposes a greater strain on the right heart remains uncertain. In view of the possible accentuation of the oedema an attempt to reduce the haemoconcentration by transfusion of plasma cannot be justified without clearer experimental evidence than is at present available; although during the last war animal experiments in America were thought to show that intravenous infusion of saline after venesection had some beneficial effect. Cardiac stimulants have had their advocates, particularly on the Continent, but their substitution for oxygen therapy, which does so much to remove one of the principal causes of cardiac failure, is akin to flogging a tired horse; in association with oxygen they should have a better chance of success.

Although inhalation of the lung-irritant gases causes immediate coughing and choking and even retching and vomiting—symptoms more marked and persistent with some gases than others—these immediate signs of irritation often subside, and an interval, perhaps of several hours, may elapse before there is serious evidence of pulmonary oedema, which may then increase with alarming rapidity, often as the result of some muscular exertion. This delay, which introduces such difficulty in correctly appraising the real severity of the case in the early stages, may be attributable merely to the insidious development of oedema and anoxaemia, but the sudden accentuation of the oedema as a result of the circulatory changes and rise of blood pressure caused by muscular effort, the failure of a heart already weak-

ened by shortage of oxygen to meet the sudden strain of exertion, or possibly the liberation of such a substance as histamine from the damaged lung tissues, may all play a part. One thing is certain—that muscular exertion, which in any case means that the body uses up more oxygen, must be prohibited.

In its effect on the lungs that remarkable vesicant mustard gas differs greatly from the acute lung-irritant gases.* Whereas it is pulmonary oedema which endangers life in the case of the latter, this is not a serious feature with mustard gas unless the concentration of gas is very high; it is the damage to the respiratory passages that matters. Depending on the dose of vapour inhaled this may vary from the mildest laryngitis, with hoarseness and trivial cough, to the most intense destructive inflammation and necrosis of mucous membrane from the larynx to the smallest bronchioles, while bacterial infection of the necrotic debris may initiate a widespread septic bronchopneumonia. The full damage to the mucous membrane may take many hours to develop. In the last war there were rare cases of death from obstruction of the respiratory passages by debris and false membrane, but apart from these death was as a rule delayed and invariably due to bronchopneumonia. There is no specific remedy; treatment must follow the same general lines as in bronchopneumonia from other causes. Lewisite does not differ greatly from mustard gas in its action on the lungs, but is perhaps more prone to cause pulmonary oedema as well as grave damage to the air passages.

With acute lung-irritant gases there is a critical early period, and the aim must be to tide the patient over this. If this can be accomplished there is a good chance of ultimate recovery. With the vesicants there is no such critical early period; recovery is a question of the ability to withstand secondary infection.

RADIOLOGY TO THE HELP OF OBSTETRICS

Some forty-five years have elapsed since x rays were harnessed to medical science. Although their use is now extending to obstetrics, the new tool has hitherto been tardily accepted in this special field. There are reasons for this. The mechanical factors influencing labour are many and varied, and not the least important of them is the function of the uterine muscle, a matter concerning which x rays can give no help. Even with regard to the shape and size of the pelvis matters are far from easy, for the radiographic film tends to give a false impression of precision, and no easy method exists by which a three-dimensional problem can be solved by reference to one, two, or even three sets of pictures, in each of which the possibility of shadow distortion is ever present. Another difficulty has been the frequent lack of co-operation between radiologist and obstetrician. To quote from one recent paper: "The radiologist seldom has a clear understanding of the obstetrician's problems and needs: the obstetrician rarely appreciates the radiologist's difficulties and limitations." Nevertheless, substantial progress has of late been made in this difficult field, and contributions to the literature now follow each other in quick succession.

Clark Nicholson¹ of Moreton-in-Marsh has devised a highly accurate method of pelvimetry, and has painstakingly analysed his results according to modern statistical methods. He has estimated the frequency of variations of pelvic size, at both the brim and the outlet, and has correlated the difficulties in subsequent labours with the incidence of these abnormalities. Hastings Ince and the late Matthew Young² made a somewhat similar investigation among the obstetric patients of University College Hospital. From these valuable papers the following conclusions of general interest emerge.

The measurement of the true conjugate is greater than that stated in the standard textbooks: it is usually in the region of 4½ inches. There is little correlation between different sets of pelvic variations—for example, the shape of the outlet has no constant relation to the shape of the brim. External measurements are unreliable guides to the measurement of the true pelvis; this is especially so with regard to the external conjugate. Ince and Young state, however, that there is a fairly high correlation between the intercrural measurement and the transverse diameter of the brim. According to the same workers there is little evidence of any relation between the pelvic characters, including the shape of the brim, and physical characters expressive of type of body build. This matter has also been recently thoroughly investigated by Greulich, Thoms, and Twaddle,³ who hold a somewhat different view, but agree that the correlation is too uncertain to be of value in predicting pelvic type. Nor is there any relation between pelvic characters and hirsutes and "masculine" distribution of pubic hair.

Three factors have a special influence on the incidence of delivery by forceps: these are the size of the pelvic outlet, the size of the subpubic angle, and the size of the baby. Nicholson, stressing the importance of the subpubic angle, writes: "We can now definitely state our conclusion that the great majority of the minor difficulties of labour, so far as these are due to contraction of the pelvis, are due to a contraction of the outlet, which is quite unassociated with any contraction or any alteration of the shape of the brim." Ince and Young prefer the old classification of pelvic contraction into the two main types of the flat and the generally contracted to the ten or twelve types suggested by Caldwell and Moloy, a classification which relies too much on subjective impressions regarding the shape of the pelvic brim. More recently Chassar Moir,⁴ working in the new Nuffield Obstetric Department at Oxford, has described methods, both clinical and radiological, by which pelvic contraction may be detected and the probable course of labour foretold. Like other workers, Moir stresses the importance of outlet contraction as the cause of difficult delivery, and prefers to call such pelves by the name of "funnel pelvis," as recommended many years ago by Whitridge Williams. While radiography gives the clearest indication of outlet contraction, much may be done by digital palpation: the distance between the tip of the sacrum and the under-margin of the pubic bone may be estimated, and so also the size of the subpubic angle and the distance between

¹ *J. Obstet. Gynaec. Brit. Emp.*, 1932, 45, 950.

² *Ibid.*, 1940, 47, 120.

³ *J. Amer. med. Ass.*, 1939, 112, 455.

⁴ *Edinb. med. J.*, 1941, 43, 361.

the spines of the ischium. Such methods do not aim at high accuracy, and in case of doubt recourse should be had to radiological examination. Moir stresses the value of the lateral view of the pelvis, obtained according to Thoms's technique, both before and during labour. This he considers the most valuable of any single x-ray examination; incidentally it is also the easiest picture to obtain. Pelvimetry without cephalometry is almost meaningless. A useful estimation of the size of the foetal head can usually be made from the lateral radiograph of the pelvis. In cases of difficulty additional help can be obtained from a film exposed for brim pelvimetry. In breech presentation the clinical test for disproportion between head and pelvis is impossible, and Moir urges that in such patients x-ray pelvimetry and cephalometry should always be employed. Many of the difficulties and dangers encountered in breech delivery, particularly in primigravid women, could thus be avoided. In our present issue (p. 543) O'Sullivan and McLaren, in a paper on radiology in disproportion, again stress the value of the lateral or profile view of the pelvis. By its use not only may the obstetric conjugate be measured but the curve of the sacrum may be demonstrated and the antero-posterior dimension of the cavity and outlet easily determined. A simple method is suggested of estimating the "fit" of the head and pelvis. This test will be of most value when the foetal head is conveniently positioned to show its shortest diameter; when, however, it is otherwise positioned a "negative" finding would have to be accepted with reserve.

Enough has been said to show that radiology is fast becoming an accepted tool in obstetric practice. But all new tools must be used with caution. And here we may once more quote Nicholson: "As is the case with most new methods, radiological pelvimetry has suffered more in reputation from the enthusiasm of its followers than from the criticism of its detractors. Nobody is so foolish as to claim that the radiologist is to supersede the obstetrician in the judgment as to when a Caesarean operation is necessary; but nobody should be so foolish as to claim that the obstetrician can afford to neglect precise information about the bony pelvis with which he has to deal."

GOVERNMENT HOSPITAL POLICY

Last week the Minister of Health made a statement in the House of Commons on the Government's post-war policy on hospitals which is of the highest significance to both voluntary and municipal hospital authorities. This policy is based on the solid foundation of making available by means of a comprehensive hospital service appropriate treatment to every person needing it. The duty is to be laid on major local authorities, acting in co-operation with the various voluntary agencies concerned, to secure the provision of this service "by placing on a more regular footing the partnership between the local authorities and the voluntary hospitals on which the present hospital services depend." The service will be based on larger

areas than those of existing local authorities: this is an endorsement of the policy of regionalization with which everyone is now so familiar and to which modern conditions and logic obviously point the way. The Minister has already had preliminary discussions with representatives of the voluntary and the municipal hospitals, and is instituting a survey of the hospitals in London. In his statement he referred to the valuable preliminary work that had already been done in the Provinces under the auspices of the Nuffield Provincial Hospitals Trust. In order to avoid waste and overlapping the Government's policy is to secure the provision of the more specialized services at teaching hospitals and at other centres which serve the larger regions contemplated.

So far as the important question of the payment for this reorganized service is concerned, the Government recognizes the principle that patients should make "a reasonable payment" towards the cost, whether through contributory schemes or otherwise; the limiting factor, it may be assumed, being the patient's capacity to pay. The provision of a reorganized hospital service will put a heavy burden on both voluntary and council hospitals, and the Government has established the highly important principle of making Exchequer moneys available for the increased cost that will be incurred. This decision is significant in view, especially, of the State help which will be needed for rebuilding damaged hospitals after the war. It may be remembered that after the last war, when there was a steep fall in the incomes of the voluntary hospitals, the Government compensated them direct to the extent of half a million pounds. As the duty of securing the reorganized hospital service is laid upon the major local authorities, Exchequer grants will be made to them for any new burden that is incurred in providing and maintaining their own hospitals and in contributing to the expenditure of voluntary hospitals.

Those who have fears for the future of the voluntary hospitals may wonder whether this financial channel will give the local authority increasing control over them; whether, in fact, this is a step towards converting the voluntary into council hospitals. So far as the teaching hospitals are concerned, some reassurance comes from the statement that they will be assisted by way of increased educational grants, presumably through the University Grants Committee; but should the financial assistance to the voluntary hospitals through council channels become large, then, it might be feared, so would the control of the destinies of these hospitals. While the various agencies which provide the hospital service of the country will jealously watch their rights, they will, it is certain, be eager to meet the obligation that is now to be put upon them. The Minister's statement brings to solid earth what has long been in the air, and asserts as Government policy the three important principles of regionalization, co-operation between voluntary and local authority bodies, and, last but not least, State aid to the hospitals of the country.

AN INTERNATIONAL STANDARD FOR VITAMIN E

We are asked to announce that an international standard for vitamin E has been established, and that, as in the case of the international standards for the vitamins A, B, C, and D, the National Institute for Medical Research, Hampstead, acting on behalf of the Health Organization of the League of Nations, has undertaken its supply to laboratories, institutes, and research workers throughout the world.

Synthetic racemic α tocopheryl acetate ($C_{55}H_{102}O_6$) has been adopted as the international standard for vitamin E. The investigation of the chemical, physical, and biological properties of this substance, its suitability for adoption as the international standard, and the manner of its application in biological assay was carried out, at the request of the Health Organization of the League of Nations, by the Vitamin E Subcommittee of the Accessory Food Factors Committee of the Lister Institute and the Medical Research Council. The subcommittee was able to enlist the co-operation of experts in fourteen laboratories in Europe and America, and as a result it was able to recommend the adoption of synthetic racemic α tocopheryl acetate as the international standard for vitamin E. The subcommittee further recommended that the international unit for vitamin E should be defined as the specific activity of 1 milligramme of the standard preparation, this quantity being the average amount which, when administered orally, prevents resorption-gestation in rats deprived of vitamin E.

In normal circumstances the results of the co-operative investigation would have been submitted for discussion at the third International Conference on Vitamin Standardization, which had been arranged for the autumn of 1939. On account of the war this conference could not be held. The report and recommendations of the subcommittee have, however, been placed before those members and officers of the League of Nations Permanent Commission on Biological Standardization and of the International Conference on Vitamin Standardization who were available and accessible, and these consented to accept the responsibility of taking such decisions as would normally be accepted by a properly constituted International Conference and by the Permanent Commission. They have accordingly adopted the proposed standard for vitamin E, accepted the recommendation defining the international unit, and authorized the National Institute for Medical Research, Hampstead, to proceed with the distribution of the standard.

The international standard for vitamin E is issued in the form of a solution in olive oil of which one international unit is contained in 0.1 gramme. It will be supplied to directors of national control centres in those countries in which these have been established, for local distribution; also to laboratories, institutes, and research workers in this country, and in those countries in which national control centres have not yet been established. Application should be made to the Department of Biological Standards, the National Institute for Medical Research, Hampstead, London, N.W.3.

A MEDICAL OFFICER'S CONSCIENCE

Dr. W. A. McLennan, medical officer of health for the borough of Dudley, has been suspended from his post for the duration of the war by the borough council for the sole reason that Dr. McLennan has registered his conscientious objection to serving with the armed Forces. We print in the *Supplement* the correspondence between the B.M.A. and the Ministry of Health and the Town Clerk

of Dudley. The Association has first of all protested against this action on the part of the borough council, and, secondly, has refused to accept for advertisement in its columns a notice inviting applicants to apply for the vacant post—two actions which will no doubt be endorsed by the medical profession generally. We are not concerned here to discuss the ethical basis of Dr. McLennan's conscientious objection, but we may feel sure that he looked deeply into his conscience before making what in these days a difficult decision. It was laid down by Mr. Chamberlain at the beginning of this war that there was to be no persecution of those whose scruples forbade them to take a course which their conscience and religious principles did not allow them to follow. There is no reason to believe that since Mr. Chamberlain's statement in the House of Commons there has been any change in Government policy, and the Dudley Borough Council's decision is particularly lamentable in the case at issue, because of the need for civilian doctors. As the correspondence points out, Dr. McLennan is a key officer of recognized experience and efficiency, and the number of suitable men available to fill his post is very small. This kind of local arbitrary action against declared Government policy and against the civilized principle of a man's right to adhere to deeply grounded convictions is difficult to tolerate.

STREPTOCOCCAL ULCERATION AROUND
WOUNDS

The writings of Meleney, to which reference has several times been made in these columns, have defined and now made generally familiar a form of spreading ulceration of the skin which sometimes develops around infected operation wounds, usually of the chest or abdomen. Zinc peroxide is said to be a specific for this condition—and has indeed been found useful as an application to various other types of indolent septic area, especially where anaerobic infections exist—though there are puzzling features about impurities in the zinc peroxide used and the inactivity of some preparations which led us to suggest that perhaps oxygen liberation is not the *modus operandi* of this treatment, as its author and others have supposed. According to Meleney the cause of the spreading skin ulceration described by him is a micro-aerophilic haemolytic streptococcus, but the characters of this organism have not, so far as we are aware, been as fully investigated as they deserve. That a streptococcus is responsible, and that it tends to be micro-aerophilic in its habit of growth, every bacteriologist knows who has met this interesting condition. Whether in all its characters other than atmospheric requirements it is simply a *Streptococcus pyogenes* is another matter. It is not even known whether these characters are constant, and the observations of J. Reicher¹ suggest that they are not, since he has had a small series of cases with features which, according to Meleney's definition, are anomalous. Of two typical cases of undermining and spreading ulceration one was found to be due to a streptococcus of the type described by Meleney, whereas in the other the organism was non-haemolytic. On the other hand, both these types of streptococci, haemolytic and non-haemolytic, though micro-aerophilic in each case, were found in lesions in other patients which had different characters, showed no spreading tendency, and responded to other forms of treatment. This short series of cases suggests the need for further study of such streptococci. If a number of strains could be collected from typical cases of spreading ulceration as described by Meleney, they

¹ *Surg. Gynec. Obstet.*, 1941, 72, 651.

should be investigated by the various methods employed for classifying streptococci, of which there are many. If they are in fact to be classed as *S. pyogenes* it would be interesting to know whether they belong to any of the known Lancefield groups. The fact that similar micro-aerophilic streptococci can be found in lesions with other characters is of course no evidence against the specific nature of the lesion described by Meleney, but it does raise the questions of the distribution and source of these organisms. Streptococci similar in their atmospheric requirements and in their morphology—characteristic points being the small size of the individual coccus and the great length of its chain—are not uncommon in lung and cerebral abscesses. Are they obligatory pathogens derived from an external source, or do they—as appears more likely—sometimes exist as saprophytes in the mouth or lower bowel? As opportunities occur, these are matters which should repay investigation.

DIGITALIS PREPARATIONS COMPARED

There are few official but many proprietary preparations of digitalis; new forms of the latter appear from time to time, often with claims of superior therapeutic properties combined with freedom from toxic effects. It has generally been found, however, that these attributes, therapeutic and toxic, are inseparable and vary simply with the activity and dose of the preparation. A comparison of six commonly used forms of the drug has been made by W. Evans,¹ based on the results in eighteen patients with heart failure. All had rheumatic heart disease with mitral stenosis and auricular fibrillation, which is particularly suitable for the investigation of digitalis action. Each preparation was given for fourteen days in the doses reckoned equivalent on the basis of biological assay, and at the end of each fourteen-day period the heart rate and the severity of symptoms and signs were estimated. Improvement in the latter coincided closely with reduction in heart rate, although the optimum rate varied considerably from patient to patient, being as low as 52 per minute in one and as high as 115 in another. The satisfactory control of symptoms combined with absence of toxic effects and decrease in heart rate was obtained with all six preparations, which in the order of efficiency of the doses used were: powdered digitalis leaf; digitaline (Nativelle); digifoline (Ciba); digoxin (Burroughs Wellcome); tincture of digitalis; and digitaline (Allen and Hanburys). A trial was also made of three other drugs which have a digitalis-like action and which have been vaunted on the Continent and in America as being equal or superior to digitalis itself. These three drugs—folincrin obtained from the oleander tree, strophanthin, and ouabaine (a strophanthin glucoside)—proved unsatisfactory. Strophanthin and ouabaine did not lead to any improvement but often caused toxic effects, while folincrin was followed by improvement in only two of the eighteen patients. Finally coramine (nikethamide) and cardiazol (leptazol)—two drugs sometimes described as heart stimulants—were given. They were without avail in the control of symptoms, and because of this had to be replaced by digitalis after seven days. Moreover, they appeared to cause toxic symptoms. Evans's study indicates that the dried leaf is a very satisfactory preparation of digitalis. It is favoured by many cardiologists to-day just as it was by Withering over 150 years ago; in fact we have little better remedy than the "Flower of Physicians," except that there is now at our disposal a pure glucoside of digitalis, which may be used intravenously when a quick on is needed. The leaf, moreover, is cheap, the

cheapest with the exception of the tincture. In this study the effects of different preparations were compared on the same patient—the only possible way, as each patient is a law to himself. If this be accepted, it follows that potency in man cannot be based alone upon biological assay, nor can the correct dosage be based upon body weight or any other preliminary consideration, but simply upon the clinical results as shown by continued observation. After 150 years we still need to draw the moral from Withering's statement: "The more we multiply the form of any medicine the longer we shall be in ascertaining the real dose."

WELFARE OF BRITISH BLIND

The seventy-third annual report of the National Institute for the Blind (224, Great Portland Street, W.1) is a record of fine achievement in conditions that have entailed the loss of valuable lives and the wrecking of a sunshine home for blind babies, of the Institute's talking-book recording studio, of the headquarters of its home industries department, and other premises. Yet, though the calm of its normal procedure had been disturbed and progress along familiar lines partially diverted, the report declares that the problems, the difficulties, and even the dangers of the times have "enlivened the work, tested its vitality, revealed its ingenuity, and proved its capabilities under abnormal stresses." Blind readers have continued to receive their embossed newspapers, students to have their textbooks transcribed into Braille, men and women to be trained as masscurs; and similar continuity has existed in each of the Institute's other services to the sightless. Time has even been found to send out books in Moon type to the aged blind of America and the Empire. Many special wartime duties have been undertaken in respect both of people blinded by enemy action and of the new needs of those already blind. It can to-day offer immediate help to every war-blinded civilian as the casualty occurs, and homes of recovery for this purpose are now operating in various parts of the country. The gift of one of these homes by the American public was a timely and significant act.

Dr. R. D. Gillespie, who now holds the rank of Wing Commander in the Royal Air Force, has been granted leave of absence by the Air Ministry to report to the American medical profession his first-hand observations on the psychological effects of air warfare on the British public. He is visiting America at the request of the Salmon Committee on Psychiatry and Mental Hygiene of the New York Academy of Medicine. He will deliver the Salmon Memorial Lectures in the New York Academy Building on November 17, 18, and 19, speaking on "Psychoneuroses from the Standpoint of War Experience." The New York lectures will be followed by addresses before the Chicago Neurological Society, the Chicago Institute of Medicine, and the Illinois Psychiatric Society in Chicago, and lectures in Toronto, Ontario, and San Francisco, California.

Mr. W. C. W. Nixon, F.R.C.S., F.R.C.O.G., will deliver the fourth William Blair-Bell Memorial Lecture, on "Diet in Pregnancy," before the Royal College of Obstetricians and Gynaecologists, 58, Queen Anne Street, W., on Saturday, October 25, at 2.30 p.m. Medical practitioners not members of the College will be welcomed.

¹ Brit. Heart J., 1940, 2, 51.

THE ARMY MEDICAL OFFICER

BY

J. T. ROBINSON, M.A., M.D., B.Ch., D.T.M.&H.

Major, Royal Army Medical Corps

As the war proceeds and the field of operations extends, more officers and men are required to fill the fighting Forces. To keep pace with the extension of these commitments in fighting personnel the age groups for recruitment are being gradually raised. The medical needs of the armed Forces must be met and doctors will be concerning themselves with the implications of their calling up. Family disruptions, temporary severance from practice and civil appointments, and financial adjustments form some of the considerations which will face these practitioners, who will also be concerned with their future in one of the fighting Services.

The medical profession is privileged to a degree which few other professions enjoy in war. Medical students who have completed two satisfactory terms in anatomy and physiology are reserved to enable them to graduate, doctors are not required to serve in the ranks but are granted commissions on being called up for service with the armed Forces of the Crown, while the medical officer is employed in work which is essentially in touch with, and part of, his professional work.

Many doctors liable for service will be recruited into the R.A.M.C. and will be anxious to have some information regarding what is expected from them as medical officers, and of the steps taken to adjust them to their new work and environment. This is the purpose of this brief article. It is not intended to describe in detail the duties which a medical officer in charge of effective troops is expected to perform. These are fully depicted in the Regulations of the Army Medical Services, and in a recent pamphlet, *Notes for Medical Officers, 1941*, which is issued to every serving medical officer. Colonel Middleton¹ has ably described the work of the regimental medical officer in his interesting Honyman Gillespie Lecture delivered in September, 1940, while Captain Pozner² has recently given his personal experience and impressions of regimental medical practice. Medical practitioners not in the Services will therefore have some idea of the responsibilities of the medical officer in the Army.

The Corps and its Function

The Royal Army Medical Corps first came into being on June 23, 1898, by a Royal Warrant of Queen Victoria, and the badge with the motto "In arduis fidelis" was granted. In the same year the Corps made its first appearance with an Army in the field in the Nile Expeditionary Force. With the Corps organization, military titles, and a secure position in the military hierarchy came a great impetus to medical and surgical keenness. Officers had to select a special subject, and research was marked out as one of the high roads of advancement. Men like Bruce, Leishman, and many others adorned the Corps.

From its inception the Corps has played a noble part in every campaign in the scientific efforts to discover and check disease and in the efficient care and treatment of the sick and wounded of the Armies in the field. From the war of 1914-18 it emerged with outstanding credit, and the names of officers and men were prominent in the lists of awards for valour. When the history of the present struggle is written the Corps will assuredly be given an honourable place and will be depicted as having lived up to the great tradition of the past. The doctor of yesterday who has become the medical officer of to-day will no doubt adorn once again the lists of those awarded for bravery and bring glory to the medical profession and the Corps.

To the mind of the uninitiated the function of the Corps presents a series of pictures in which the wounded soldier is seen receiving first aid on the battlefield, moving to rear by field ambulance, being cared for in well-equipped hospitals by efficient doctors and nurses, and finally leaving hospital restored to duty. These concepts are correct but fail to give the whole picture. To them must be added the responsibilities of (a) the prevention of disease by necessary sanitation measures; (b) the collection, evacuation, and treatment of the sick and wounded in all theatres

of war; (c) the provision and distribution of medical equipment and supplies; (d) the maintenance of morale by a medical organization which imbues officers and men with a conscious confidence that immediate medical aid is available at all times; (e) the preparation and preservation of records of sick and injured for the adjudication of claims for disability with justice both to the Government and to the soldier, and also for statistical purposes; and (f) the training of personnel to carry out these responsibilities.

In all these the medical officer has an important part. His duty is the conservation of man-power and the maintenance of a high standard of physical fitness and morale throughout the Army. Famous military commanders have frequently spoken in high praise of the conscientious and efficient medical officer. General Thorne,³ commander of an Army Corps, in an address to medical officers, has stressed that the first and most important contribution that a medical officer can make to fighting efficiency in the Army is by his efforts to improve the standard of "man-mastership." He pointed out that economy of force was vitally important in war, and that the medical officer by his professional efficiency does much to avoid unnecessary wastage of man-power when a soldier either mentally or physically sick was returned to his unit a fit man. He emphasized that the most striking lesson he had learned as a Divisional Commander was the reliance placed by a commanding officer on his medical officer to raise the standard of human relationships in the unit to a high level. Concluding his address he expressed the view that the management of men was an art, but that the medical officers, by using their technical knowledge, could make it almost a science.

Civilian Medical Practitioner to Medical Officer

Readers are aware of the machinery of the Central and Local Medical War Committees for the supply of medical officers to meet the demands of the Services, of the arrangements made to protect the practices of those who join, and of the responsibilities of these committees in safeguarding the medical needs of the civil population to meet all emergencies. It may be of interest to them to learn something of what transpires when doctors are recruited for commissions in the Royal Army Medical Corps.

The War Office on receipt of these nominations makes arrangements for the interview and physical examination of each candidate. At the interview the latter is requested to fill in a special form regarding details of qualifications and other relevant matter relating to appointments held, for the information of the Medical Department. The candidate is officially informed of his acceptance or otherwise for a commission. All commissions are in the rank of lieutenant, and those who have had service in the R.A.M.C. in the last war in the rank of captain are eligible for promotion to this acting rank from the date of commission.

A careful record is kept in the Medical Department of the War Office of the qualifications and experience of every candidate, so that each may be placed at some future date in an appointment for which his talents are considered best suited. All documents of those possessing higher qualifications and experience are submitted to the consultants in the branch of medicine or surgery in which an officer has shown special aptitude and skill. If considered to possess the necessary experience and qualifications for employment in his selected subject efforts are made to appoint him to a post within establishment where he can continue such work. If none is immediately available a careful record is kept for future employment when a vacancy occurs.

Training Courses

In the less venturesome there is an element of anxiety which inhibits the desire to take on a new life and dwell in a new environment, leaving behind something sure for an indefinite future. Individuals in the medical profession particularly take pride in carrying out work in which they are masters. They are reluctant to take up employment which means new and additional responsibilities for which they feel unprepared. This is perhaps the view presented to the minds of those who suddenly find themselves for the first time in the uniform of a medical officer of the R.A.M.C. Such anxiety is unnecessary, because just as the newly joined gunnery officer must learn the technical and intricate details of weapons which he has

never before understood, so special arrangements are available to acquaint and train the newly joined medical officer in the principles and elementary knowledge of his more military duties so that he will be happy and well equipped for his future environment and responsibilities.

Those granted emergency commissions are expected to report to one of the R.A.M.C. Depot and Training Establishments for Medical Officers. Here he is initiated into the organization and administration of the Corps, the general organization of the Army, and co-operation with other arms and Services. He receives instruction in field medical work, map reading, the use of the compass, P.A.D. (the Army's A.R.P.), and other items of essential value in the battlefield. He is also given lectures and demonstrations of the records and reports which he is expected to maintain, and how and when these should be rendered. He is given a free issue of books and pamphlets on all relevant matters which he is expected to know. These are carried with him and are available for guidance and ready reference. This course now lasts for three weeks, after which one week is spent at the Army School of Hygiene, where the professional activities of the medical officer are primarily directed to environmental sanitation, water supply, sewage disposal, anti-malarial work, and inspection of rations. On completion of this four-weeks course the officer is posted for duty to either a field medical unit, hospital, training centre, or regiment according to the requirements in medical personnel. Wherever he is sent he will still have much to learn, but will never be completely divorced from his professional work if interested and conscientious. As the exigencies of the Service demand, medical officers are moved from one appointment to another, and may be sent to all parts of the world where troops are required. For those proceeding to tropical climates courses are arranged in tropical medicine and hygiene. These are held at the London School of Hygiene and Tropical Medicine and the Liverpool School of Tropical Medicine by the kindness of the respective deans, while other courses are held at the Royal Army Medical College, Millbank, London. Courses are also given in the medical aspects of chemical warfare to all officers. All who have attended testify to the valuable and practical knowledge which they assimilate from these courses.

The Medical Officer and the Unit

The medical officer in charge of effective troops is in the unique position of being able to study the newly joined recruit, especially his reaction to military training and environment, treating him when he is sick or injured, and finally deciding on his ultimate disposal. In the university and medical school the teacher is never tired of impressing on the medical student to "observe." The qualified doctor therefore should possess this essential attribute to a high degree, and it is this that makes the life of the medical officer interesting and provides him with a technique which, if properly employed, will enhance his knowledge of humanity and better equip him for his return to practice after the war.

The first thing which strikes a medical officer in dealing with soldiers is that they differ considerably from the patient in civil life. There are few scrimshankers in the Army of to-day, but these few prey on the kindness and inexperience of the newly joined medical officer, and if allowed to get away with their frivolous complaints can quickly demoralize a whole unit. Others will carry on with disabilities and ailments until they drop. The action and behaviour of individual soldiers to injury and disease present features of unique study under the rigours and monotony of Service life.

The medical officer has also a definite duty to his country to equip himself with a practical knowledge of psychiatry in order to differentiate between functional and organic disease. The frequent attendance of a soldier at sick parade will give him opportunities to observe the temperament, character, and intellectual qualities of the individual, and lead to a full investigation of his physical and mental capacity. Co-operation with the psychiatric specialist will add to his own knowledge, in many cases lead to the cure of the soldier, in others to the soldier's adaptation to more suitable employment within the Army, while those unsuited for Army life will be quickly sifted out, thereby avoiding unnecessary expense and wasted time in training. A

thorough physical examination of every man who reports sick is the first duty of every medical officer.

In order to take his proper place as the adviser to the commanding officer of the unit in all matters relevant to the prevention of disease and the preservation of the health of the men in a unit the medical officer must have a thorough knowledge of the propagation, prevention, and treatment of infectious diseases, sanitation, water and its purification. On him rests the decision as to whether the Army ration is fit or unfit for human consumption.

The efficient medical officer will also identify himself with the interests and daily routine of the officers and men of the unit of which he has medical charge. He will interest himself in their training, take pride in reading and understanding the various Army manuals connected with the weapons they use and the vehicles they drive. He will march and play with them, enter into their social activities, and be with them in their hours of trial to cheer and encourage the faint-hearted, and succour and give aid to the wounded. By so doing he will not only gain the respect and affection of the unit, but will increase in wisdom and knowledge by his personal contact and co-operation with all types and conditions of men. His wide interests should stimulate his professional acumen, and will enable him to take his true place as doctor, guide, philosopher, and friend to all.

Conclusion

The great men of the profession have always taken pride in acquiring knowledge on subjects outside their medical attainments, and many have added honour to the profession in politics, law, and other spheres. To them every subject and person is of interest and a new experience gained. The medical officer has the opportunity to take his place with the "Great" in this respect.

To combine medicine with efficient modern soldiering has the immediate aim of winning the war. Many other results follow also when a doctor takes this line whole-heartedly, and the benefits to the soldier, Army, community, and nation are obvious to all. Only in this way can the medical officer give the maximum service to his country, and no sphere offers such opportunities for dealing with the individual problem of men. No other line of work offers the same chance of affecting the social future and well-being of the country as that of the whole-hearted intelligent medical officer.

In view of the many apparent duties and interests which will absorb his time the prospective medical officer will be concerned with keeping himself abreast of modern developments in medicine and surgery. The War Office has ensured that modern research and therapeutics consistent with the latest practice of medicine and surgery are available for each medical officer in a concise form. Each month the *Army Medical Directorate Bulletin* is issued free to all, and the *Bulletin of War Medicine* produced by the Medical Research Council is also available. The latter contains abstracts of relevant articles in all branches of medicine, surgery, and kindred subjects, and is a mine of information.

I wish to thank the Director-General, Army Medical Services, for permission to publish this article.

REFERENCES

- 1 Middleton, D. S. (1940). *Edinb. med. J.*, n.s. (lvth), vol. lxvii; also *J. R.A.M.C.*, June, 1941.
- 2 Forner, H. (1941). *British Medical Journal*, 1, 412.
- 3 Thorne, A. F. A. N. (1941). *Ibid.*, 1, 167.

A tribute to the good will and sympathy of Americans in helping to relieve the distress of war in this country has been paid by the Lord Mayor of London in accepting on behalf of the London Chest Hospital, Victoria Park, E., a parcel of valuable drugs presented by Mrs. Edward Murrow of the Bundles for Britain Movement, which has adopted the hospital. The drugs, which had been flown to this country, were contributed by nurses in Dayton, Ohio. The Lord Mayor and Lady Mayoress were paying a visit to the hospital to inspect the progress made since it was severely bombed in the spring, and he congratulated the staff on the splendid job they had done. All the departments were open, including wards for in-patients.

THE MEDICAL DEFENCE UNION

The annual general meeting of the Medical Defence Union took place on September 30. The report of the council testified to continuing success and prosperity, as evidenced by 1,368 new members elected during the year, a net gain of 688, bringing the total membership up to just over 24,000. It was stated that the war had not brought to medical practitioners any immunity from litigation based on allegations of negligence or malpraxis. Several serving members had been seriously perturbed by the litigious activities of aggrieved patients or their relatives. New problems had emerged from the conflict of partnership and legal obligations with national and local demands for the services of medical practitioners. Partnership deeds had required special amendments and in some cases temporary determination. Arbitration had been resorted to in rare cases when a partner refused to waive, cancel, or amend his legal rights in the partnership deed or to release a junior who desired or was required to join the Forces. Practitioners heavily committed financially by the purchase of their practices and practising in bombed or evacuation areas had been interviewed and advised on their special difficulties. The amount expended by the Union last year on indemnity claims and insurance was £6,117, and on law charges £4,587. Six cases were cited in which the aggregate amount expended in costs and damages was close upon £4,000, and the total received in yearly subscriptions from the six practitioners concerned since they took up membership was only £60. After a long discussion the council had decided to admit to membership practitioners of non-British nationality, provided they satisfy certain criteria and also undertake on the cessation of hostilities to give notice of their intention to withdraw from membership. Mr. St. J. D. Buxton had been elected president of the Union in succession to the late Mr. Eric Pearce Gould, and during Mr. Buxton's absence on military duties Dr. de Bec Turtle had served as acting president. The financial statement for the year 1940 was presented by the treasurer, Mr. E. D. D. Davis, who expressed the view that the report was self-explanatory and did not call for comment on its details. The report was immediately approved and adopted unanimously. Mr. A. D. Griffith, Dr. A. Lyndon, and Dr. G. de Bec Turtle were elected members of the council, and at a subsequent meeting of the elected members of council Dr. Turtle was appointed president of the Union for the session 1941-2, and Messrs. Hempsons were re-elected the solicitors to the Union.

list. Nearly 15,000 patients had passed through the clinic since its foundation, and before the war it was giving 26,000 medical treatments a year, not taking into account the social work and ancillary services. It was also the first child guidance clinic in the country, although it never took that name. He added that of the group of doctors working at the clinic before the war, some twenty were now specialists in the fighting Services, fifteen were in the Emergency Medical Service, and eighteen in the Ministry of Pensions and various other institutions, mostly out of London, leaving about twenty-three, mostly women doctors, carrying on a splendid part-time service at the clinic. More children had been seen during the first eight months of this year than during the corresponding period in any of the previous five years. He, too, believed that after the war there would be a vast increase in psychiatric problems. When once the tension was relaxed signs of strain would appear, and then the clinic would be able to render even fuller service.

Queen's Institute Nurses

The Queen's Institute of District Nursing reports that during 1940 maternity cases to the number of 85,242 (in which no doctor had been engaged for the confinement) were attended by 1,530 Queen's nurses and 2,782 village or other nurse-midwives. Rather more than one-fourth of the patients were primiparae. The maternal death rate was 1.74 per 1,000 live births, of which 0.08 was due to non-puerperal causes. The death rate was slightly higher in rural than in urban areas (1.78 and 1.39 respectively). Deaths among the primiparae were 31% of the total maternal deaths. Medical aid was summoned for the mother in 31,311 cases and for the infant in 5,692 cases. An analysis of 138 maternal deaths shows that 31 were due to sepsis, 50 to accidents of labour, 17 to eclampsia, 19 to embolism, and 21 to complications. Of the fatal cases 45 were not delivered by the midwife, as it was necessary to summon medical aid before the birth. The number of forceps deliveries was 4,572, or 5.4% of the total confinements. The need for more frequent ante-natal visits, particularly during the last two months of pregnancy, is emphasized. This is particularly evident from the report on deaths from eclampsia: in 10 out of these 17 cases no symptoms were noted before coming into labour. In addition to these cases in which no doctor was engaged for the confinement, the nurses or nurse-midwives acted as maternity nurses in 36,560 cases in which a doctor had been engaged. The maternal death rate among these was 2.79.

Local News

ENGLAND AND WALES

The Tavistock Clinic

The Tavistock Clinic (the Institute of Medical Psychology) celebrated its twenty-first birthday by a luncheon, over which Lord Alness presided, on September 29. The Marchioness of Reading, in proposing the toast of "The Clinic," sketched its progress from small things until just before the war, when ninety doctors, including clinical students and postgraduate assistants, were working in association with it. She said that the work was being continued in temporary quarters at Westfield College, Hampstead, and the home at Malet Place, Bloomsbury, had been destroyed by enemy action, but it would again have a habitation of its own, for its work would be more needed than ever after the war. Even though the British people did not get neurosis as a result of bombing, they were very likely to get it in the dread of starting life over again on a new basis. Lord Alness claimed that the clinic was an institution of national importance; he knew of no other which had stood up more gallantly to the shock of war. Lord Hollenden, the treasurer, mentioned the need for reducing the debt which weighed so heavily on the work. Colonel J. R. Rees, the medical superintendent, reminded the company that the clinic was started on the understanding that it should run for only three years, by which time it was believed that the hospitals would have developed a sufficient number of out-patient psychiatric clinics to meet the need. In fact, however, the Tavistock Clinic had never been able to catch up with the demand for its services, and indeed one of its problems had been an unshiftable waiting

SCOTLAND

Prevention of Eye Injuries: Exhibition in Edinburgh

An exhibition of appliances for the protection of the eyes in industry has been opened in the Eye Department of the Royal Infirmary, Edinburgh. It has been arranged by the W. H. Ross Foundation (Scotland) for the Study of Prevention of Blindness. At the opening of the exhibition, which conveys its information to a great extent by means of a series of enlarged photographs, Dr. Arthur H. H. Sinclair said that it was hoped that it would help workers engaged in industry, particularly in dangerous work, to realize the importance of employing the protective measures which were available. Colonel R. M. Dickson, director of the Foundation, said that under the Factories Act about 8,000 eye accidents were reported each year. Analysis of 1,000 cases of eye injury in the ophthalmic department of the Glasgow Royal Infirmary showed over 70% to be occupational in origin, the great majority of these being among metal workers and coal miners. The hazards to sight had been greatly increased recently by the expansion and speed-up of production, with large numbers of men and women in new jobs, working long hours, often under poor lighting conditions the result of the black-out. The strict enforcement of rules concerning the use of goggles and other protective devices was proving the most effective means of reducing eye injuries.

W. L. Donohue (*J. Pediat.*, 1941, 19, 42) records a fatal case of mumps encephalitis in a girl aged 5 years, with a review of the literature. The fundamental lesion was a perivascular demyelination similar to that seen in other cases of post-infective encephalitis.

The recent radiographic survey among Army recruits in America by H. R. Edwards and D. Ehrlich (*J. Amer. med. Ass.*, July 5, 1941, p. 40), even though carried out by a comparatively expensive method, shows how a financial saving of considerable proportions can be effected by wise expenditure at the right time—in this case a saving on pensions. Tuberculosis among the civil population of Great Britain may not be a potential source of future financial outlay of this kind, but its steady increase will certainly make further demands on finance, for the public health and public assistance activities associated with the general burden of tuberculosis within the community. I suggest that the time has come when the authorities concerned should give serious consideration to the many implications arising from the steady increase in tuberculosis which is now apparent. The war effort must be the dominating factor in all national activity of the moment, but we might find it would be best served, so far as this problem is concerned, by taking action now rather than later.—I am, etc.,

Walthamstow, Oct. 1.

HUGH RAMSAY, M.D.

The Spread of Poliomyelitis

SIR,—Your recent annotation (August 30, p. 311) has drawn attention to one of the most interesting unsolved epidemiological problems of the present day, and it is the object of this letter to point out one method whereby practitioners attending cases of the disease can materially aid in research.

It is generally believed that in the majority of cases the poliomyelitis virus spreads by means of infected droplets of nasopharyngeal secretion. It is thought that these droplets are inhaled and that the virus passes from the roof of the nasal cavity along the olfactory nerves to the olfactory bulbs, and thence backwards by nerve tracts to the thalamic region and on to the spinal cord. Actual observations on man in support of this theory are, however, scanty, and some workers affirm that this is not the commonest mode of spread.

Much of value would undoubtedly be learnt if post-mortem examinations were carried out on all fatal cases of poliomyelitis, and the olfactory bulbs and tracts carefully dissected out and submitted to expert histological examination for the presence of inflammatory changes. If a considerable number of such observations were recorded it would be easier to assess the likelihood or otherwise of the olfactory route being the usual channel of entry of the poliomyelitis virus into the body.

It may be said that at the moment the few observations recorded do not favour this portal of entry, as, in the majority of cases examined, changes in the olfactory bulbs and tracts have been scanty or absent.—I am, etc.,

Pathological Laboratories, Royal Salop Infirmary,
Shrewsbury, Oct. 2.

A. J. RHODES.

Treatment of Scabies

SIR,—Since my letter in the *Journal* of January 25 (p. 135), in which I described my experience of treating scabies by sulphur given internally, there have been many letters, references, and articles on the subject of scabies and its treatment, but only three of them refer to sulphur taken internally.

I read with interest the practical and instructive article by Surgeon Lieut. J. F. Buchan on the comparison of treatments of scabies (August 16, p. 227), but I am sorry he did not include in his series cases treated by internal sulphur alone, and in those he treated by combined internal and external methods he does not mention one reaction to taking sulphur internally, which to me is the most important, and that is that all silver coins or ornaments on the patient turn black, due to H_2S exhaled from the skin. I believe, and I am also well informed, that it is the H_2S which kills the acarid, and it also disinfects the clothing and prevents recurrences. An adjustment of the dose controls any tendency to looseness of the bowels; my patients were mental cases, and one drachm of the confection just acted as an effective laxative.

In the scrub and ointment treatment you make abrasions, the exudation from which combines with the sulphur in the ointment and gives off H_2S to kill the acarid. Surgeon Lieut. Buchan truly says that this is a dirty method; it is not only dirty, it is expensive as regards laundry and deterioration of clothing and bed-linen, and unless there is a very plentiful supply of hot water, which means plenty of coal, it can be more than dirty; in addition it requires the complete co-operation of the patient. Dr. N. F. Cooper in his note (April 19, p. 616) confirms my experience.

I am indebted to Dr. A. M. H. Gray of University College Hospital for informing me that sulphur internally was used for scabies in the first half of the nineteenth century, and in his letter (February 8) he gives extracts on the subject from the books of doctors who had written about it, including Hebra, the Viennese dermatologist. Dr. Gray very logically says in his letter that "it is difficult to believe that a remedy—which was evidently at one time in constant use—would have been discarded if it had been as effective as Dr. Berncastle imagines." I submit an explanation why internal sulphur was dropped which I think is reasonable.

I deduce from two facts. First, in the reign of King George III there was a heavy tax on soap (glycerin was not needed for explosives in those days); the tax was as much as the cost of the soap, and was not repealed until 1853. Secondly, bathrooms and hot-water systems did not exist in the average Georgian and early Victorian houses; it can be inferred that cleansing baths were a luxury only indulged in by the well-to-do. The bulk of the citizens relied on brimstone and treacle to ward off spring and heat spots, and scabies, which must have been pretty well endemic. After the repeal of the soap tax in 1853 bathing and bathrooms became more frequent and scabies less in those who bathed, so that a class distinction arose between those who bathed and those who did not, as in the present day. Doctors have never got, nor ever will get, any credit for prescribing common household remedies, especially if they carry a stigma with them. Sulphur cannot be disguised if taken internally; it always exhales the H_2S odour, so they just dropped it and applied it externally instead.

I wrote my first letter with the idea that it might be of some use as a war measure; preparations, however efficient and elegant, are not much use if they cannot be obtained owing to the war. I am not likely to be called on to treat scabies again, but if I am, whatever external treatment the patients have, they are going to have sulphur internally as well, just in case the first shot misses, and personally I always keep a few sulphur tablets by me in case I should be unlucky and pick up a wandering acarid.—I am, etc.,

H. M. BERNCASTLE.

Croydon, Oct. 3.

Treatment of Impetigo

SIR,—In reading the voluminous correspondence, I have been struck by the absence of mention of what I believe to be a safe, rapid, and certain cure of this disease. I refer to ultra-violet light locally administered. In this district, abounding in large schools, we have for many years treated epidemics of this disease, but since war began thousands of evacuees have come to the district, bringing infection to each other and to their unfortunate hosts and their families. Having treated literally hundreds of cases, I can only recollect one failure, where the scabs became so profuse that the parents refused to continue treatment owing to the unsightliness of the face.

Dr. R. T. Brain (October 4, p. 492) seems to me to bring out the whole object of the treatment, whatever form adopted, when he says: "Nature's defence against skin infection is the dry intact stratum corneum, and our treatment should be designed to maintain it." This ultra-violet light accomplishes to a nicety, the only essentials I lay down being that no ointments or other remedies be applied. It is essential to produce a mild degree of erythema, and all patients should be warned of this and assured that it will rapidly pass off in a few days. In some severe cases in middle-aged men fears were present of sycosis barbae, so severe were the infections, but all cleared up rapidly under ultra-violet light. After the first dose dry scabs form in twenty-four hours; a second dose is then administered, which is usually sufficient, but in some severe cases a third dose may be necessary.—I am, etc.,

F. F. C. JAGGER.

Winchester, Oct. 6.

Treatment of Scabies and Impetigo

SIR,—The letters of Dr. Mumford and Dr. Brain (October 4, p. 492) contained very important points, and I would like to stress the undesirability of reporting "cures" for scabies which are based on far too limited an experience in the treatment of skin diseases. On the other hand, I cannot subscribe to Dr. Mumford's demand that the presence of living acarid must be shown before a diagnosis of scabies is tenable, and, conversely, that the absence of living acarid must be certain before cure can be accepted. This position is quite impossible where large numbers

have to be treated. Including children and adults and Service patients I see several thousands of cases annually, and I venture to say that Dr. Mumford's criteria of cure, while being no doubt the ideal, are, obviously impossible to achieve.

While not denying the almost universal experience of the large increase in scabies, I am certain from my own experience (and I have no doubt that other dermatologists would confirm this) that many cases of lichen urticatus and prurigo mites are included in cases of so-called scabies. This is obviously proved by the records of persistence of the lesions after apparently efficient treatment had been given. Cases of scabies so persistent should be referred to an experienced dermatologist.

There is no doubt about the value of benzyl benzoate in this disease, but sulphur is equally effective if properly used. The only advantages of the former are convenience and ease of application and much less risk of dermatitis, often mistaken for persistence of infection. Despite a recent paper in the *Journal*, I am convinced that infection from bed-clothes plays a great part in the spread of scabies, and the disinfection of these, along with the underclothing of the patient and inspection of contacts, forms an integral part of the proper treatment of the disease. Before the war the Liverpool city authorities treated scabies as a notifiable disease, and it was kept well under control. Under war conditions such a practice is not always possible, but it is the ideal at which to aim if control of the disease is to be achieved.

Dr. Brain's remarks were extremely valuable and should be pondered over by all called upon to treat cases of skin disease. Nevertheless, I feel sure that the merits of unguent, hydrarg. ammon. in the treatment of impetigo are much greater than is apparently admitted. This disease does not need the almost numberless remedies suggested for its cure. If the less common erythematous cases described by Dr. Brain are excepted, unguent, hydrarg. ammon. 2% will cure the great majority of the remainder. The probable cause of the mercurial dermatitis occasionally seen is that too strong an ointment has been used. I agree that where much serous exudation is present the first essential is to promote drying. Here gentian violet 1 to 2% is valuable, particularly if small exposures to ultra-violet light are added to the treatment. I have found cold starch and boric poultices to be most successful in the removal of scabs, and have often cured the disease without recourse to any other form of treatment. I have not had Dr. Brain's success with the use of soap and water; spread was so invariable that it is forbidden in my wards and clinics.

Finally, I am grateful for Dr. Brain's vindication of the use of sulphanilamide in the erythematous cases, where infection is more virulent. I have used this drug for several years with undoubted benefit. The dose need not be large—2 to 3 grammes daily—but the effect is gratifying. I have been told that such a dose could not be of use because the concentration of the drug in the blood would not be sufficiently high. My reply has been that for superficial skin infections this concentration need not be high, and I am glad of Dr. Brain's confirmation of this point.

—I am, etc.,

Liverpool, Oct. 9.

F. GLYN-HUGHES.

Scabies: Questionable Evidence of Cure

SIR,—On the subject of this very social disease, with two main exceptions there have been in your and several other columns recently many articles which seem to show a good deal of the modern expression "wishful thinking." The two notable exceptions have been from Dr. Kenneth Mellaanby and Dr. P. B. Mumford. In order to substantiate the latter's letter (October 4, p. 492) I thought you might be interested in a few more actual figures.

Since January, 1940, I have been in charge of a hospital under the Ministry of Health for non-notifiable infectious diseases in evacuated children. As you would expect, a great many of these cases are of impetigo or scabies, or both. From January, 1940, to September 30, 1941, I treated seventy-five cases of pure scabies and twenty cases of scabies and impetigo. The children have all been admitted and not been returned home until considered cured. I have taken a cure to be no recurrence of signs or symptoms for fourteen days. This is, in all probability, too short a time, but economically has been found desirable at the moment. In these seventy-five cases only five have returned. Having these facts in mind, the average lengths of stay, using all known methods of treatment, are as follows: scabies alone,

seventy-five cases, 4½ weeks; scabies and impetigo, twenty cases, 6½ weeks. These figures include seven children removed by parents uncured.

The object of this letter is not to advocate any specific cure, but to show that even with children in a hospital for that purpose and treated by many different systems the average length of time for even theoretical cure is at least four and a half weeks in uncomplicated cases of scabies, and up to at least six and a half weeks in those complicated by impetigo. I do feel very strongly that anyone who claims a cure in much under this time (especially seven days) is suffering from not only "wishful thinking" but an inability to follow up the cases.—I am, etc.,

Haslow, Kent, Oct. 7.

JOHN B. MARSHALL.

SIR.—Two criteria may be employed in the determination of cure of scabies. One is based on the absence of live acari; the other depends on clinical cure and freedom from irritation for a period of a fortnight or longer from cessation of treatment. Both are valid, but in my view the latter is the more valuable and indeed the only practicable method where large numbers of patients are being treated.

A method of treatment which produces the complete relief from symptoms noted in my report, a relief which continued without recurrence for months afterwards, should surely be regarded as an effective anti-scabietic measure without the support of time-absorbing and presumably fruitless search for acari. Where sulphur inunction has been employed, the slight residual irritation which too infrequently results without a frank dermatitis developing rather complicates matters, but I have not observed subsequent dermatitis in the series of cases treated by benzyl benzoate.

The weakness of the live acari method under the social conditions existing in the areas where scabies is most rife lies in the possibility that the patient may become reinfected quickly, and that live acari may be discovered on him at any period after a short interval following treatment. Kenneth Mellaanby's discovery of a carrier state, in which the person may remain without symptoms for an unspecified period, diminishes the usefulness of the live acari method. Since it appears that even nymphs may be transferred from person to person, who is to say that a particular example of immature or adult acarus detected on a person developed on him after the application of a parasiticide or whether it came from another untreated person? If this cannot be decided easily, the value of the test is seriously impaired, unless it is employed solely on patients under strict supervision as in hospitals. The suggested venereal mode of spread exemplifies the possibilities of early reinfestation following complete extirpation of all forms of the parasite by treatment.

Can Dr. P. B. Mumford (October 4, p. 492) produce evidence that live acari (or viable ova) persist on the body after benzyl benzoate treatment as thorough as that which produced the complete and persisting relief from irritation noted? His deduction from Kenneth Mellaanby's discovery of acari on symptomless volunteers is surely not valid, inasmuch as Mellaanby's observations (as so far published) were not made on patients retested symptomless by an effective parasiticide.

The investigations of Kenneth Mellaanby and his volunteers are worthy of the highest praise if they lead to the easier control of this disease, which, until recently, has been accorded scant attention by dermatologists and research workers.—I am, etc.,

Hereford, Oct. 8.

I. F. MACKENZIE.

SIR.—Dr. P. B. Mumford's letter (October 4, p. 492) regarding the necessity for keeping strict control when reporting cures of scabies is interesting; so are his remarks concerning "blindly accepting prejudiced concepts." While not overlooking the necessity for pathological confirmation, one might consider that present ideas are tending too much to the academic and theoretical. After all, provided the patient obtains benefit and relief, what matter to him the *modus operandi*?

To require proof of the absence of living acari before admitting a cure is surely going a little too far. Many of us have them dormant and doing no harm for all we know. Dr. Mumford must realize that we do not insist on a pathologist reporting a skin free from staphylococci before pronouncing a person free from boils, or a throat free from haemolytic streptococci before giving up treatment for tonsillitis.—I am, etc.,

London, W.1, Oct. 7.

NEVIL LEYTON.

Herpes Labialis after T.A.B. and Chemotherapy

SIR,—I read with interest the article by Major C. E. van Rooyen, Dr. A. J. Rhodes, and Captain A. Cameron Ewing (August 30, p. 298). I have given T.A.B. intravenously in doses of 0.25 c.cm. in cases of gonorrhoea treated with sulphapyridine and of non-specific urethritis treated with sulphanilamide. In some cases T.A.B. was given concurrently with the drug in question on the fourth or fifth day of administration; in other cases it was given four to eight days after completion of a six- or eight-day course of chemotherapy. The T.A.B. used in either event was the same, and the results stated below were obtained during the same season—that is, spring and early summer of this year.

My observations were as follows: Herpes labialis is very common following T.A.B. when this is given four to eight days after a complete course of sulphapyridine. Herpes occurring in these circumstances is always labial and nearly always affects the external mucous membrane of the lips as well as the skin. Herpes has not occurred when the T.A.B. was given concurrently with sulphapyridine on the fourth or fifth day of the course. Herpes has not been observed after T.A.B. in patients treated with sulphanilamide. These results conform with the clinical observations of van Rooyen and his associates, and in some measure amplify them.—I am, etc.,

Sept. 13.

F. RAY BETTLEY, M.D.,
Major, R.A.M.C.**Medical Statistics in Wartime**

SIR,—May I be permitted to reinforce your plea (October 4, p. 481) for the release of medical statistics. In addition to the fact that no Annual Review has been issued by the Registrar-General since 1938 and that we are still awaiting the long-promised Report from the Ministry of Health, no Quarterly Returns have been published by the Registrar-General since December, 1940.

How does one reconcile this statistical black-out in England with the continued publication of the Quarterly Returns by the Registrar-General for Scotland? Yet Scotland is as deeply interested in this war, as the last Return for June 30 indicates. From this return we can see that immediate measures must be taken to deal with, for instance, a serious rise in both infantile and maternal mortality. Sir Wilson Jameson has issued a timely warning that "local authorities and the medical profession must remain on the alert," but as you, Sir, point out, we cannot remain effectively on the alert unless we are well informed. If the statistics for England and Wales are held up for military reasons, let the authorities be democratically frank and tell us so. In that event, however, would it not be wise for similar measures to be taken in respect of the Scottish figures? If there is to be an eclipse let it be a total one.—I am, etc.,

London, W.4, Oct. 6.

RICHARD M. TITMUSS.

"Perfect Sight without Glasses"

SIR,—Your annotation (September 13, p. 383), together with the trenchant comments of Messrs. Seymour Philips and David Hardie (September 27, p. 459) on the published works on this subject by Bates and Benjamin respectively, seem fully to dispose of any claim to merit of the methods advocated by these gentlemen, and to answer my friend Dr. J. Parness's query as to whether such methods have the blessing of standard ophthalmological opinion. It is therefore pertinent to question the wisdom of Dr. Julian Huxley in affording prominence to these methods in his recent broadcast. The name of Dr. Huxley as a scientist is deservedly a household one among the laity, who might easily attach undue weight to his words through the belief of certain of the more uninformed members that a scientist is a person competent to speak with authority on any scientific subject, and by reason of the credence attached to B.B.C. broadcasts. Doubtless Dr. Huxley had no intention of proffering treatment; yet out of his vast audience it is not improbable that there were some who would be impelled to consult the books of Bates and Benjamin. Since treatment of any condition cannot be efficient, except fortuitously, unless based on an intimate knowledge of the patient and the pathological process from which he suffers, it follows that a line of treatment delivered gently may be harmful. Consequently, topics touching upon the treatment of bodily dysfunction, however indirectly, should be avoided in broadcasting.

The case cited by Dr. Huxley (September 13, p. 389) to you, Sir, in which improvement in sight occurred in a patient treated unsuccessfully for thirty years by other methods, proves nothing. One cannot generalize as to treatment on the basis of a solitary case; any medical man can instance recoveries apparently conditioned by unusual, unconventional, or even bizarre means.

I am perhaps unduly critical of Dr. Huxley, as in the public interest the question might well have been omitted. But the question having been put Dr. Huxley was hardly justified in giving the subject the added stress of repetition in a subsequent broadcast, together with the citation of books of reference.—I am, etc.,

Withington, Manchester, Oct. 4. LESLIE BALLON, L.R.C.P.&S.Ed.

The Midwife's Title

SIR,—Many local authorities and voluntary organizations still fail to give midwives their correct and proper designation—that is, State Certified Midwife or the abbreviation S.C.M. Invariably correct use is made of the term State Registered Nurse and the abbreviation S.R.N. Why is not the midwife's title, which is of much older date, also used correctly?

Frequently in advertisements it is stated that applicants must "hold the C.M.B. certificate." Someone given to harsh opinions might say that the use of this phrase is a bad habit resulting from loose thinking. The advertisers mean that the applicants must be State Certified Midwives, but they don't say so. The Central Midwives Board awards three kinds of certificate: (1) the "first certificate" awarded to State registered nurses successful at the examination held at the end of Part I of the course of midwifery training; (2) the certificate of enrolment as a midwife awarded to candidates successful at the examination held at the end of Part II of the course of midwifery training; and (3) a Midwife Teacher's Certificate of proficiency in the art of training pupil-midwives. It is strange that no one seems to have an urge to refer to "G.N.C. Certificate" as synonymous with State Registered Nurse.

May I hope that in the future all advertisers for midwifery staff will "invite applications from State Certified Midwives," and that if they wish applicants to be general trained nurses as well they will express this by adding afterwards the words "who are also State Registered Nurses." I suggest that these words should come afterwards and not before, for the obvious reason that the legal right to practise midwifery arises from State registration as a midwife and not from State registration as a nurse.

While on the subject of titles may I commend to employers of midwives the desirability of adopting standard titles for various appointments in the midwifery service, for example:

For midwives practising in institutions: staff midwife, instead of staff nurse or staff nurse-midwife or midwifery staff nurse or maternity staff nurse, all of which are in current use; midwifery sister, instead of sister or maternity sister or maternity ward sister; midwifery sister-tutor; midwifery sister-in-charge.

For midwives engaged in domiciliary practice: municipal district midwife (or city or county midwife); district midwife and district midwifery sister in the case of the staff of voluntary organizations.—I am, etc.,

London, W.1, Oct. 9.

COMYNS BERKELEY.

Avoidable Disability seen in Recent Amputations

SIR,—It is true that despite the vast experience gained during the last twenty years with many thousands of cases, one still sees far too many bad amputation stumps. I am in complete agreement with the views expressed by Mr. W. R. D. Mitchell in your issue of September 27, and by reason of the fact that in all amputation cases the responsibility for securing a satisfactory end-result rests with the artificial limb maker, I hope that a short summary of the major difficulties experienced from the limb-fitting point of view will be of interest.

A recent analysis of 500 cases of above-knee and below-knee amputations fitted with limbs at ten centres throughout England shows that 88 suffered from varying degrees of flexion at knee or hip, and 73 had adherent scars.

Flexion Deformity and Superfluous Flesh.—Flexion at the hip or knee always causes difficulty to the limb maker, and sometimes involves considerable expense for the construction of special limbs. While it is true that it can be prevented by

splinting when the patient is in hospital, it is our experience that most of the trouble occurs in the three or four months after discharge. During this period the uninstructed patient spends most of his time in a sitting position, and flexion naturally develops. Mr. Mitchell rightly states: "The ideal stump is, of course, firm and tapering to the end, with rounded contours and a minimum of flabby tissue." Yet 80% of the cases sent to us for limb fitting have received no instruction in the preparatory treatment which can do so much to achieve this ideal condition. An amputation stump, as soon as it is healed and painless, should be kept tightly bandaged (renewed night and morning), and exercised progressively by means of an elastic exerciser. This simple treatment, correctly applied, can in six weeks greatly reduce the superfluous flesh, retain full movement, and recondition the muscles. A patient who has received this treatment is far easier to fit with an artificial limb, and can control the limb and learn to walk well in a far shorter time than is necessary with a patient who has had no preparatory treatment. This means an earlier return to work and less subsequent trouble.

Adherent Scars.—The best results with artificial limbs are obtained when it is possible for the patient to control the limb and walk purely by movement of the stump. The primary function of the stump is weight-bearing, but as weight is applied and relieved it causes a slight piston action between the stump and the socket, and this pulls the skin over the end of the bone. An adherent scar is therefore always a great disadvantage. The practice of using equal lateral skin flaps in amputations below the knee not only places the scar at the maximum point of pressure in relation to the socket of the artificial limb, but also nearly always results in the scar becoming adherent to the end of the tibia. This very often means that a looser fitting must be given and weight-bearing must be taken by an extended thigh corset having a bearing on the tuberosity of the ischium—a less comfortable limb with increased disability.

Excessively Long Stumps.—In the cases referred to above, quite a number of above-knee cases had stumps over 11 in. long, but a much larger proportion of the below-knee cases had stumps over 7 in. long. It is curious that too long a stump should be more frequent in below-knee cases than with above-knee cases, but apparently the practice of amputating just above the ankle for foot injuries is still fairly common. The disadvantages of long stumps are well known and can be briefly listed: (1) bad circulation, leading to breakdown; (2) impossibility of constructing the artificial limb to obtain correct alignment or to match the sound limb, also increased bulk and weight; (3) no space for a modern knee mechanism, and therefore bad gait.

Guillotine Amputations.—Whatever may be the surgical advantages of guillotine amputations, it is most certainly an amputation that the limb maker would far prefer never to see. From a practical point of view it appears wrong to cut straight through a limb and then by traction to try and stretch an inadequate amount of skin to cover the end of the stump; in practice it always results in a large area of adherent scar tissue, causing great difficulties in limb fitting. It is rare that a fully satisfactory result is obtained.—I am, etc.,

E. R. DESOUTTER,

London, Oct. 1.

Director, Desoutter Brothers, Limited.

The Tellurite Medium of Wilson and Blair Selective for *B. dysenteriae* (Flexner)

SIR.—The article by Prof. W. J. Wilson and Dr. Blair, published in your issue of October 11 (p. 501), is a welcome contribution on an important problem which has hitherto presented much difficulty apart from Leifson's work. It may be of interest to your readers to know that as the result of extensive work I can confirm the effect of the addition of tellurite to medium for suppressing the ordinary coliform organisms, while permitting the Flexner types of dysentery bacilli to flourish. A further striking character of media containing tellurite is that they also permit the growth of *B. dysenteriae* (Shiga), as I have found in a study of thirteen strains (none of which, unfortunately, was very recently isolated). Thus tellurite media may prove of great value in the diagnosis of dysentery of Middle European and tropical origin.—I am, etc.,

IWO LOMINSKI.

Scholar of the British Council and Polish
Department of Bacteriology and Pathology, National Culture Fund,
the University and Western Infirmary, Glasgow, Oct. 11.

Obituary

JAMES KERR, M.A., M.D., D.P.H.

Consulting Medical Officer, L.C.C.; formerly School Medical Officer for London

The death of Dr. James Kerr on October 5 at his home in Regent Terrace, Edinburgh, removes a pioneer whose enterprise and vision in the early years of this century, when he was school medical officer for London and the mainspring of an enthusiastic group of workers, established the value of school hygiene as a necessary public service, after he had originated the school medical service in Bradford.

James Kerr was born in Glasgow, and from Manchester Grammar School entered St. John's College, Cambridge, with a science scholarship. He gained first-class honours in the Natural Sciences Tripos of 1883, and followed this with a senior science scholarship at St. Bartholomew's Hospital. He took the M.B., B.Ch. degrees and the D.P.H. of Cambridge in 1887, the M.A. in 1888, and the M.D.

in 1891. Beginning his career with clinical ambitions, he was elected to the honorary medical staff of the Bradford Royal Infirmary and the Bradford Eye and Ear Hospital after some experience in general practice, and turning later to administration was made medical superintendent under the Bradford School Board, and organized with great success the school medical service of that city. He came to London as the first medical officer to the old London School Board, and on its absorption by the L.C.C. became Medical Officer (Education), and held that post with great distinction from 1902 to 1911, publishing valuable papers and reports on school hygiene and kindred subjects. Throughout his administrative work he retained the outlook of the clinician.



Among many other public duties Dr. Kerr undertook the secretaryship of the second International Congress of School Hygiene, served on the International Commission on Standards of Illumination, and was a member of the examination board and chief examiner in hygiene for the English Board of Education. He gave the Ingleby Lecture before the University of Birmingham, and was awarded the Howard Medal by the Royal Statistical Society. During the last war he held a commission as temporary major in the R.A.M.C., and was honoured by the rank of Officier de l'Instruction Publique de France. He published two small books, one entitled *The Air We Breathe* and the other *School Vision and the Myopic Scholar*, and in 1926 a large and important work, *The Fundamentals of School Health*. The last-named publication filled a gap in medical literature: it was the outcome of patient recording and checking of accumulated facts during many years. In writing its 850 pages Dr. Kerr gathered up his experience and followed it to the present-day development of an established system of health culture in childhood and adolescence the like of which had never before been seen. The book is a mine of information on every side of health and disease in relation to school life, with abundant references to original literature. Its practical purpose, well fulfilled, was to help everyone concerned in education to secure better and better conditions for the children. It set forth all the known facts upon which to found a scientific study of the hygiene of the growing age.

Dr. James Kerr joined the British Medical Association in 1889. He was a member of the Fabian Society for many years, and served on its executive for a time; he was also a member of the Labour Party's Advisory Committees on Public Health and on Education. Taking up residence in Edinburgh after his

retirement twelve years ago, he became chairman of Donaldson's Hospital, and took a close interest in the work of that institution on behalf of the deaf and dumb. He is survived by his wife and by his son, Dr. Douglas Kerr, principal police surgeon under the Corporation of Edinburgh.

ROBERT BRIGGS WILD, M.Sc., M.D., F.R.C.P.

We regret to announce the death at Buxton on October 7 after a long illness of Dr. R. B. Wild, emeritus professor of materia medica and therapeutics in the University of Manchester.

Robert Briggs Wild was born at Holcombe, Bury, in 1862, the son of the late Robert Wild. His scientific education was received at Owens College, Manchester, and he won prizes, scholarships, exhibitions, and medals during his student career. He graduated B.Sc. (with honours in physiology) at the Victoria University in 1883, and in the intermediate M.B. won a gold medal and exhibition in the same subject. His M.D.Lond. (1887) was also passed on gold medal standard. He actually qualified in 1884, before obtaining the London M.B. in 1886, with the L.S.A. diploma, a favourite way in the first instance of earning the means to reach higher professional steps. The M.R.C.S. followed in 1885. He proceeded M.Sc.Vict. in 1894. After residence in the Manchester Royal Infirmary as house-physician he began practice in 1886 and, taking a special interest in pathology, was appointed as registrar in this subject at the hospital and for many years carried out all the necropsies himself and demonstrated their lessons. At the same time he assisted Julius Dreschfeld in lecturing on pathology, a chair of which had been established at Owens College as the first of its kind in England (1881). Wild was keenly interested in the work and was a very good teacher, clear, precise, and definite. He helped Dreschfeld in no small way to prove the importance of pathology in medical education and in having it made a subject for the Manchester medical degrees. Other examining boards followed suit. After this pathological work he joined Daniel John Leech in the materia medica and therapeutics department, lecturing and developing the experimental pharmacology laboratory, of which both Leech and he were enthusiastic supporters. Several men obtained their doctorates by research in this laboratory, Wild's scientific mind assisting them greatly in their work. He also was very helpful to Leech in the investigation of the action of the nitrites on the circulation and in getting amyl nitrite made an official preparation. On the death of his chief he succeeded to the chair, which was endowed as a whole-time office by Leech.

Wild was elected an F.R.C.P. in 1912 and was an examiner for the college for four years. He was also for some years dean of the Manchester Medical School and a prominent member of its Faculty with very definite ideas on the medical curriculum. For a time he acted as Pro-Vice-Chancellor of the University, and in later years represented it on the General Medical Council from 1922 until his retirement from Manchester in 1927. He naturally took much interest in scientific discussions and was president of the medical and pathological societies of the city. He also founded one for therapeutics alone, but it died in early infancy from neglect and inanition. Though he had a very good knowledge of general medicine and of the various methods of treating disease, Wild's chief consulting practice was in diseases of the skin, and he was the leading authority and teacher in the city after the death of H. A. G. Brooke. The Manchester and Salford Hospital for Diseases of the Skin was opened in Dale Street as a separate institution from the Lock and Skin Hospital, for the sole treatment of diseases of the skin. Walter Whitehead was the chief actor in this desirable divorce, and one of his junior colleagues helped him for a few months in 1892 in seeing the patients. Wild's name was then suggested as an assistant, and this being agreeable he saw all Whitehead's cases in an unofficial capacity until he was elected honorary assistant physician in 1894. For many years he was the mainstay of the Christie Cancer Pavilion and Home which was founded in 1882 with this title, subsequently changed to that of the Christie (Cancer) Hospital and Home. He took the physician's side of the treatment and played a very active part in the administration of the hospital. He tried every medical remedy with a reputed action for good on cancer that was suggested to the hospital.

He found, however, that few had any value in relieving pains and distress, let alone curing the disease. He wrote many papers on the actions and uses of medicines and on diseases of the skin, including cancer.

Prof. Wild was a member of the British Medical Association for thirty-eight years, and at the Annual Meeting in Manchester in 1902 he served as vice-president of the Section of Pharmacology. In 1909, at the Belfast Meeting, he was vice-president of the Section of Dermatology and Electrotherapeutics; at the London Meeting in 1910 he was vice-president of the Section of Dermatology; and at Bath in 1925 he held office as president of the Section of Therapeutics. He served on the Standing Therapeutics Subcommittee of the Association in 1919-21.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Titles of the degrees of M.B., B.Chir. were conferred by diploma during September on J. I. Hallinan of Girton College, and on J. W. Shrimpton of Newnham College.

J. Morton has been approved at the examination for the Diploma in Medical Radiology and Electrolgy (Part II).

Vice-Chancellor's Valedictory Address

At a Congregation of the Senate held on October 1 Mr. E. A. Benians, Master of St. John's College, resigned the office of Vice-Chancellor, and Dr. J. A. Venn, President of Queens' College, was admitted as his successor for the year 1941-2. In the course of an eloquent address Mr. Benians gave a survey of the second year of war in its relation to the academic life of Cambridge, and recorded benefactions, losses by death, and the departure on national service of many university officers. He spoke of a Christmas message from the Universities of Harvard and Yale expressive of the bonds of friendship that unite the two countries and of the common ideals and traditions shared by English and American scholars, adding his own plea for a new consideration by the History Faculty of the educational value of American history. Coming to the general administration of the University he noted the heavy burden caused by depletion of staffs during a year of full activity in which no essential function had been suspended. The many calls made upon accommodation in Cambridge had strained resources to the utmost, and he doubted if university and college buildings had ever been more fully used. Emergency regulations, the absence of many teachers, the addition of special courses, adjustments and readjustments of many arrangements, had imposed a continuous strain on the central administration. Work on new buildings and the reconstruction of old ceased with the outbreak of war, and only what was necessary for the wartime protection of buildings had been undertaken. With regard to the educational activities of the year Mr. Benians said that the decision of the Government that the continuance of university education was essential to the present and future interests of the nation was a call to maintain work to the best of everyone's powers. The results of the examinations showed no falling off in the quality of students' work. With a grateful acknowledgment of the help given him from all sides he said, "Looking back on the two years of war which have now passed—years in which we have been so closely occupied with urgent business as to have little time for general reflection—I see the University finding its place in the national effort. I see, too, the growing recognition in all quarters of the importance of the universities as schools of character and schools of professional training, and none who have followed the trend of events in the last two years can fail to see that great tasks will be laid upon them when peace returns. Universities have long ceased to be the forefront of modern life; more and more it is realized that education, learning, and research are the root of national effort and not merely a splendid efflorescence. . . . The universities will have a great part to play in repairing the national loss. Commerce and industry, as well as education and the public services, will, I believe, look more and more to the universities for men of character and ideals, and connexions made in time of war must not be abandoned in peace. We have to bring our science into close and fruitful contact with industry and administration and to send forth chivalrous leaders into industrial life and fit teachers into all the fields of education. The Empire over-seas will make great claims upon us. Thus, while we give all assistance we can to every side of the national effort, it remains vital, for the sake both of present and of future needs, that we should also keep in efficient being the great educational

institutions of which we are at the moment the guardians. We talk of our own affairs, but it is the common task and the common peril that press upon us. History knows no such scene as that in the midst of which we contend to-day, nor was ever more at stake. The pursuit of truth and the dominion of reason are the articles of our faith. All that is ennobling in man's long struggle issues from them. Yet, if freedom perish, they will perish."

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a recent meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, the President, Mr. Roy F. Young, in the chair, the following were admitted Fellows of Faculty: James Walker Ferguson, M.B., Ch.B., Hector Ross MacLennan, M.D., M.R.C.O.G., Thomas Semple, M.B., Ch.B., Harry Ellis Charter Wilson, D.Sc., M.B., Ch.B.

Medical Notes in Parliament

Post-war Hospital Policy

Sir FRANCIS FREMANTLE on October 9 asked the Minister of Health whether he was in a position to indicate the general lines of the Government's post-war hospital policy. Mr. ERNEST BROWN, in reply, made the following statement:

The question of post-war hospital policy and reorganization, more particularly in relation to the Emergency Hospital Scheme, has for some time been engaging the attention of the Government. While any immediate reorganization must be regarded as impracticable in present circumstances, certain broad principles can be laid down as the basis of Government policy.

It is the objective of the Government, as soon as may be after the war, to ensure that by means of a comprehensive hospital service appropriate treatment shall be readily available to every person in need of it. It is accordingly proposed to lay on the major local authorities the duty of securing, in close co-operation with the voluntary agencies engaged in the same field, the provision of such a service by placing on a more regular footing the partnership between the local authorities and voluntary hospitals on which the present hospital services depend. The Government recognize that to achieve the best results and to avoid a wasteful multiplication of accommodation and equipment it will be necessary to design such a service by reference to areas substantially larger than those of individual local authorities. It will be the aim of the Government also to avoid overlapping and uneconomical expenditure by securing the provision of the more highly specialized services at teaching hospitals and other centres selected to serve these wider areas and by arranging for a proper division of function between hospitals in these areas.

With regard to the financial aspects of the Government's proposals, it is their intention to maintain the principle that, in general, patients should be called on to make a reasonable payment towards the cost, whether through any contributory schemes or otherwise. In so far as any new burden may be thrown upon local authorities in providing or maintaining hospital accommodation, or in contributing towards the expenditure of voluntary hospitals, a financial contribution, the extent of which will be a matter for further consideration, will be made available from the Exchequer. Special arrangements for dealing with the teaching hospitals by way of increased educational grants are in contemplation.

In present circumstances the arrangements for hospital services must be determined by wartime requirements, but the Government are anxious to take every step to avoid any unnecessary delay. I have already had preliminary discussion with the bodies representing the municipal hospital authorities and the voluntary hospital movement, and I am hopeful that these discussions will be continued. With their concurrence I am instituting a survey of hospitals in London and the surrounding area to provide the information needed as a basis for future plans. As regards the remainder of the country, valuable preliminary work has already been done in some areas by bodies representing both the municipal and voluntary hospital authorities, in particular by an organization formed under the auspices of the Nuffield Provincial Hospitals Trust. In any surveys which it may be found necessary to institute in the Provinces, I shall have full regard to

the information already available in this way, which I am glad to know will be at my disposal for the purpose.

I am asked by the Secretary of State for Scotland to take this opportunity of stating that the aims of future policy in Scotland are generally similar, but that certain important differences in the Emergency Hospital Service and in the methods of financing voluntary hospitals in Scotland are being given special consideration.

Sir FRANCIS FREMANTLE asked if the survey would be carried out simply by the officials of the Department concerned or if officials of the local authorities would be consulted along with professional or other outside persons who were interested. Mr. BROWN replied that he would do his best to see that the most competent persons were consulted, including local bodies.

Asked by Dr. HADEN GUEST if he would consider hospital policy in relation to the future of the medical profession as a whole, with a view to bringing forward a scheme for a general health service in the country, Mr. BROWN stated that that was a wider question, and the hospital service must be considered first. The Minister also said that the general control to be exercised by his Department would secure that in the design of the scheme for the future hospital service full opportunity would be given to the voluntary hospitals to play their part.

Invalids' Special Rations

On September 30 Major LLOYD GEORGE circulated the following table of weekly supplementary allowances of rationed foods for invalids:

Disease	Supplementary Allowance		Coupons to be surrendered
	Food	Quantity	
Diabetes	Butter and margarine	12 oz. (not more than 4 oz. butter)	Sugar
	Meat	2s. 4d. adult, 1s. 2d. child under 6	
Diabetes—vegetarians only	Cheese	8 oz.	Sugar
Hypoglycæmia	Sugar	16 oz.	
Steatorrhœa	Meat	4s. 8d. adult, 2s. 4d. child under 6	Butter and margarine
Nephritis with gross albuminuria and gross oedema; also nephrosis	Meat	3s. 6d. adult, 1s. 9d. child under 6	

Lord Woolton's medical advisers are of opinion that, provided adequate supplies of vitamin C are available, there is no need for a special supply of oranges for anyone suffering from any disease or injury. Major Lloyd George could not adopt a suggestion that, during the children's priority period or immediately after, oranges should be made specially available to invalids, and that the special requirements of tuberculous patients should be recognized.

Orthopaedic Treatment in Scotland

Mr. TOM JOHNSTON gave an assurance on October 1 that the six new orthopaedic units in Scotland were on the lines recommended by the Delevingne Committee. There were ten orthopaedic surgeons, of whom four were employed whole-time. The junior staff consisted of one junior surgeon, who acted as registrar in each of the units except Peel Hospital, Selkirkshire. Other junior staff were attached to each unit by the medical superintendent up to three per 200 beds.

Home Guard Medical Officers

Mr. ERNEST BROWN explained on October 1 that to avoid undue interference with the medical organization of the locality Army Council instructions provided that no medical practitioner was to be enrolled in the Home Guard unless previous permission had been given by the Local Medical War Committee. It was open to any practitioner aggrieved by the Committee's decision to communicate with the Central Medical War Committee, under whose general directions the local committees acted in this as in other matters relating to the selection of doctors for wartime services. If dissatisfied with the conclusion of the central committee the practitioner could make representations to Mr. Brown, who would be prepared to consider them. There was no representative of the Home Guard as such in the central committee, but an observer attended on behalf of the War Office.

Diet of Workers in Heavy Industries

Mr. JAMES GRIFFITHS opened a debate on October 2 about food distribution, and dealt with the special needs of miners and steel workers of South Wales. Prof. A. V. HILL said the man who worked at a level of 6,000 calories a day could not remain healthy and contented on the same diet as the sedentary worker plus extra bread. He needed at least one-fifth of his energy in the form of fat and must have 2½ lb. of fat weekly. That was impossible on the present ration. Vitamins could not replace energy in the diet of heavy workers.

Major LLOYD GEORGE said the nation was better off for staple foodstuffs than last year or, in some cases, than before the war. He hoped that by mid-November a scheme would be introduced for the fair distribution of unrationed commodities. The Government did not propose to alter its policy of giving the maximum ration to all consumers rather than a supplementary ration to particular classes at the expense of the community. They had encouraged the setting up of canteens and British Restaurants, and would increase food supplies to transport cafés on the main roads. Canteens for mine workers were being provided more rapidly. For all canteens in a first priority category, to be decided in consultation with Mr. Bevin, the Ministry of Food hoped to double the meat ration, to treble the sugar allocation, and to increase the allowance of cheese. Announcements would soon be made on school feeding.

Sir E. GRAHAM-LITTLE said the effort to popularize the national wholemeal loaf had not been highly successful. Compulsion would have effected an immediate result. The wholemeal loaf was not in general supply, and for fourteen months the nation had fed on an inefficient and fallacious diet.

Dr. EDITH SUMMERSKILL said Lord Woolton should direct his attention to the fact that pulmonary tuberculosis, which often resulted from under-nourishment, was increased in this country, particularly in the age groups between 18 and 40. Expectant mothers working in factories should have equal consideration with those who were doing heavy manual work. Major LLOYD GEORGE promised close attention to the points raised in the debate.

Diphtheria Immunization

Replying on October 2 to Mr. W. Leach, Mr. ERNEST BROWN said immunization of children against diphtheria necessitated two, or at most three, injections of the prophylactic. It was considered that immunity, once established, persisted for years and perhaps for life. Inoculation was carried out only with the written consent of the parent or guardian of the child. The Ministry of Health did not accept responsibility for any mishap arising out of inoculation.

Rehabilitation of Disabled Persons

Mr. ERNEST BEVIN, in answer to Sir Francis Fremantle, said the Ministry of Labour had started the interviewing of disabled persons in hospital, in conjunction with the hospital authorities. A leaflet had been prepared which described the interim scheme for resettlement and training of disabled persons. He was consulting other Departments in order to develop a wider national scheme.

On October 2 the Minister stated that circulars had been sent to hospital authorities setting out arrangements for treatment, rehabilitation, and subsequent training of fracture cases. Patients had been successfully treated at centres which had been in operation for some time, but statistics were not available.

Mustard Gas Decontamination

On October 9 Mr. GROVES asked the Parliamentary Secretary to the Ministry of Supply whether he had yet received the report of the re-examination of a basic pharmaceutical ingredient consisting of a dehydrated calcium hypochlorite admixed with a dehydrated sodium perborate; and whether the results of the examination disclosed that such product was an effective decontaminant of the eye from mustard gas. Mr. H. MACMILLAN said that several reports on the mixture referred to had been received. They showed that it was not an effective decontaminant for the eye after contamination with mustard gas.

The Services

NAVAL AWARD

The D.S.C. has been awarded to Surgeon Lieut. Eric Arthur Penn, R.N. (H.M.S. *Ladybird*), for courage and coolness when his ship was sunk by enemy aircraft.

R.A.F. COMMENDATION

The King has ordered the publication of the name of Flying Officer Frederick Alastair Forbes, R.A.F.V.R., as having received an expression of commendation for brave conduct in connexion with civil defence.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

Wounded

Colonel Cyril Popham.
War Substantive Captain Edward Alexander Robertson.

SOUTH AFRICAN MEDICAL CORPS

Lieut.-Colonel JOHN GERALD McMENAMIN, the eldest son of Mr. J. J. McMENAMIN of Capetown, died on active service in Abyssinia in April. He received his medical education at St. Bartholomew's Hospital, London, and qualified M.R.C.S., L.R.C.P. in 1924. For some years he was honorary assistant physician at Germiston Hospital, Transvaal.

Medical News

Prof. R. R. Macintosh will deliver a lecture on "Anaesthetics in Wartime" at the Weston Hotel, Bath, on Thursday, October 23, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

The first scientific meeting of the Nutrition Society, the formation of which was announced in our last issue at page 521, will be held at the Physiological Laboratory, Downing Street, Cambridge, to-day (Saturday, October 18), beginning at 11 a.m. Buffet lunch and tea will be provided.

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, October 23, at 4.30 p.m., when Dr. T. Christie will read a paper on "The Manic-depressive Psychoses (in Relation to the Crime of Murder), with some Medico-Legal Points."

At a meeting of the Leeds and West Riding Medico-Chirurgical Society held on October 3 Dr. A. Massey, C.B.E., Medical Officer of Health for Coventry, gave a lecture on "Emergency Hospital Work—Coventry Experiences."

A war memorial fund is being formed in memory of the four staff masseuses who lost their lives when St. Thomas's Hospital was bombed in September, 1940. Donations should be sent to: Miss M. Randell, C.S.M.M.G., Massage School War Memorial Fund, St. Thomas's Hospital, S.E.1.

Dr. James Macfarlane of the Department of Health for Scotland has been appointed medical liaison officer at the Scottish Office, Fielden House, London. He will maintain liaison with the Ministry of Health and medical branches of the Services Departments and other Government Departments located in London.

At the invitation of Dr. H. Lightstone, the Director-General of Medical Services, Ministry of Pensions, a conference of the orthopaedic surgeons attached to the Ministry of Pensions hospitals was held at Queen Mary's Hospital, Roehampton, from September 24 to 26. Mr. G. R. Girdlestone, honorary consultant to the Ministry, presided. Demonstrations were given in the wards by Mr. George Perkins and Mr. T. Pomfret Kilner, and in the limb-fitting centre by Dr. A. Kelham and Captain Maxwell. Lieut.-Commander J. Bunyan, R.N.V.R., by permission of the Admiralty, showed a cinematograph film illustrating his method of the treatment of burns and other injuries by irrigation envelopes, and demonstrated a number of cases treated in this manner (see *British Medical Journal*, July 5, 1941).

No. 39

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended September 27.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	94	7	30	—	1	129	11	35	—	4
Deaths	—	—	2	—	—	—	—	4	—	—
Diphtheria	1,066	44	282	31	36	1,153	53	370	33	25
Deaths	28	1	4	—	3	37	2	8	—	—
Dysentery	89	10	71	—	—	68	1	64	1	—
Deaths	—	—	—	—	—	—	—	1	—	1
Encephalitis lethargica, acute	6	—	—	—	—	5	—	3	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Enteric (typhoid) fever* ..	32	4	5	9	1	60	2	11	1	—
Deaths	2	1	—	—	—	2	—	—	—	—
Erysipelas	—	—	44	4	2	34	59	8	5	—
Deaths	—	—	—	—	—	1	—	—	—	—
Infective enteritis or diarrhoea under 2 years	43	2	19	31	7	35	5	12	11	11
Deaths	—	—	—	—	—	—	—	—	—	—
Measles	745	35	9	40	1	7,910	190	303	—	8
Deaths	—	—	—	—	—	10	—	—	—	—
Ophthalmia neonatorum ..	98	4	25	1	—	116	5	33	—	3
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid A and B ..	100	10	13	—	—	—	—	—	—	—
Deaths	1	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† ..	485	19	6	—	3	603	42	8	—	4
Deaths (from influenza) ..	3	17	—	1	4	17	2	—	—	—
Pneumonia, primary	—	—	158	8	—	—	148	8	4	4
Deaths	—	—	—	2	—	—	—	—	—	—
Polio-encephalitis, acute ..	3	—	—	—	—	4	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	38	3	4	2	1	47	1	7	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	—	9	1	—	4	4	8	3	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	123	6	7	—	1	140	8	18	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,255	38	199	55	30	1,755	82	196	42	45
Deaths	1	—	—	1	—	3	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	2,247	214	81	44	17	1,253	8	87	—	17
Deaths	45	1	2	—	—	7	—	2	—	—
Deaths (0-1 years)	293	19	63	47	23	307	25	56	22	23
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still-births) ..	3,697	456	514	166	133	5,742	1,700	553	187	123
Annual death rate (per 1,000 persons living) ..	—	—	11.2	11.0	—	—	11.3	12.5	11.2	—
Live births	5,105	474	899	355	221	6,315	878	868	364	235
Annual rate per 1,000 persons living ..	—	—	18.3	23.6	—	—	17.6	24.3	20.6	—
Still-births	187	14	49	—	—	218	17	37	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	—	—	—	—	—	41	—	—

* Includes paratyphoid A and B for Northern Ireland.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

With the exception of whooping-cough, notifications of the common infectious diseases in England and Wales were larger than in the preceding week. An increase of 133 cases of measles marks the end of the continuous decline in the incidence of this disease, which had extended over seventeen weeks. During this period the notifications fell from 13,400 to 612 per week. The rise in the number of cases was mainly due to the large increase shown by two counties—Lancashire, where the cases rose from 95 in the preceding week to 132; and Staffordshire, where the cases increased from 69 to 147 (Walsall C.B. 6 to 55).

The rising trend of diphtheria continued both in England and Wales and in Scotland; the number of cases is the largest for any week since March. The increased incidence in England and Wales is still chiefly confined to Cheshire, Lancaster, and Yorkshire. Although the totals for the past two weeks are below those of the corresponding weeks of last year, the rate of increase is the same for the two years. The total number of cases reported in the last four weeks is 1.3 times the total in the preceding four weeks. Glasgow, with 107 notifications, contributed over one-third of the cases reported in Scotland.

There were 118 cases of scarlet fever in excess of the total of the preceding week in England and Wales. During the past two weeks the disease has shown an increase of 25% in the number of notifications. Another small rise was reported from Scotland, where the weekly notifications have been doubled since the beginning of August. In Scotland an increase of 3 on last week's total was recorded for dysentery. The chief outbreaks were in Dundee 16, Edinburgh 8, Lanark County 19, and Glasgow 13. No outbreak of any size occurred in England and Wales, and the total was 13 less than in the preceding week. The notifications of paratyphoid declined by 25 in England and Wales.

Poliomyelitis

After the relatively large decline recorded in the previous week in England and Wales, from 36 to 28 cases, the notifications for the week reviewed rose to 38, the largest recorded this year. Five cases were notified in the counties of Berkshire (Maidenhead M.B. 2, New Windsor M.B. 2, and Reading C.B. 1) and Oxfordshire (Oxford C.B. 4 and Bullington R.D. 1). In administrative areas multiple cases were recorded in Hertfordshire (Hatfield R.D. 2); Lancaster (Manchester C.B. 4); Middlesex (Southall M.B. 2); Norfolk (Norwich C.B. 2). The cases notified in Scotland were Edinburgh 2 and Glasgow 2.

Week Ending October 4

Cases of infectious diseases notified in England and Wales were: scarlet fever 1,217, whooping-cough 2,078, diphtheria 997, measles 715, cerebrospinal fever 109, poliomyelitis 31, dysentery 108, paratyphoid 87, typhoid 34. Fourteen deaths were attributed to influenza, the largest number for nearly four months.

S. H. Gurian (*Arch. Pediat.*, 1941, 58, 528), who records a personal case, states that during the six-year period January 1, 1935, to December 31, 1940, there had been only one case of accidental transmission of malaria among approximately 3,500 transfusions given at the Flower and Fifth Avenue Hospitals, New York, located in an area densely populated by Puerto Ricans. The rarity of malaria accidentally transmitted by transfusion is also shown by the fact that there are only thirty cases on record, including the first reported by Woolsey in 1911. Gurian attributes this low incidence to the following factors: (1) the presence of antibodies in the blood of a malarial individual; (2) the transfer of these antibodies from donor to recipient; (3) the relatively low concentration of parasites in the blood of an adult donor; (4) the use of small-volume transfusions and the practice of small-volume blood-letting. Gurian's case was that of a girl aged 2½ who was treated for severe nutritional anaemia by transmission of blood from a man aged 21 years who had had malaria in Puerto Rico at the age of 6. Numerous quartan plasmodia were found in the child's blood. Recovery took place under quinine treatment.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumshugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Brittle Nails and Chilblains

Dr. FRANK MATTHEWS writes: Could anyone advise me as regards diagnosis and treatment in this case? A married woman aged 42 has suffered from very thin and brittle nails of fingers and toes for four years. She usually feels cold and has chilblains; no arteriosclerosis, no focus of infection discovered. She has had long courses of kalsana, osteo-calcium, collosol calcium, and ultra-violet rays, with no improvement.

Chronic Congestive Condition of Hands

"STASIS" writes: I should be glad of any advice on a complaint from which I (a woman doctor myself) am a sufferer: a chronic congestive condition of both hands, the skin being always blue and cold, more so during the winter, when chilblains tend to develop. The feet are not involved, and otherwise I have excellent health. In addition, small subcutaneous haemorrhages occasionally appear on slight pressure, say, when turning a door handle, etc. I have taken calcium in various forms over a long period, with halibut-liver oil, etc., but so far the only remedial agent which has given benefit (only temporary) is sunlight applied to the hands. Any further suggestion would be gratefully appreciated.

Tenosynovitis

Dr. E. T. LARKHAM (Birmingham) writes: Captain A. A. Williams (September 13, p. 377) will find the application of empl. ammoniaci c. hydrarg. (B.P., 1898) spread on thick material most efficient in tenosynovitis; in some acute cases the relief is immediate.

Income Tax

Practitioner in R.A.M.C.

P. B. carried on his practice until the end of May, 1940, when he joined the R.A.M.C. His practice is apparently being carried on under the normal emergency arrangements. He is assessed for 1940-1 on the basis of the profits of the practice for 1939-40. Is this correct?

** Yes. The legal position appears to be that the practice has not ceased but is being carried on by practitioners acting as the agents of the practitioner. The appropriate remedy against hardship is to claim under the section providing relief in respect of diminution of earned income (Finance Act, 1940, Sec. 23) if the 20% condition is satisfied.

Schedule E: Basis of Assessment

R. acted as house-surgeon from July, 1937, to January, 1938, then took an appointment as assistant to a general practitioner, but returned to house-surgeon's work from March, 1939, to September, 1940, after which he became an A.M.O. to a local authority. Can he claim the previous year's basis for 1941-2?

** No. There is no legal claim to adopt the previous year's basis after a change of employer, unless the case falls within Section 26 of the Finance Act, 1935. One of the conditions laid down in that provision is that the change does not result in an increase of more than 20% in the emoluments, and that condition bars any claim by R. R. The Inland Revenue authorities do make some concession with regard to changes, but the dissimilarity between the nature and emoluments of R.'s appointments in 1940-1 and 1941-2 is such as to place his case outside that concession.

LETTERS, NOTES, ETC.

A Case of Idiosyncrasy to Strychnine

Lieut. P. R. SAVILLE, R.A.M.C., writes: The following unusual case of idiosyncrasy to strychnine may be of interest to your readers. I recently prescribed a tonic for Lieutenant A—a simple iron and strychnine mixture, each dose containing 3 minims of tinct. nucis vom. The patient took one dose, and in fifteen minutes his face flushed, he had headaches, with beads of perspiration, and the palms of his hands itched. He felt very faint and "almost collapsed." He recovered in half an hour, and came to see me later on with no ill effects other than headache. His first words were: "Was there any strychnine in my medicine?" Apparently in 1934 his doctor prescribed a similar medicine with "not sufficient strychnine in it to harm a baby." He then had a similar group of symptoms, even more severe, and lost consciousness for ten minutes. His doctor at the time told him to avoid strychnine in the future; he omitted to tell me this. The whole of the medical inspection room staff, including myself, took doses of the same medicine and showed no ill effects.

Cost of Diphtheria Immunization

Dr. OWEN WILSON (Nelson) writes: A week or two ago I heard an eminent medical broadcaster announce on the B.B.C.'s home transmission that "a child could be protected against diphtheria at a cost of 74d." I looked up a manufacturer's price-list, and found one 0.5 c.cm. dose of A.P.T. listed at 2s. 6d. Many parents who choose to have their children treated by their own doctor must have got the impression that they are grossly overcharged. If the B.M.A. has any useful function it ought to deal with questions like this.

Radiographs of Tuberculosis Workers

Dr. ROSE JORDAN writes from Uckfield, Sussex: On retiring, after twenty-five years' service as tuberculosis officer, I thought it would be of interest to see the radiological pictures of myself and my staff, six of whom had worked with me, in close contact with tuberculous patients, for periods extending from seven to twenty-one years. The results showed that, while in two of the radiographs minute calcareous deposits could be seen, the remaining five showed no radiological changes whatever in the lungs. Perhaps this demonstration may be of encouragement to lay workers in the field of tuberculosis.

Surplus Copies of the Journal

The restricted consumption of paper now permitted by the Paper Control of the Ministry of Supply makes it imperative that the margin between the number of copies of the *British Medical Journal* printed each week and the number required for immediate dispatch be maintained at the lowest possible figure. With the tendency to an increased circulation brought about by the war, a number of the earlier issues of 1941 are now out of print. The publishing department would therefore be grateful for any unwanted copies, particularly those published in the first three months of this year. Copies should be sent, carriage forward, to the Secretary of the Journal Board, B.M.A. House, Tavistock Square, London, W.C.1.

A Newspaper's Inquiry

Dr. E. STARLING writes: I administered an anaesthetic to one of my patients who was being delivered by a midwife. On the following morning I was rung up by a provincial newspaper office and asked to confirm the birth of the child. I demurred somewhat sharply, on the grounds of professional secrecy, but was told it was "our usual custom." I subsequently found out that the father, who called at the office in person to insert a notice in the birth column, had been asked to give my name and telephone number as well as those of the midwife. I believe that finally the mother herself was called upon to confirm the announcement. I imagine that a patient's condition after delivery is as much a matter of confidence as it is during pregnancy, and I should be glad to know whether other practitioners have had similar experiences. Neither my partner nor myself has ever been approached in this way before.

Operability of Carcinoma of Rectum: Corrigendum

We wish to correct a printer's error which occurred in Mr. J. C. Goligher's article in our issue of September 29. In line 21 of the second column on page 394 the phrase "while 94 had apparently inoperable growths" gave an entire reverse of the author's meaning. The sentence should have run: "While 94 had apparently operable growths, in which confirmation of operability at laparotomy was precluded, etc."

OBSERVATIONS ON THE CEREBROSPINAL FLUID IN CLOSED HEAD INJURIES

BY

J. W. ALDREN TURNER, D.M., M.R.C.P.

Neurologist, E.M.S.

These observations are based on the study of 85 patients who were admitted to an E.M.S. head injury centre within a few days of an injury from which no open wound of the skull had resulted. Most of the patients were involved in motor-cycle or lorry accidents, but some were air-raid casualties who had been thrown to the ground or hit by flying masonry or metal fragments. In all these cases a lumbar puncture was performed shortly after they were admitted, and in some of them repeated punctures were carried out.

Lumbar Puncture Pressure

The cases have been divided into three groups, of low, normal, and high pressure, the normal pressure being taken as 90 to 180 mm. of water. In 42 the pressure was within normal limits, in 28 it was above 180 mm., and in 15 it was below 90 mm. An attempt has been made to correlate the pressure with features of the clinical state.

TABLE I

State of Consciousness	Lumbar Puncture Pressure		
	0-90 mm.	90-180 mm.	Over 180 mm.
Full consciousness	11	27	9
Drowsy	2	8	11
Restless stupor	1	5	6
Coma	1	2	2
Total	15	42	28

These findings were recorded at the time of the first lumbar puncture; in many cases this was done within twenty-four to forty-eight hours of injury, but in others, owing to delay in admission to a head injury centre, it was not carried out for seven to ten days. It will be seen from Table I that the pressure of the cerebrospinal fluid in the lumbar sac bears little relation to the patient's state of consciousness: deep coma can be present with a normal or low pressure as well as with a high one. It is, however, true that drowsiness is a frequent symptom in patients with a high pressure, though it is not confined to them.

TABLE II

Condition	Lumbar Puncture Pressure mm. H ₂ O		
	0-90 mm.	90-180 mm.	Over 180 mm.
No headache	11	24	1
Moderate headache	2	8	10
Severe headache	0	3	9
Stupor or coma	2	7	8

In the acute stages of a head injury the lumbar puncture pressure bears a closer relation to the degree of headache present than to the state of consciousness. It will be seen from Table II that only one patient with a high pressure

was free of pain. He was a soldier admitted six days after a motor-cycle accident from which he had been unconscious for five days, and though his lumbar puncture pressure was 300 mm. he showed no symptoms. In all the other patients with high pressure who were conscious headache was complained of, and in 9 of them it was severe and not necessarily accompanied by blood in the C.S.F. In the low-pressure group bad headache was not a feature, but 3 of the patients with normal pressures had severe pain.

The same relation does not appear to hold in patients with late post-traumatic headache, in whom the lumbar puncture pressure is usually within normal limits but occasionally low.

Pulse Rate

As a slow pulse rate may be found soon after a closed head injury with any degree of C.S.F. pressure it cannot be taken as a reliable index of a raised intracranial pressure. Further, the pulse rate may remain slow when the pressure is rapidly reduced. The presence of a slow pulse rate with a normal C.S.F. pressure in head injuries has been remarked on by Denny-Brown (1941), and has been ascribed by him to medullary contusion. This explanation would be compatible with the persistence of a slow rate in spite of rapid reduction of intracranial pressure.

Reduction of Increased Pressure

Patients with a raised C.S.F. pressure who have had only small quantities of blood in the fluid have been treated by dehydration by means of hypertonic enemata of 6 oz. of 50% magnesium sulphate administered twice daily. In most cases this method has succeeded in reducing the pressure and relieving symptoms. In a few patients severe headache has continued and the pressure has remained high in spite of this treatment, and to them 40 c.cm. of five-times-concentrated serum has been given intravenously. This treatment has usually resulted in a fall of pressure and often a dramatic relief of headache. An account of this group of cases is in preparation.

As a rule, in uncomplicated cases the clinical condition improves as the C.S.F. pressure falls, but in one case of closed injury in which the clinical condition remained stationary, though the C.S.F. pressure fell, an extradural haematoma was found at necropsy.

This patient was a soldier, aged 20, who was admitted five days after an injury of which no details were available. He had been admitted to another hospital, where he was found to be in a semi-comatose state with right-sided spasticity, but no pupillary or reflex changes. When seen by me he was in a restless stupor, and had a small sutured scalp wound in the left frontal region; there was slight weakness of the right side of

the face and right arm and leg, all the tendon jerks and the abdominal reflexes were absent, the plantars were flexor, and the fundi and pupils were normal. Radiographs of the skull showed no fracture, and lumbar puncture pressure was 260 mm., the fluid containing 3 cells and 50 mg. of protein per 100 c.cm. As his condition remained stationary a left parietal trephine hole was made, but no haematoma was found. The patient's clinical condition remained much the same as on admission, but the lumbar puncture pressure thirteen days after the injury was 70 mm. and twenty-one days after was 10 mm., the fluid still being normal. He died on the twenty-third day, and at the post-mortem examination a large extradural haematoma containing solid blood clot was found low down in the left temporal region; this had arisen from a torn anterior branch of the middle meningeal artery.

Similarly, in penetrating injuries a space-occupying lesion needing operation may be present though the C.S.F. pressure is falling, as in the following case.

A soldier with a penetrating wound of the left parietal region was admitted in coma with a right hemiparesis on the day on which he was wounded by a bomb fragment. The small external wound had been sutured before admission. His lumbar puncture pressure was 310 mm. and the fluid was deeply blood-stained. In the course of the next twelve days there was gradual improvement and he passed into a restless stupor, the lumbar puncture pressure gradually falling to 140 mm. On the twelfth day the parietal lobe was explored and an intracerebral haematoma was evacuated from it. This was followed by rapid improvement in his condition.

These cases emphasize that in spite of a progressively falling C.S.F. pressure there may still be present a compressive lesion which needs operation, and this is especially likely if the clinical condition does not improve fairly rapidly as the pressure falls.

Blood in the C.S.F.

Blood in moderate quantity may be present after what appear to be comparatively slight injuries which are followed by only a few seconds' post-traumatic amnesia or even no loss of consciousness (cf. McKissock and Browncombe, 1941). The presence of blood in any considerable quantity is accompanied by symptoms, especially headache, neck rigidity, and a positive Kernig sign; but Ritchie Russell's (1932) suggestion that a patient with over 100,000 red cells per c.mm. in the C.S.F. is stuporous or comatose has been found to be not always true.

A man aged 46 had fallen off a ladder on the day previous to admission, striking the back of his head on the ground; he had been unconscious for about three hours. When seen thirty hours after the accident he was drowsy but conscious and co-operative, and there was marked neck rigidity. Lumbar puncture gave a pressure of 270 mm., and the C.S.F. resembled pure blood, except that there was no tendency to clot. Cell counts showed over four million red blood cells per c.mm. and a protein content of 2 grammes %. On the following day, when the count was still over 100,000 red cells per c.mm., the patient was conscious but drowsy.

It is difficult to account for the remarkably high red cell count in this case unless there was gravitation of blood to the lumbar theca.

It is probable that the state of consciousness is not related directly to the quantity of blood in the C.S.F.: it depends rather on the site of origin of that blood. If it comes from cortical lacerations it is likely that there is extensive cerebral damage which will be accompanied by coma or stupor; if it comes from an injured venous sinus there may be profuse bleeding with little cerebral damage, and in these cases unconsciousness may not be present. This latter type of injury probably occurred in the above case, as there was never any further evidence of cerebral damage after the first loss of consciousness, and there was a long crack in the occipital bone.

In cases in which there is blood in the C.S.F. it is important to culture the fluid and to do a differential white cell count on it, as it is possible to ascribe to subarachnoid bleeding the fever and meningeal signs which are usually present, when in reality there is an infective meningitis as well as a chemical one from the presence of blood. This is illustrated by the following case.

This patient, a soldier, was admitted to hospital four days after a motor-cycle accident in France; details of his condition in the first four days were lacking. On admission he was drowsy, had a severe headache, presented meningeal signs, and had a left lower facial weakness. The C.S.F. was under a pressure of 240 mm. and was heavily blood-stained; haemoglobin amounted to 16%, and the supernatant fluid was yellow. During the next three days he became more deeply unconscious, and as he was thought to be bleeding a right subtemporal exploration was performed and a burr-hole made in the left subtemporal region, but no haematoma was found. At post-mortem examination two days later there was seen to be a fracture of the anterior fossa with a purulent meningitis spreading from the posterior wall of the frontal sinus, which was involved in the fracture.

If a culture and a differential white cell count had been made on this man's fluid it is probable that the purulent meningitis would have been recognized; as it was, the meningeal signs were ascribed to subarachnoid bleeding.

Disappearance of Blood from the C.S.F.

Red blood cells usually disappear from the fluid in four to five days; even in the case with over four million cells in the fluid no red cells were found on the fifth day. Occasionally they may persist for considerably longer periods after a closed injury, and it may be assumed that in these cases subarachnoid bleeding has continued for some days. For example, a soldier was admitted eight days after a motor accident in a restless confused state; the C.S.F. contained 100,000 red cells and was under a pressure of 310 mm. It was not until fourteen days after the injury that this man's fluid became free of red cells.

As the red cells disappear it is common for an excess of lymphocytes to persist in the C.S.F., 10 to 20 cells per c.mm. being a common finding. This increase of lymphocytes may last for three to four weeks after severe bleeding: it is usually found even when the yellow coloration of the fluid has disappeared. The presence of more than 2 or 3 polymorphs per c.mm. is unusual after a closed injury unless there is infection.

Protein Content of C.S.F.

The protein content of the C.S.F. shortly after an injury seems to depend on the amount of blood the fluid contains, and it usually falls as the blood disappears, but in the majority of cases in which there has been much bleeding the fall in the protein content is slower than the disappearance of the red cells. Occasionally there is a small rise of 20 to 40 mg. of protein per 100 c.cm. as the red cell count is falling. It seems possible that this is due to corpuscular protein set free by haemolysis, as in the ordinary protein estimation the amount present in the corpuscles is not included, because they are centrifuged off before doing the estimation.

In a few cases the C.S.F. protein remained higher than normal for several weeks after an injury. This does not seem to be related to the severity of the injury, as we have seen 100 to 120 mg. of protein per 100 c.cm. three to four weeks after comparatively minor injuries which were followed by only half an hour to one hour of post-traumatic amnesia. The significance of this continued raised protein content of the C.S.F. is at present undetermined, as the cases do not differ clinically from those in which the protein content has fallen fairly rapidly to normal.

Summary

The pressure and constitution of the C.S.F. have been studied in relation to the clinical condition in 85 cases of recent closed head injury.

The C.S.F. pressure bears little relation to the state of consciousness, but in conscious patients a raised pressure is usually accompanied by headache. The C.S.F. pressure may fall steadily even when a space-occupying lesion is present.

The degree of consciousness is not related directly to the amount of blood present in the C.S.F.; it depends rather on the site of origin of the blood.

The importance of a differential white cell count and a culture on a blood-stained C.S.F. is emphasized. If these are not done the presence of subarachnoid bleeding may mask an infective meningitis.

A lymphocytosis in the C.S.F. may be present for three to four weeks after a severe head injury.

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"NIGHT-BLINDNESS"—A PSYCHO- PHYSIOLOGICAL STUDY

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Night-blindness has been defined as a disturbance of light perception resulting in a difficulty and occasionally an inability to adapt the faculty of vision to very faint illumination (Jeghers, 1937). Figures as to its incidence in the average population under peacetime conditions are not available. Minor degrees of it are fairly common (Maitra and Harris, 1937; Jeans and Zentmire, 1934, 1936; Schuck and Miller, 1938). It is said to be commoner in the undernourished poorer classes than in the well-fed well-to-do classes (Jeghers). During the war of 1914-18 numerous cases of night-blindness were reported in the armies of the various belligerent countries:

French Army: Bourdier (1916), Truc (1916), Bussy (1916-17), Frenkel (1916-17), Aubaret (1917), Landolt (1917). Belgian Army: Weekers (1916), Danis (1918). Rumanian Army: Savo Goiu (1922). Serbian Army: Néchitch (1918). British Army: Smith (1921), Derby (1921). American Army: De Schweinitz (1921). German Army: Augstein (1915), Best (1915), Braunschweig (1915), Feilchenfeld (1915), Paul (1915), Wessely (1915), Wietfeldt (1915), Zade (1915), Birch-Hirschfeld (1916), Elschnig (1916), Gelenczér (1916), Junius (1916), Löhlein (1916), Rauch (1916), Uthoff (1916), Wolffberg (1916). Hübener (1917). Koeppé (1917), Wohlfarth (1917), Hillemanns (1918), Hölcher (1918), Meyer (1918), Sattler (1918), Schieck (1918), Wiese (1919), Jess (1921).

Towards the end of that war cases of night-blindness were seen in increasing numbers in the German Army, and

the problem is again presenting itself there (Fillat, 1940; Hofe and Glees, 1940). Its significance for both the combatant and the non-combatant arms of the Services is obvious. It impairs the efficiency of the soldier: sufferer from this malady are unfit for night guards, night driving and night fighting. In the darkness they are likely to inflict serious injury on themselves or to damage Army property.

Apart from congenital and hereditary night-blindness various views on the aetiology of this disorder have been put forward. It has been attributed to: (1) diseases of the eye (advanced myopia, choroidoretinitis, retinal detachment, optic neuritis, glaucoma, etc.); (2) overexposure to strong light and glare; (3) defective nutrition; (4) toxæmia (diseases of the liver, alcoholism); and (5) great fatigue. The most commonly accepted and, indeed, widely advertised view is that it is due to vitamin A deficiency (Jeghers, 1937; Sweet and K'ang, Frandsen, 1935). This view is regarded as so well established that dark-adaptation tests have been used as a criterion and a quantitative indicator of vitamin A deficiency. Many authors state that patients with night-blindness are often found to be nervous, irritable, and depressed (Duke-Elder, 1932; Elschnig, 1916; Park, 1935; Paul, 1915; Weekers, 1916; etc.). A few writers believe that every night-blind patient is a malingerer (Derby, 1921; Feilchenfeld, 1915; Smith, 1921), a view which has been emphatically repudiated by others (Fillat, 1940). Most authors have recognized and separated a group of cases labelled as nervous or hysterical night-blindness. The neurotic implications of night-blindness have been discussed by Culpin (1940), but so far as is known to us no attempt at a systematic study of the personalities concerned has as yet been undertaken. Everyday experience shows that anxious individuals object more than others to going out in the black-out. Coming out into the street, they cling like frightened children to others and ask for their support. These considerations and the idea that anxiety may be related in some way to dark adaptation prompted us to undertake the following study.

Material: Method of Examination

Biographical studies were made of 52 soldiers complaining of night-blindness who either were sent to us without selection by the eye department or were referred direct to us because of psychological disorders. Their ages at the time of examination were from 19 to 50: 39 of them were under 30 (9 had suffered from night-blindness since childhood, 16 for several years; 13 noted difficulty in seeing in the dark for the first time when the black-out started, and 14 in the course of the war). Four were Regulars, 5 Territorials, 12 volunteers, and 31 conscripts; 43 were privates, 8 N.C.O.s, and 1 an officer. The patients, so far as was possible, were examined ophthalmologically by Major Scott, eye specialist at a military hospital, and were tested for their dark adaptation by Dr. Semeonoff of the psychological department, University of Edinburgh.

Findings

Symptomatology.—All the patients examined suffered from severe night-blindness and stated that they were unable to find their way about in the dark without help from others; they often gave a dramatic description of how, with their arms stretched out in front of them, they groped their way in the dark or clung to their wives, mothers, or comrades. Several of them, unable to see in the dark, had met with serious accidents or had damaged Army or Air Force property—e.g., vehicles.

In association with their night-blindness they often complained of other eye symptoms, such as photophobia, blurring of sight, black spots or floating blobs in front of the eyes, aching or beating sensation in the eyeballs, quivering

of the eyes, etc. Previous spells of complete blindness were reported by 4. Headaches described as shooting or stabbing were complained of by 20, and fits of giddiness, dizziness, or fainting fits by 11; 12 reported symptoms suggestive of effort syndrome, and 10 suffered from rheumatism. Most of the men ate the ordinary Army food and therefore had plenty of vitamins in their diet. Dyspeptics numbered 9, and only in these could the possibility of a reduced vitamin A intake be admitted.

Ophthalmic Examination

At the eye department of a military hospital 42 cases were examined. For purposes of analysis these cases have been divided into five groups, and the results may be summarized as follows:

Group 1 (13 Cases).—In all of these cases the ocular findings were completely negative, apart from the fact that two of the men exhibited "tubular" fields of vision (although they had no difficulty in orientating themselves in daylight) of the type which one meets in "hysterical" subjects. The fundi were normal in all of these cases. In none was there any ocular cause for the symptom of night-blindness.

GROUP I.—Summary of Clinical Findings

Case	Unaided Vision	Corrected Vision	Refraction	Fundi	Peripheral Fields of Vision
W. C.	R. 6/6 L. 6/6	—	No appreciable error	Normal	Normal
R. W. M.	Only admits R. 6/18 L. 6/24	—	No error	"	Small "tubular" fields
G. A.	Only admits R. 6/18 L. 6/18	—	"	"	Normal
A. M.	R. 6/6— L. 6/6—	—	"	"	"
Sgt. B.	R. 6/6— L. 6/6—	—	"	"	"
J. E.	R. 6/6— L. 6/6—	—	"	"	"
J. T.	R. 6/6— L. 6/6—	—	"	"	"
S. M.	R. 6/6— L. 6/6—	—	"	"	"
J. S.	R. 6/6— L. 6/6—	—	"	"	"
H. C. V.	R. 6/6— L. 6/6—	—	"	"	"
B. K.	R. 6/5— L. 6/5—	—	"	"	"
B.	R. 6/6 L. 6/6	—	"	"	"
N.	Only admits R. 6/36 L. 6/60	—	"	"	Gross contraction. Only admitted small "tubular" fields

Group II (6 Cases).—These men were "one-eyed" for all practical purposes. In two cases one eye had been removed in earlier life, while in the other four the vision of one eye was grossly defective as the result of trauma, inflammation, or amblyopia ex anopsia. In all six cases the good eye was normal, and showed no ocular cause for the night-blindness.

GROUP II.—Summary of Clinical Findings

Case	Unaided Vision	Remarks	Refraction	Fundi	Peripheral Fields of Vision
A. V.	R. <6/60 L. 6/9—	Corneal scarring right eye	No error left eye	Normal left eye	Normal left eye
Be.	R. "P.L." L. 6/6—	Detachment of retina right eye	"	"	"
H. T.	R. Nil L. 6/9+	Right eye enucleated	Very little error	"	"
D. L.	R. "P.L." L. 6/6—	Old penetrating injury, right eye	No error left eye	"	"
Ba.	R. 6/9 L. Nil	Left eye enucleated	Practically no error right eye	Normal right eye	Normal right eye
M.	R. 6/6 L. <6/60	Left eye amblyopic ex anopsia	No error right eye	Normal	"

Group III (11 Cases).—These cases all showed slight errors of refraction, but all had good vision with glasses, and fair vision

without glasses. The fundi were normal in ten of the cases; the remaining one showed a small area of infective choroiditis in one eye. The peripheral fields of vision were normal in all except one patient, who admitted to possessing only a small tubular field in both eyes. In no case was there any ocular cause for night-blindness.

GROUP III.—Summary of Clinical Findings

Case	Unaided Vision	Corrected Vision	Refraction (Axis of Cylinder omitted in Each Case)	Fundi	Peripheral Fields of Vision
H. D.	Only admits R. <6/60 L. <6/60	Only admits R. <6/60 L. <6/60	R. +1.75 L. +1.75	Normal	Only admits small "tubular" fields
T. C.	R. 6/18 L. 6/36	R. 6/6— L. 6/9—	Moderate hypermetropia	"	Normal
R. W.	R. 6/9— L. 6/9—	R. 6/9— L. 6/9—	Slight error: small congenital lens opacity right eye	"	"
W. S.	R. 6/18 L. 6/36	R. 6/9 L. 6/12	R. +2.0 L. +1.5/+2.75	"	"
A. Mc.	R. 6/24 L. 6/24	R. 6/9 L. 6/18—	Moderate hypermetropia	"	"
E. S.	R. 6/60 L. <6/60	R. 6/6— L. 6/9—	R. -1.0/-1.25 L. -2.75/-1.5	"	"
W. M.	R. 6/18 L. <6/60	R. 6/12+ L. 6/24+	Very little error	Choroiditis, left eye	Normal right eye
D.	R. 6/18 L. 6/12	R. 6/9 L. 6/9	Low myopic astigmatism	Normal	Normal
T.	Only admits R. 6/18 L. 6/18	Only admits R. 6/12 L. 6/12	Low degree of astigmatism	"	"
H. C.	R. 6/5 L. <6/60	R. 6/5 L. <6/60	R. +3.0 L. high myopia (amblyopic)	Normal right eye	Normal right eye
F. C.	R. 6/12— L. 6/18+	R. 6/9 L. 6/12+	Moderate astigmatism	Normal	Normal

Group IV (11 Cases).—All of these cases showed moderately high errors of refraction. In five the vision was good when corrected with glasses, which were being worn at the time of examination. Three men had marked amblyopia in one eye, the good eye being normal apart from the error of refraction. Two men had defective vision for which there was no ocular cause, and one of these had typical "hysterical" fields of vision. In ten of the cases the fundi of both eyes were seen to be normal; in one case, which showed a complicated cataract in one eye, the fundus in this eye could not be seen, but the fundus of the other eye was observed to be normal. One of the men in this group had considerable corneal scarring in both eyes, but with vision equal to 6/18 partly and 6/24; this was the only case which showed any ocular defect that one could say might cause a certain amount of difficulty in seeing in dim light.

GROUP IV.—Summary of Clinical Findings

Case	Unaided Vision	Corrected Vision	Refraction (Axis of Cylinder omitted in Each Case)	Fundi	Peripheral Fields of Vision
S. B.	No record	No record	Irregular astigmatism	Normal	Normal
J. F.	R. 6/18— L. 6/24	R. 6/18— L. 6/24	Irregular astigmatism (corneal scarring)	"	"
W. C.	R. "P.L." L. 4/60	Only admits L. 4/60	L. +1.5/+4.0 (cataract right eye)	Normal left eye	Normal left eye
W. W.	R. 6/36 L. <6/60	R. 6/12— L. 6/18	R. +0.5/-3.5 L. -2.75	Normal	Normal
H.	R. <6/60 L. <6/60	R. <6/60 L. 6/12—	R. +6.0/+3.0 L. +6.0/+2.0	"	Normal left eye (right eye amblyopic)
A.	R. <6/60 L. <6/60	R. 6/9— L. 6/9—	R. -2.5/-0.75 L. -2.0/+0.75	"	Normal
R.	R. <6/60 L. <6/60	Only admits R. 6/36 L. 6/24	R. -3.25/-4.0 L. -2.0/-4.0	"	"
F.	R. <6/60 L. <6/60	R. 6/18— L. 6/18—	R. -3.5/-1.0 L. -3.5/-4.0	"	Small "tubular" fields
K.	R. 6/24 L. 6/60	R. 6/6 L. 6/18	Moderately high astigmatism	"	Normal
P. P.	R. 6/36 L. 6/6—	R. 6/36 L. 6/6—	L. +6.0/+2.0	"	Normal left eye (right eye amblyopic)
E.	R. <6/60 L. <6/60	Only admits R. 6/36 L. 6/60	R. -1.75/-1.25 L. -1.5/-0.75	"	Typical "hysterical" fields

Group V (I Case).—This man showed degenerative choroido-retinitis involving the peripheral parts of both fundi. The case was diagnosed as one of "retinitis pigmentosa," although in some respects the appearances were atypical. The night-blindness was, however, undoubtedly due to organic disease of the choroid and retina in this case.

GROUP V.—Summary of Clinical Findings

Case	Unaided Vision	Corrected Vision	Refraction	Fundi	Peripheral Fields of Vision
W.S.	R. 6/6— L. 6/60	—	No error.	Degenerative choroido-retinitis both eyes	"Ring scotoma" right eye Marked contraction left eye

Summary of Findings

1. In 41 of the 42 cases examined there was no ocular cause for the night-blindness. One man had corneal scarring that might perhaps cause a certain amount of difficulty in seeing in dim light, but only one case showed disease of the eye sufficient to cause true "night-blindness."

2. In no case was there any suggestion of xerosis of the conjunctiva or of the corneal epithelium.

The further significance of these findings will be discussed later in this paper.

Dark-adaptation Examination

Of the 52 cases studied 40 were tested for dark adaptation in the George Combe Psychological Laboratory, University of Edinburgh. The instrument used was the Nagel adaptometer (Nagel, 1907), and the method of testing as described elsewhere (Semeonoff, 1941). Since it was felt that the results obtained with this instrument might be influenced by general intelligence, the men were tested with Group A of the Herring revision of the Binet-Simon test. In two cases the eye condition made it impossible to apply this test, although these men were able to take the test of dark adaptation.

By way of control a group of 33 soldiers, chosen at random, was tested for dark adaptation and intelligence in the same way as the night-blind group. Certain features of the two groups are compared in the following table.

Comparison of Night-blind and Control Groups

	Night-blind Group (40 Cases)	Control Group (33 Cases)
Age:		
Highest	50	44
Median	27	25
Lowest	19	18
Intelligence (raw scores):		
Highest	36	38
Median	25	30
Lowest	14	21
No. with post-elementary education (any type)	6	14

It will be seen that the groups are not quite identical in respect of age, education, or intelligence, and, moreover, a high proportion of the control group had various visual abnormalities. Three, indeed, mentioned that they experienced considerable difficulty in night vision. The control group must be regarded as a fairly random sample of Army personnel rather than as a group of "normals."

The testing technique and treatment of results were briefly as follows. A period of forty minutes' dark adaptation followed ten minutes' preliminary light adaptation to a white surface of about 40 foot-candles illumination. During dark adaptation, readings of threshold intensity were taken at intervals, usually of five minutes. Sensitivity was measured in terms of logarithms of reciprocals of successive threshold values, zero corresponding to the maximum intensity of the adaptometer. Curves based on these sensitivity values were drawn, and smoothed in such a way as to eliminate or at least minimize the effects of accidental or other irregularities. Different measures of amount and rate

of dark adaptation were derived from these curves, and it eventually appeared that, although these were almost interchangeable, the most reliable single measure was the maximum sensitivity attained during the test period, as shown by the course of the smoothed curve.

It must be noted that actual sensitivity to light under conditions of low illumination was being tested, and not ability to discriminate detail under these conditions. The latter, as Ferree and Rand (1938) point out, is by no means the same thing as the former, and is probably of greater significance in the ability to "see in the dark." Nevertheless, pure sensitivity to light may be assumed to be more closely associated with the actual physico-chemical processes which take place in the retina, and which would therefore be more directly affected by nutritional causes, assuming that these could be operative.

The distribution of dark-adaptation measures for the two groups is given in Fig. 1. Average figures are: night-blind cases, 2.6; control group, 3.6.

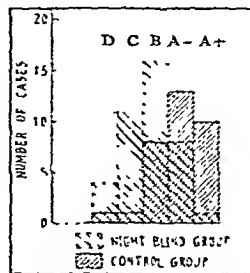


Fig. 1.—Distribution of dark-adaptation measures. A+ = 4.0 and over—high normal. A = 3.5–3.9—low normal. B = 2.5–3.4—subnormal. C = 1.5–2.4—defective. D = below 1.5—grossly defective.

It is necessary also to consider the possible effect of extraneous influences, such as those of age and intelligence, though the small numbers in each group reduce the reliability of any conclusions. Ferree *et al.* (1935, 1938) have shown that power of dark adaptation decreases with age, though the effect is more notable for discrimination of detail than for actual sensitivity to light. In the present control group a high negative correlation between age and sensitivity was found (-0.78 ± 0.049), though this was strongly influenced by two cases of men over 40 who were the only "C" and "D" patients in this group. In the night-blind group, on the contrary, a non-significant positive correlation was found ($+0.27 \pm 0.099$). As regards intelligence, positive correlations with dark adaptation were found for both groups (controls, $+0.46 \pm 0.094$; night-blinds, $+0.31 \pm 0.099$). Since intercorrelations of sub-tests for the two groups suggested that the Herring revision presented a virtually different situation for neurotic and normal subjects, it was felt that general educational level might prove a truer basis for comparison, particularly since the proportion of control cases with any sort of post-elementary education was much higher than in the night-blind group. The average dark-adaptation measure of the six night-blind men of this type was identical with that of the whole group (2.6); in the control group, which included fourteen such cases, the average was slightly higher (3.9, as against 3.6 for the whole control group).

The general conclusion seems to be that among normal persons higher intelligence and educational level and lower age are associated with superior dark adaptation, while for "night-blind" cases such influences are wholly or in part obscured by other factors.

'Psychiatric Examination

On psychiatric examination the soldiers studied were found to be psychologically abnormal far beyond the range of individual differences in the average population. In fact most of them, quite apart from their night-blindness, were unfit for military service because of their psychological abnormalities and disorders.

Nature and Degree of Psychological Disorder

Using a modified Culpin scale, the patients were divided into four grades according to the degree of their psychological disorder:

0. No obvious psychological disorder.
1. Minor psychological abnormalities not sufficient to interfere with an ordinary mode of life.
2. Psychological disorders interfering with activities but not incapacitating.
3. Psychological disorders temporarily or permanently incapacitating.

The grading was exclusively based on psychiatric findings, and the night-blindness itself was not taken into account. Grade 0 was absent in the series: 9 patients were classified as Grade 1, 12 as Grade 2, and 31 as Grade 3.

While fully aware of the very limited value of psychiatric labels, we nevertheless tried to classify the patients according to their psychiatric diagnoses. In doing this Grade 1 was left out of consideration for obvious reasons. Of the 43 patients classified as Grades 2 and 3, 14 suffered from acute and 13 from chronic anxiety states—i.e., more than half of the total of 52 were anxiety states—8 were cases of conversion hysteria, 4 were cases of depression, and 3 were psychopathic personalities of the schizoid or of the over-aggressive type. One patient was unclassifiable. These are some illustrative examples:

Grade 1.—A soldier aged 34, unaggressive and averse to mischief as a child, has always been very shy and prone to blushing. Until he was 16 he stuttered very badly, and he still has a slight impediment of speech.

Grade 2: Chronic Anxiety State.—A soldier aged 28 complains of sleeplessness. He does not feel sure of himself and has always worried unduly about his work and his duties. He believes that other people stare at him and pass remarks about him. He has always been unaggressive, over-compliant, timid, afraid of darkness and of being hurt, and has been unduly concerned about his eyesight. Until the age of 14 he was a stutterer; he is still a nail-biter and prone to bed-wetting. He is unduly attached to his mother, and if she is taken ill he feels ill himself.

Grade 3: Acute Anxiety State.—An extremely efficient R.S.M. aged 44 had an acute nervous breakdown after a period of overwork, and one day, marching at the head of a column, he collapsed. Afterwards he felt very anxious, for no reason known to him. He could not travel unless there was a corridor in the train by which to get out. He felt unable to go to the pictures unless he was seated near the exit. Every time he had a hair-cut he wanted to get out of the chair. He felt better when in company but, on the other hand, he dreaded meeting people. He also suffered from palpitation, dizzy spells, breathlessness, sleeplessness, and a feeling of exhaustion.

Conversion Hysteria.—A soldier aged 24 developed a peculiar disturbance of gait after an accident. He felt that his left leg was giving way, and he constantly stumbled. While he was in hospital for an examination of this disorder, which was found to be hysterical in origin, he suddenly felt unable to rise when seated and also lost his voice.

Depression.—A sergeant aged 43, feeling rather tired, went on leave. On return to his unit the tiredness persisted and he became very irritable. He suffered from headache and sleeplessness, was afraid of giving orders and of meeting people, and had difficulty in making decisions. He carried on his duties until, three months afterwards, he broke down completely, became very depressed, did not care if he were killed in air raids, and "howled like a kid" for no definite reason. He had no confidence in himself, felt that he was no use for the Army, and wanted to get out of it.

Personality Types

Correlation and mathematical evaluation of childhood characteristics carried out on these patients, according to

a method previously described, enabled us to delineate certain personality types.

The majority of the men were of an over-dependent type; a minority were ostentatiously independent. At the one end of the scale are individuals who have kept up a dependent childlike attitude even in adult life; they are perpetual children. Towards the centre of the scale there are men with strong feminine tendencies, more or less successfully concealed; they present merely a façade of masculinity. At the other extreme are men who have a compulsive and clearly reactive and over-compensatory need to demonstrate their masculinity to everyone and anyone; they succeed in being regarded as he-men.

1. OVER-DEPENDENT TYPE

Of the total of 52 soldiers 27 were of the over-dependent type. The majority were either delicate in health or had been definitely ailing as children. A fair number lost their father in early life and grew up in purely female surroundings. In others admiration for their father, whose physique or mental outlook represented their much-envied ideal, was mingled with a dread of his sternness or violence. Being delicate in health, they were often doted upon by their over-anxious and over-solicitous mothers, to whom many of them were grossly over-attached. Undue dependence on their mothers often extended into adolescence or even adult life. Many of them are still nicknamed "Mummy's pet" or "Mummy's darling" in the family circle. Some, on the other hand, felt or actually were unwanted, were neglected or ill-treated, and had in consequence a lifelong craving for love and affection. Any display of affection to one of their siblings roused undue resentment and jealousy in them. Most of them stated that they were unfit for games, and, at any rate, afraid of getting hurt; they preferred indoor activities to outdoor rough-and-tumble. Some were definitely lazy and liked best lying about or hanging about in the house. Some were helpless as children, constantly falling and getting cuts and stitches. Many of them took a great delight in girlish activities, such as washing dishes, scrubbing, and dussing (sometimes even in adult life). "Mother often said I should have been a girl," several of the patients said. They had little inclination to associate with other children at all and, if they did, they preferred girls' company. "Boys are too rough for me," they often stated. Certainly not entirely accounted for by their physical ill-health, most of them lacked aggressiveness. If they were attacked they burst into tears and ran home for their mother's or their strong brother's protection. Extreme cases endured even tormenting by other children without any attempt at retaliation or protest. One of the patients allowed himself to be rolled in the mud by other children and did not even take the trouble to remove the dirt. Smarting from such humiliations, they indulged in fantasies of strength and power, often modelled upon their strong fathers and brothers, but their actual efforts were weak and often pathetic. Most of them were timid, shy, and self-conscious. They were subject to numerous morbid fears and other nervous symptoms.

Six of the patients maintained their childhood characteristics practically unchanged in adult life. They were unhappy creatures, a burden to those around them, unemployable and useless members of the community. Seven others were poor workers, clumsy and unintelligent, and handicapped by their morbid fears. They were shiftless in their occupations, were frequently dismissed, and had long spells of unemployment. Eleven did moderately well, and four even excelled in their occupations, but their ostentatious zeal, zest, and over-conscientiousness were clearly anxiety-motivated, and gave way to complete passivity once they came up against serious and apparently insuperable difficulties. One of these, an N.C.O., had distinguished himself in numerous examinations and in the execution of his duties, but he broke down during the war of 1914-18 after severe shelling, and again in this war when his unit was about to be sent to France. Two men, after a completely passive attitude in childhood, went through a phase of great audacity and over-aggressiveness in adolescence and adult life, only to fall back again into a state of complete passivity when eventually they broke down. Over two-thirds of the men in this group are of a retiring disposition in their social contacts:

they are quiet, unassuming, unaggressive, tender-hearted people who prefer long walks alone in the country to being at parties or in crowds, where, without justification, they feel that everybody is looking at them or passing remarks about them. Even if they appear well adjusted, they are timid anxious individuals, unduly dependent on and swayed by the opinion of others. Whatever they do is carefully weighed up beforehand, because of their preoccupation with potential adverse consequences. Some are shy in front of women or are even terrified of contact with them. Others state quite frankly that they feel more at home in their company. "Girls understand me better than boys," several said. If they marry they choose a sisterly or maternal type of woman who looks after them. They are meek and docile husbands, and if their wives are domineering, or even if they are unfaithful, they submit without protest. As might be expected, with very few exceptions they are poor soldiers. They are isolated in their units and often the butt of their comrades.

2. OSTENTATIOUSLY INDEPENDENT TYPE

This group comprises 12 patients, basically similar in structure to, though superficially just the reverse of, the first group. They adopt an active, energetic, masculine attitude towards life, but the ostentatious nature of their conduct and behaviour bears the stamp of its reactive over-compensatory origin. Vaguely aware of their inherent passive feminine trends, they have to show the world how tough they are, for fear of being found out.

They were usually robust as children, mixed easily and liked parties, whose "life and soul" they were anxious to be. They were good organizers, always ready to assume leadership. They liked to be in the forefront of everything, were involved in any mischief that was going, and were often the leaders of the local gang. They were stubborn and cheeky at home, and argumentative and quarrelsome with other children if these did not fall in with their views and arrangements. Like the members of the first group they indulged in grandiose fantasies, but in contrast they put them into action. They were fond of taking risks, excelled in sports and games, and, in general, "liked to show off brute strength," as one of the patients put it. They liked fighting for the fun of it, and prided themselves on having acquired such nicknames as "Tiger" or "Champ." Many of them, however, realized that this was not their real nature: behind a façade of self-assertiveness they were shy and diffident. They blushed easily, and joking insinuations implying their possession of girlish characteristics upset them unduly. A few fainted easily if it came to actual fighting, and almost all of them shamefacedly admitted they had always been subject to numerous morbid fears.

Half of them, in whom self-driving ambition and wish to show off prevailed, made a success in life before their breakdown. One of them, anxious to demonstrate his heroism, joined "the toughest tramp-ship company afloat." The others were either lazy good-for-nothing loafers or got into trouble because of their aggressiveness. Strange as it may appear, this group includes the only female member of the series. Grossly over-attached to her mother from early childhood onwards, she "went for" her drunken father on many occasions. Afterwards, in the face of many hardships, she tried to live up to her very high and rigid Spartan ideals. She joined the A.T.S. at the outbreak of war, and became severely depressed after her father's death through enemy action.

Their main characteristics fit these men well for soldiering. A few have distinguished themselves by their bravery; four who were poor soldiers were either inefficient from the start or became involved in disciplinary difficulties.

3. MIXED REACTION TYPES

The remaining 13 patients showed no predominance of their dependent or independent tendencies. They have certain characteristics in common with both preceding groups without falling into either of them. This group includes individuals who, struggling against a constitutional handicap, tried more or less successfully to emulate their strong brothers and fathers; chronically anxious individuals who somehow managed to master their morbid fears; apparently fearless individuals with deep-seated conflicts over aggressiveness; and solitary individuals without manifest social anxiety. Three patients of this group showed only minor personality deviations which approximated very closely to the normal.

(To be concluded. References will be given with Part II)

THROMBOSIS IN ARTERIOSCLEROSIS OF THE EXTREMITIES

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At 25 years of age the arterial tree is seen at its best, and from this time onwards signs of wear and tear begin to appear. The downward course is slow and insidious, and the extent of the changes seems to depend more upon inherited quality of the arterial wall than upon any other single factor. Nature, however, possesses immense reserves, and, in general, the stiffened wall and reduced calibre give rise to no significant symptoms, though they no doubt play a part in the loss of bodily strength and mental alertness in later years.

In those arteriosclerotic patients in whom the embarrassment of the peripheral circulation of the limbs becomes serious the first signs of trouble are usually a persistent coldness of the extremities and an arresting cramp in the calf or foot on exertion (intermittent claudication). The walking distance gradually lessens; colour changes appear, at first rubor and later cyanosis. Finally, severe and continuous rest pain in the dusky digits is ominous of impending gangrene.

There are, however, other cases of arteriosclerosis in which serious consequences descend like a bolt from the blue in patients who have had no previous warning of any defect in their peripheral circulation. These accidents appear to result from a sudden thrombosis, and when one thinks how commonplace is thrombosis of the cerebral or coronary arteries it is not surprising that similar catastrophes should occur in the arteries of the limbs. During the last few years we have studied 19 cases in which sudden thrombosis of arteriosclerotic arteries has occurred, and we have watched the course of these patients over long periods. Of the 19 patients 16 were men and 3 women. The lower limb was affected in 17 cases and the upper in 2. The average age was 53, which indicates that thrombosis of the arteries of the limbs happens at a relatively early age in a patient who, already arteriosclerotic, is still capable of considerable muscular effort.

Symptoms

In most of our cases the attack has developed during a spell of active exertion—e.g., cycling uphill, climbing the gangway of a ship, pulling on a rope—and in one instance the trouble followed immediately on a fall from a lorry.

The first symptom is a sudden pain of crippling severity, usually in the calf. On examination the foot is found to be cold and waxy, and no pulsation can be felt. The acute pain usually abates and the limb then presents the well-known signs of arterial embarrassment; it is cold, shows rubor in the dependent position, and all active movement is sharply limited by the onset of severe cramp in the calf or foot, often within a few yards. Very gradually—it may be several weeks—the condition improves as some collateral circulation slowly comes into play, but recovery is always far from complete; some degree of claudication, cold, and rubor persists. Gangrene is not common, and

when it does occur—it is usually slight and limited to the distal parts of one or more digits. In only one of our patients was amputation of the limb necessary for gross gangrene.

The cardinal feature is therefore the sudden acute onset followed by a severe claudication which, unlike that of progressive arterial disease, tends steadily to improve as some amount of collateral circulation develops. These features are shown in Cases 1 and 2—the one in the upper, the other in the lower, extremity.

Case 1.—A farmer aged 51 was pulling hard on a rope when he was seized with a severe pain in the right forearm and wrist. Within a few minutes his hand became cold, white, and completely useless. He went to his doctor, who found that the right radial pulse was absent. The pain gradually diminished, but the hand remained useless. When we saw him some months afterwards the right hand and forearm were wasted, cold, and pale; moderate exertion brought on severe cramp. There was no pulse at the wrist or bend of the elbow, but a strong pulse was felt in the upper half of the brachial artery. A right cervico-dorsal ganglionectomy was done, and gave a good result. He went back to his work and was able to do milking and other jobs on his farm. This patient eventually died suddenly from a coronary thrombosis eighteen months later.

Case 2.—A labourer aged 44 was crippled by a sudden pain in the right calf while walking to his work. We saw him in September, 1938, and at that time there was no pulse in or below the popliteal. The foot was cold, showing distinct rubor but no loss of tissue. He was unable to work, and could walk at best less than 400 yards, when he was stopped by severe cramp in the calf. He was seen at frequent intervals, and as he showed no improvement lumbar-cord ganglionectomy was done in April, 1939. This gave a good result. He is still at work, and can walk a mile at a good pace before he feels pain in the calf.

Pathology

The clinical features of all these cases suggest that there has occurred a sudden deposit of clot upon an atheromatous ulcer of the intima, and in one case we were able to obtain the thrombosed popliteal artery. This case was that of a man who at the early age of 33 was seized with a sudden thrombosis of the right popliteal artery. A massive gangrene of the foot developed, and amputation was inevitable. On naked-eye examination the artery showed gross arteriosclerosis; its wall was stiff and thickened, and its lumen over a length of three-quarters of an inch was blocked by a thrombus. Under the microscope it was seen that this was an organized thrombus situated on an ulcerated area of the intima; the media showed hyaline changes such as are found to precede calcification.

Diagnosis

Owing to the pain in the calf on walking these cases are apt to be wrongly diagnosed as "rheumatism," and owing to their onset during muscular exertion they have been taken for instances of ruptured muscle. These mistakes, which may be followed by useless and even harmful treatment, should be avoided if attention be paid to the coldness, pallor, and absence of pulse distal to the thrombosis.

Arteriosclerotic thrombosis is not likely to be mistaken for the acute embolism of cardiac disease. This latter is more acute, it happens usually in a patient already known to have a serious cardiac lesion, and it leads rapidly to massive gangrene because the post-embolic thrombosis is apt to extend over a great length of the artery and its extension blocks the collateral channels.

There should be no difficulty in excluding thrombo-angiitis obliterans, because this disease is found usually in younger men and, although its chronic course may be

rise to a sudden incapacity. Moreover, in thrombo-angiitis obliterans there may be a history of phlebitis migrans, and in the more advanced cases the periarticular fibrosis can readily be felt as a massive deeply seated thickening in the popliteal space.

The actual diagnosis that the lesion is arteriosclerotic can be made only by section of an artery or by radiographic evidence of flecks of calcium in the arterial wall. This latter evidence is, however, available only when the degeneration is advanced.

The diagnosis of arteriosclerosis as the cause of the thrombosis depends upon the summation of a number of observations, no one of which is pathognomonic. Such are family history, age, premature greyness, arcus senilis, hardening and tortuosity of radial and brachial arteries, raised blood pressure, hypertrophy of left ventricle, and increased aortic second sound. Too much stress should not be laid on age or blood pressure. In one of our cases the age of the man was 33, and in another the systolic blood pressure was 120.

Treatment

Beyond the use of sedatives for pain there is little that can usefully be done during the first few days after the acute onset. We could, however, draw attention to what has seemed to us a point of importance in the nursing of the case. It is customary in the treatment of deficient arterial circulation in the lower extremity to send the patient to bed and to keep the limb horizontal or even elevated; some form of heat or warm wrappings are usually employed. We believe this line of treatment to be wrong. The raised position encourages the veins to drain away too rapidly a blood supply which is already gravely limited by the arterial block; an increase in the ischaemia results and the starved extremity may be pushed over the brink of gangrene. The correct handling of such a limb is to keep it dependent and cool. It is remarkable how quickly patients with deficient arterial circulation learn to hang the limb over the edge of the bed in the open.

With the disappearance of pain the patient may be encouraged to get about, and the treatment should be directed to obtaining some degree of vasodilatation. Padutin or similar drugs and hot and cold contrast baths, with postural exercises, may be used with advantage. Treatment by intermittent venous occlusion is well worth a trial, and has seemed to bring about some improvement in several of our patients. Massage, radiant heat, and electric therapy should be avoided; they may be actually harmful.

Should the condition appear to hang fire after a thorough trial of expectant treatment, and if the patient still shows a restricted circulation with a very limited walking distance or the presence of a persistent ulcer, onychia, or other trophic disturbance, we would advise that a lumbar-cord ganglionectomy should be done. In those of our patients on whom we have thought it advisable to do this operation the result has been very gratifying. Case 3 is a typical instance.

Case 3.—A labourer aged 57 was thrown violently from a moving lorry in September, 1933. Immediately after the accident he felt severe pain in the left calf and found that his foot was cold and white. The acute symptoms passed off in a few days, but left him unable to work owing to claudication at 100 yards and a persistent and very painful ulceration of the third toe. When seen four months after the accident he was a tired man who had lost flesh and energy from pain and want of sleep. His blood pressure was 128/80, and the arteries of his legs showed many flecks of calcareous deposit. In the left lower extremity no pulse was felt in the popliteal artery or at any point below. An indolent gangrenous ulcer covered most of the medial surface of the third toe. Lumbar-cord ganglionectomy was done, with the result that pain was at once abolished

and the ulcer was healed within three weeks. He has been seen since on many occasions, and when last examined, seven years after the operation, he was in good general condition, able to do some work and to walk at least 300 yards without trouble.

Prognosis

The prognosis of this form of thrombosis may be described as good with regard to the life of the limb, but as poor with regard to function. Some degree of claudication and restricted use is the rule.

Summary

A condition of sudden thrombosis in the arteries of the extremities is described and treatment is discussed. For the more severe and persistent disabilities section of the sympathetic supply is advocated.

VOLVULUS OF CAECUM, ASSOCIATED WITH PUTRID PUERPERAL ENDOMETRITIS AND GANGRENOUS VULVITIS

BY

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The following case should prove of interest to the consultant obstetrician as well as to the general practitioner.

Case Report

A primigravida aged 38 was admitted to St. Helen Hospital at 3 p.m. on November 19, 1940, with "obstetric shock and complete perineal tear." About seventeen hours before admission she had been delivered, with forceps, of a stillborn infant twenty-two inches long. The delivery had been difficult—the head at 10.40 p.m. and the shoulders at 11.20 p.m.

On admission she was extremely ill, restless, dyspnoeic, cyanosed, and toxæmic. Her temperature was 97°, pulse 132, and respirations 32. The heart sounds were rapid, soft, and muffled in character, with systolic bruits over the praecordium. The chest was clear, but there was extreme gaseous distension of the abdomen, with generalized tenderness but no rigidity. Vaginal examination revealed a stinking lochial discharge and a complete perineal tear, the edges being black and gangrenous for half an inch on each side. The infection must have been very virulent to cause gangrene within seventeen hours of delivery.

Owing to her extreme restlessness 1/3 grain of morphine was prescribed. Mixed anti-gas-gangrene serum (40,000 units) was injected intramuscularly and subcutaneously, compresses of 50% aqueous urea solution were applied locally to the perineum, ergometrine was given, and she was nursed in the high Fowler position. I was greatly interested in her pronounced abdominal distension, as within the previous two years I had seen the following three cases, in which this extreme distension was a prominent feature:

Case A.—A multigravida with obstetric shock. Forceps had been applied by her own doctor with the head "floating" and the cervix not fully dilated. A deep left lateral cervical tear was caused, opening up the base of the broad ligament, with rupture of the cervical branch of the uterine artery, producing a huge retroperitoneal haemorrhage extending from the pelvis to the left perinephric region. In this connexion Berkeley, Bonney, and MacLeod (1938a) state: "It is important to remember that haemorrhage under the peritoneum produces even more marked flatus distension of the intestines than that taking place into the abdominal cavity, and if the patient lives long enough this will be a very pronounced sign."

Case B.—A primigravida with a complete perineal tear (after difficult forceps delivery for an occipito-posterior presentation). She had puerperal pyrexia, phagedaena of the perineum, and extreme abdominal distension, which had been

diagnosed as pelvic peritonitis. She was extremely ill and toxæmic, vomited excessively, and looked so much like a case of paralytic ileus that I decompressed her gradually, using Holt's modification of Wangenstein and Paine's technique (Holt, 1936). She was completely deflated within twelve hours, and made an uneventful recovery under the usual routine treatment.

Case C.—This patient had puerperal pelvic peritonitis due to haemolytic streptococcal infection which cleared up after suprapubic drainage under local anaesthesia and sulphonamide therapy. In this respect Berkeley, Bonney, and MacLeod (1938b) state: "Great difficulty is experienced in diagnosing the presence of peritonitis (in the puerperium) and its characteristic signs, since those of rigidity and acute tenderness are frequently absent. The patient usually complains of abdominal pain, though tenderness is not pronounced. On the other hand, distension and the presence of diarrhoea are highly suggestive."

Bearing these three cases in mind, I carefully exposed the cervix with a speculum and found it to be intact. At the same time cervical and vaginal swabs were taken for culture. A tentative diagnosis of post-partum paralytic ileus or of post-partum peritonitis was made. Throughout her stay in hospital the patient did not vomit.

Slow intestinal decompression by the Holt-Wangenstein-Paine method of suction by duodenal tube was instituted, and, while the apparatus appeared to be working satisfactorily, there was not the dramatic deflation that was seen in Case B, although the abdominal distension was not so pronounced as on admission. The duodenal tube was left *in situ* for twenty-four hours. The patient's general condition improved, but her temperature began to rise. A further 40,000 units of anti-gas-gangrene serum was injected, and 1 gramme of sulphanilamide was given four-hourly. She took nutritious drinks and light diet readily.

The patient became very restless in the early hours of November 21, and morphine 1/3 grain was administered. At 10 a.m. she collapsed and was given a hypodermic injection of atropine 1/100 grain, adrenaline 5 minims, and strychnine 1/60 grain, this being repeated four-hourly for six doses. Later in the day 30,000 units of anti-gas-gangrene serum was injected. She was very restless and the abdominal distension had increased. I considered it unwise to give her enemata, as the bowel contents would be returned via the vagina and probably aggravate the local gangrenous condition. At 6 p.m. she was extremely ill, with rapid thready pulse and cold and clammy skin. A pint of human citrated plasma, Group A(II), was given intravenously, followed by a small suprapubic incision and drainage under local anaesthesia. A large quantity of sero-sanguineous fluid escaped, some of which was sent for examination and culture. The tentative diagnosis of peritonitis appeared to be justified. On return from the theatre her general condition was improved, but the abdominal distension was still severe. A further 40,000 units of anti-gas-gangrene serum was given intramuscularly and 20,000 units intravenously. Her general condition became poor again at 9 p.m., and 1½ pints of Group A(II) citrated plasma was given intravenously, followed by glucose saline drip. She improved for a few hours, then gradually became worse in spite of stimulants, protosol soluble, and calcium gluconate therapy. She died at 11.50 a.m. on November 22.

At necropsy a volvulus of the caecum and about two inches of the ascending colon was found, with a twist of one and a half turns. The caecum was enormously distended, its walls showing patchy areas of haemorrhage, but there was no gangrene. The apex of the volvulus appeared to be the site of a mass of inflamed tuberculous mesenteric glands. There was a gangrenous vulvitis and vaginitis with putrid endometritis. The pelvis was a typical small one, through which an average-sized foetus would be delivered with great difficulty. Culture of the cervical and vaginal swabs gave a growth of haemolytic and non-haemolytic streptococci, staphylococci, and *B. welchii*. Culture of the peritoneal fluid produced a growth of haemolytic and non-haemolytic streptococci, *B. coli*, and *Staph. albus*.

An inquest was held, and the midwife who had supervised the patient ante-natally gave the following facts in her evidence: (i) The patient had vague pains on November 11. (ii) The pains had gone on the 12th. (iii) On the 14th an enema was returned clear. (iv) The membranes ruptured on the 16th—no pains. (v) Pains began again on the 17th, but were weak and

irregular. The bowels had not acted. An enema was returned clear. (vi) The patient fell out of bed on the evening of the 17th and broke an iron fender in her fall. The midwife noticed that the abdomen seemed larger after this accident. On being questioned she stated that the distension was more pronounced below the umbilicus—no bruising was seen on the abdominal wall. The midwife was not aware of the post-mortem findings.

Discussion

The most interesting question is, When did the volvulus occur? Had the injury on the evening of November 17 predisposed to this condition? The bowels had not been opened from November 14, when the result of an enema was clear. Clifford White (1914) recorded a case of volvulus of the caecum that was not diagnosed before operation, and asked, "When did the volvulus occur?" Margaret Basden (1934) reported the case of a woman in labour in whom laparotomy (and Caesarean section) was done for a suspected intra-abdominal condition and a volvulus of the caecum was found at operation. J. H. Spence (1937) quoted a case of volvulus shortly after delivery in which too much attention was paid to the associated uterine infection. He stated that "during pregnancy and the puerperium there should not be much delay in performing laparotomy in doubtful cases."

Extreme abdominal distension occurring in the puerperium may be due to (1) pelvic peritonitis; (2) a condition simulating paralytic ileus; (3) retroperitoneal haemorrhage from extraperitoneal rupture of the uterus; (4) an intra-abdominal catastrophe such as volvulus of the bowel; or (5) a combination of (1) and (4) or of (1), (2), and (4). The cause of the distension may be difficult to assess. Retroperitoneal haemorrhage would be suspected from the history of the labour and speculum examination under a good light. If the diagnosis is still in doubt intestinal decompression for twelve hours should be attempted. If dramatic deflation does not follow, it would be advisable to do a laparotomy. The error in the above case was in performing a small suprapubic incision for suspected peritonitis instead of a laparotomy. Even if a diagnosis of peritonitis is reasonably certain it seems preferable to do a laparotomy so as to exclude any associated abdominal condition.

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GIFT OF OXYGEN INSTALLATION TO HOSPITAL

A complete installation for oxygen and nitrous oxide has been presented to the Royal Infirmary of Edinburgh by Colonel S. J. L. Hardie, chairman of the British Oxygen Company. It incorporates three miles of copper pipe-line running to various parts of the building, and has 342 points, including points at bedsides in the wards where oxygen can be obtained, and in the theatres, for oxygen and nitrous oxide. There are two manifolds, one for the surgical side and the other for the medical, where big cylinders are housed in banks of four. If a bank of four oxygen cylinders begins to run low an automatic warning is given, a reserve bank of four cylinders comes into operation, and the four exhausted cylinders are replaced by four full ones, which in their turn become the reserve. Normally the cylinders require replacement every three or four days. Oxygen can be obtained at the bedside only when the valve attached to the ward has been turned on by the sister in charge. The oxygen is administered through a mask of American pattern, leaving the patient's mouth free, so that he can eat if necessary while breathing oxygen through the nose. At the opening ceremony the thanks of the managers to Colonel Hardie were expressed by Mr. John R. Little, chairman of the Royal Infirmary Board.

SOME FACTORS AFFECTING THE INCIDENCE OF POST-ANAESTHETIC VOMITING

BY

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The purpose of this article is to bring forward, with the aid of illustrative series of cases, some facts about post-anaesthetic vomiting which are well recognized, and some which I think have been less well recognized in the past. I shall try to show that the incidence of post-anaesthetic vomiting is modified by such factors as the anaesthetic used, the operative procedure, sex, etc., in a manner which does not seem to have been fully realized hitherto.

The cases making up these illustrative series are drawn from the anaesthetic records of the Westminster Hospital and from personal records obtained in the E.M.S. maxillo-facial unit to which I am attached.

Figures given regarding the incidence of post-anaesthetic vomiting vary widely according to their source, and also according to the observer's view as to when true post-anaesthetic vomiting begins and when it ends. The figures quoted below are from unselected series (except where otherwise stated), and represent anaesthetics, anaesthetists, and surgical procedures of every type and degree. The record is absolute—i.e., the patient who vomits once after the first post-operative drink is said for the purpose of obtaining these figures to have vomited once. In addition I have visited all cases in these series, whether referred to directly or indirectly, in an effort to eliminate any varying personal factor that might well arise if more than one investigator had been concerned.

First, taking as a basis 1,000 consecutive cases, the following figures for the incidence of post-anaesthetic vomiting were obtained:

Nausea only..	..	..	..	..	2.6%
Vomited once only..	..	..	..	..	15.7%
Vomited 2 to 5 times	..	..	..	..	20.9%
Vomited more than 5 times in less than 18 hours	..	..	..	..	6.5%
Vomited more than 5 times in more than 18 hours	..	..	..	..	0.8%

These degrees will be referred to as N, 1, 2, 3, and 4.

Secondly, it was decided to take four anaesthetic sequences: nitrous oxide, oxygen, and ether; pentothal, nitrous oxide, and oxygen; pentothal, nitrous oxide, oxygen, and ether; and pentothal, cyclopropane, nitrous oxide, oxygen, and ether. In all the series 100 consecutive cases of each anaesthetic sequence have been taken (see table on opposite page).

Series II and III.—It will be seen from the table that, as might be expected, the use of nitrous oxide, oxygen, and ether produces the highest incidence of post-anaesthetic vomiting. But it is rather surprising to find that the preliminary addition of pentothal sodium (the dose varying from 3.5 to 12 c.cm. of 5% solution) reduces the incidence by almost 20%. From the work of Seeley, Essex, and Mann (1936) this effect might well be considered possible, but that it is so great is indeed surprising.

Series IV.—The next effect that stands out is that, contrary to the opinion of some anaesthetists, the addition of cyclopropane to the anaesthetic sequence appears to have little effect on the post-anaesthetic vomiting rate. This may be because a large proportion of these patients suffered only a relatively small degree of surgical trauma; but this may well be offset, at any rate in part, by the fact that

Table showing Incidence of Post-anaesthetic Vomiting when using Four Different Anaesthetic Sequences, compared with that of 1,000 Consecutive Cases

Series	No. of Cases	Nausea N	Vomiting 1	Vomiting 2	Vomiting 3	Vomiting 4	Total N, 1, 2, 3, 4	Total 1, 2, 3, 4	Female	Male	Female Vomiting	Male Vomiting
I. General. . .	1,000	2.6%	15.7%	20.9%	6.5%	0.8%	46.5%	43.9%	—	—	—	—
II. Gas, oxygen, and ether . . .	100	3%	17%	31%	11%	0%	62%	59%	67	33	46 (68.6%)	15 (45.5%)
III. Pentothal, gas, oxygen, and ether . . .	100	6%	15%	20%	5%	0%	46%	40%	46	54	26 (56.5%)	14 (26%)
IV. Pentothal, cyclopropane, gas, oxygen, and ether . . .	100	0%	17%	21%	4%	0%	42%	42%	25	75	14 (52%)	28 (39.6%)
V. Pentothal, gas, and oxygen . . .	100	1%	10%	10%	6%	1%	28%	27%	61	39	23 (26.5%)	4 (10%)

most of them underwent an anaesthesia of more than average duration—averaging 72 minutes against 36.5 minutes.

Series V.—It is admitted that in this series the average duration of anaesthesia was less and the degree of surgical intervention also less than for Series II and III. It should, however, be stated that this series included all extra-abdominal procedures with the exception of cranial surgery, and also cases of less severe low intra-abdominal procedures. In addition, while the average duration of anaesthesia was 36.5 minutes, the longest when using this sequence was 175 minutes, while 60 to 90 minutes was considered a figure worthy of only passing note.

Another point is that of the 23 females who vomited 14 had undergone minor gynaecological procedures such as dilatation of the cervix, curettage, application of radium to the cervix, etc. If all cases of females undergoing such procedures are excluded the figures obtained become:

Nausea only (N)	..	..	..	..	..	2%
Degree 1	..	..	..	..	..	10%
" 2	..	..	..	..	..	6%
" 3	..	..	..	..	..	4%
" 4	..	..	..	..	..	1%

showing a reduction of 6% in the higher post-anaesthetic vomiting rates. The percentage of all females vomiting was 23. Thus it really does seem that the presence or absence of minor gynaecological cases in a series for which the post-anaesthetic vomiting rate is estimated has an appreciable effect on the figures obtained. This point will be referred to later.

Sex Incidence

It has been generally recognized that males tend to vomit less than females, but the difference is rather greater than expected. In Series II the ratio was 68.6 females to 45.5 males; with the addition of pentothal sodium it became 56.5 to 26 (see table). It will be noticed that the preliminary administration of pentothal sodium has a more pronounced effect in males than in females. A reason for this is suggested below.

Effect of Operation

While not dealing with this subject as fully as may seem advisable, it is interesting to note the effect of two types of operation.

Operations on Nose, Nasopharynx, and Mouth.—The figures obtained for 100 consecutive cases are as follows:

Nausea only	..	..	..	..	..	5%
Degree 1	..	..	..	..	..	24%
" 2	..	..	..	..	..	16%
" 3	..	..	..	..	..	4%
" 4	..	..	..	..	..	5%

These figures are comparable to those quoted for the general series of 1,000 cases, in spite of the fact that the patients' ages ranged from 2 to 70 years, and that it is a common remark that "patients are always sick after tonsillectomy." It appears that there is little truth in this remark.

Minor Gynaecological Operations (e.g., dilatation and curettage, etc.).—For 100 consecutive cases it has been found that the figures obtained are as follows:

Nausea only	..	..	..	..	..	4%
Degree 1	..	..	..	..	..	26%
" 2	..	..	..	..	..	22%
" 3	..	..	..	..	..	16%
" 4	..	..	..	..	..	3%

This gives the high incidence of 67% of post-anaesthetic vomiting—startlingly high seeing that pentothal played a part, even an entire part, in the anaesthetic procedure of nearly all these cases. This fact becomes more interesting when comparison is made with a shorter series of similar cases in which no pentothal sodium was used; it was then seen that the incidence of post-anaesthetic vomiting was only slightly greater (71% as against 67%). In a series of minor gynaecological operations, all of which included dilatation of the cervix, the post-anaesthetic vomiting rate was 64%, a figure which suggests that the factor causing the raised vomiting rate is the dilatation. Hence it appears that in these cases the anaesthetic given has comparatively little effect on the incidence of post-anaesthetic vomiting. This may well explain the relatively smaller decrease in the figures obtained for females in Series II and III as compared with the corresponding decrease in the case of males.

Treatment

The treatment of post-anaesthetic vomiting, while not within the scope of this article, requires one or two notes. It is as much pre-operative as post-operative. The co-operation of the nursing staff in reassuring the patient can bring about a most gratifying reduction in the figures obtained. The usual lines—absence of food in the stomach, pre-operative glucose, fluids, and avoidance of excessive purging—may be followed with success. Various authorities (Minnitt, 1932; Smith, 1934) suggest the combination of glucose with insulin. Smith found that 2 oz. of glucose given with 5 units of insulin pre-operatively, followed post-operatively by 4 oz. of glucose rectally with 5 units of insulin, reduced the post-operative vomiting rate by 50%. Premedication should be suitable and adequate, and be combined with the administration of a basal hypnotic. In this connexion attention should be drawn to the fact that the substitution of omnopon for morphine in the premedication reduces the incidence. Individual susceptibility to morphine appears to be a very definite entity. Adequate doses of atropine or hyoscine will prevent secretion, and possible swallowing, of ether-impregnated saliva and mucus. The effect of the barbiturates has been noted.

The post-operative supply of fluids in all cases in which fluid loss during operation has been in any way excessive, whether by actual blood loss or by sweating, will also reduce the incidence of post-operative vomiting. The rectal or even oral administration of normal saline to the point at which the patient complains has proved to be an effective measure, which may be further enhanced by the addition of glucose.

The patient should be moved as little as possible on his return to bed. He should be placed in the right lateral position, and be allowed to recover in peace, a careful watch being kept to prevent any obstruction of the airway. Apart from any other consideration, anoxaemia seems to be a pronounced predisposing factor in the causation of vomiting. Post-operative sedation should be applied, and the use of suppositories—e.g., nembutal—should not be forgotten.

Vomiting which is actually occurring may be treated by a variety of remedies. Drinks of hot water, to which 10 to 15 grains of sodium bicarbonate may be added, strong hot black coffee, Lugol's iodine, and sips of champagne all have their measure of success. Lenevitch (1892) advised washing out the stomach with warm alkaline solution (sodium bicarbonate). Though suggested at such a relatively early date, this line of treatment has proved most efficacious, especially in cases of persistent vomiting.

Summary

The incidence of post-anaesthetic vomiting in 1,000 consecutive cases is compared with that in four series, each of 100 cases, in which a different anaesthetic sequence was used.

The effect of sex and of certain surgical procedures on the incidence of post-anaesthetic vomiting is shown, particular reference being made to oro-nasal and minor gynaecological operations.

Lines of treatment for this condition are suggested.

My thanks are due to Dr. I. W. Magill for his advice on the Westminster Hospital cases and in the preparation of this article; and to Dr. John T. Hunter since my transfer to an E.M.S. unit.

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Medical Memoranda

Leiomyoma of the Stomach with Ulceration

Although cases of leiomyoma of the stomach have not infrequently been reported in the literature, the following case is considered worth while recording in view of the fact that the nature of the tumour was diagnosed pre-operatively, and because some light may be shed on the kind of ulceration occurring in conjunction with these tumours.

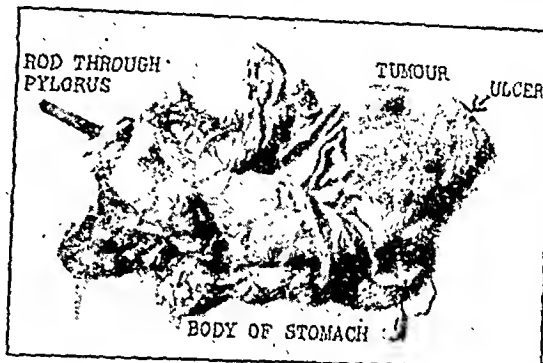
CASE REPORT

A lighterman aged 65 was admitted as an emergency, having had a severe haematemesis. Shortly after admission he vomited more bright red blood. His haemoglobin was found to be 30%. He had a history of intermittent indigestion for fifteen years, each attack lasting for from two to three months, and the periods of freedom from pain lasting for as long as two years. There had been no vomiting or loss of weight, and the pain had never been severe. Three weeks before admission there had been a small haematemesis, but since then, until admission, no abdominal pain.

On examination there were slight tenderness in the epigastrium and extreme pallor of the skin and mucous membranes, but otherwise no abnormal physical signs were seen. A transfusion of three pints of blood was given, and the patient improved considerably. X-ray examination performed a month after admission, when the haemoglobin was 68%, revealed a large filling defect high up on the anterior walls of the stomach. Rugae were obliterated over the filling defect, which was well circumscribed and well defined. No niche, crater, or spasm was seen.

In view of the x-ray findings a diagnosis of a benign tumour of the stomach was made, and partial gastrectomy was performed on March 18, 1941. In order to section the stomach

above the tumour it was necessary to remove about three-quarters of that organ. The gastrectomy was of the modified Polya type. No glandular enlargement was found in the abdomen, and tissues surrounding the stomach were healthy and free from adhesions. There was no indication on the peritoneal surface of the nature of the tumour, but its mobility within the stomach suggested that it was benign. After an uneventful recovery the patient was discharged on April 8, with a haemoglobin of 105%.



The pathological report on the specimen (see Fig.) was as follows:

Macroscopic Examination.—The stomach is enlarged, the rugae on the body being well marked. There is a firm growth at the cardiac end in the anterior wall near the lesser curve. The growth is oval, measures 2½ by 1½ inches, and appears to be insinuated between the mucous and serous layers. Its borders are sharply defined, and the mucous membrane over it is stretched and rugae free. There is an ulcer measuring half an inch in diameter, the margins of the ulcer being sloping and its floor necrotic. The cut surface shows a definitely lobulated structure, many of the lobules showing marked congestion, and giving rise to the effect of a coloured pattern.

Microscopic Examination.—The growth consists essentially of muscular fibres with a whorl-like arrangement. There is, in addition, a fair amount of fibrous tissue derived from areas of resolving haemorrhage. The growth in parts is oedematous and throughout is richly cellular; no significant changes are present in the mucosa beyond congestion and some polymorph infiltration. There is no particular cellular infiltration around the ulcer on the summit. Its walls are sloping, and it appears to be a simple pressure atrophy of the mucosa.

Diagnosis.—Leiomyoma of the stomach.

DISCUSSION

Edwards and Lewis (1940) describe a case of leiomyoma that gave rise to haematemesis, which left the patient with only 30% of haemoglobin. Apart from this case, it would seem that the degree of bleeding in our case was unusually severe. They quote Starr Judd as saying that true peptic ulceration may occur on the surface. The microscopical and macroscopic appearances of our case, together with obliteration of rugae over the tumour, strongly support the view that ulceration was due to pressure atrophy. In view of this it is rather surprising that the haematemesis that ensued was so severe. The cause of the gastric symptoms, which had persisted for fifteen years, remains in doubt. The rest of the stomach mucosa showed no signs of gastritis, nor was it apparent how such a gastritis could result from the presence of the tumour. However, the proximity of the tumour to the cardia could, in view of the size of the tumour, undoubtedly have given rise to the considerable disturbance of the mechanics of gastric digestion, and this might be the explanation.

The recommendation of Edwards and Lewis that local resection is all that is required in these cases is undoubtedly a wise one, except that it is difficult to be quite certain of the nature of the tumour. Moreover, the technical difficulties involved in performing a sleeve resection with the tumour so highly situated would be very considerable.

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Reviews

THE EXTRA PHARMACOPOEIA, VOL. I

The Extra Pharmacopoeia. Martindale. Volume I. Twenty-second edition. (Pp. 1,289. 27s. 6d., plus 6d. postage.) London: The Pharmaceutical Press. 1941.

Even in W. H. Martindale's time the *Extra Pharmacopoeia* was a useful book for the doctor, despite the strange comments and views with which Martindale sprinkled it. In the hands of the Pharmaceutical Society, however, the value of the book has increased enormously, and it has now become a sound and reliable work of reference.

It is interesting to reflect on the important consequences which follow changes which at the time seem trifling. When Martindale died the book might easily have passed into the hands of another commercial firm and have become little better or much worse. As it is, it represents perhaps the main channel through which a wide circle of doctors can keep informed of the less important advances in treatment. Important discoveries like that of the sulphonamide drugs force themselves on everyone's attention, but minor progress often receives notice for a week or two in the medical journals and is then forgotten. Doctors for the most part do not read books on pharmacology, and books on therapeutics have surprisingly little to say of our steadily increasing knowledge of new drugs. The *Extra Pharmacopoeia* provides a frequently revised source of information concerning these, which is up to date and which gives references to all the papers from which its abstracts are prepared. Considering that the book has been produced by two pharmacists neither of whom has had any form of medical training, the selection of material is astonishingly good. It is difficult to see how it could be improved.

The book contains a new therapeutic index of diseases arranged alphabetically—in which may be found, for example, burns or Raynaud's disease. Under the disease appear the different agents used in its treatment and the page in the book on which the use of each agent is considered. A doctor, puzzled to know what further steps he can take in a difficult case, might look far for better indications.

All the different substances which have occupied attention in recent years are described; amphetamine sulphate, apple powder, carbachol, cyclopropane, leptazol, nicotinic acid, oestradiol benzoate, pamaquin, penicillin, phemitone, pyridoxine, sulphathiazole, vitamin K may be mentioned in passing. It would be safe to wager that many readers of this *Journal* do not know what some of these substances are; how many know that carbachol is the pre-war proprietary doryl? For it is an additional service of the *Extra Pharmacopoeia* that it calls things by their official names, and makes it possible for any doctor to discover, for example, that allocaine, syncaine, aethocaine, ethocaine, kerocain, neocaine, novocain, planocaine, and sevicaine are different names for the same thing, which should always be called procaine. How wonderful it would be if some benefactor could be found who would present a prize to every doctor who was able to show that he never used a proprietary name when an official name was available! How much money our hospitals would save!

The *Extra Pharmacopoeia* is suffering from obesity in these days and giving those who produce it concern about its format. Can it continue to be a pocket book with all it sets out to contain? We leave its producers to struggle with this problem, asking them some time to enlighten us on the precise relation of Volume I to Volume II. Further, they ought to do something about the general arrangement; acetylcholine, for example, is to be found under the general

heading "*Acidum aceticum*," which is ridiculous. This does not interfere with the usefulness of the book, for the index always puts the reader right. But it is a reviewer's duty to pick at least one hole.

MEDICINE INTERPRETED TO THE PUBLIC

The March of Medicine. No. V of the New York Academy of Medicine Lectures to the Laity, 1940. (Pp. 154. 13s. 6d.) New York: Columbia University Press; London: Oxford University Press. 1941.

Medical science is claiming an increasing share in the planning of life. For such claims to be admitted it is necessary that its achievements and aims should be interpreted by experts to the general public. This task the New York Academy of Medicine has been undertaking for the last five years by a series of lectures given in their comfortable and acoustically perfect theatre. The speakers, avowedly taking Faraday and Huxley as their great exemplars, have tried not only to avoid technicalities so far as possible in their exposition, but also to relate their topic to general problems of living.

This most recently completed series opens with Dr. Myerson's discussion of the inheritance of mental diseases, largely based on the study of monozygotic twins, in which he gives sound reasons for discounting alarmist statements as to the increase in these diseases. But we think our Eugenics Society will be a little staggered by his remark that the term "eugenics" has now become synonymous with sterilization! Dr. Perrin Long follows with a lucid account of the history of chemical warfare against disease in which he mentions the interesting fact that the last of the synthetic sulphonamides—namely, sulphathiazole—contains a ring which in another form goes to make about half the molecule of vitamin B₁. This provides another piece of evidence that chemotherapy has more affinity with the biological defences of the body than was thought at first. Dr. Reznikoff deals with the history of our knowledge of the blood, in which he relates the curious case of Dr. W. S. Thayer's patient who, recognizing that her condition of pernicious anaemia was incurable, decided to indulge her taste for *pâté de foie gras* freely and daily. She lived to a ripe old age, but the significance of her recovery was not then understood. Dr. Hutchings describes the progress in the treatment of mental diseases under the title "*The Ascent from Bedlam*," in which he maintains that the mediaeval Church was largely responsible for the maintenance of an inhuman attitude towards those held to be in demoniacal possession. He gives deserved credit to the Quakers for their establishment of the Retreat at York in 1792, where gentler methods were to prevail under William Tuke. He might have added that Tyson, better known as an anatomist, advocated similar principles nearly a century earlier. Dr. Chevalier Jackson speaks of "*The Romance of Bronchoscopy*," in which he was himself a pioneer. Perhaps the most interesting lecture is that on "*The Story of Viruses*," by Dr. T. M. Rivers, for it is not easy to find such a consistent history of this rapid advance in knowledge. W. M. Stanley's discovery in 1935 of a crystalline protein with virus characteristics called for a fundamental readjustment of our ideas on the origin of life. For some, viruses are the result of retrograde evolution; for others, they are the simplest possible form in which life originally took shape; for yet others, they are merely autocatalytic agents, transitional between the living and non-living. Probably viruses are not all in the same category. He tells the story of Adrian Stokes, who when he was taken ill after carrying out a necropsy on an infected monkey which he had done with bare hands, one of which bore an unhealed wound, said: "I hope it is yellow fever," because that would prove he had found its virus. He was correct, and he died, but not in vain, for

that strain of virus yielded a successful vaccine. These lectures may bring home the fact that the hunt for means of preserving life may be as fascinating as the designing of methods of destroying it, while each has its spice of danger.

Presumably publishers know their own business best; otherwise we would suggest that in these hard times 13s. 6d. was an excessive price for a relatively small book.

PRINCIPLES OF RADIATION THERAPY

The Biologic Fundamentals of Radiation Therapy. A Textbook. By Friedrich Ellinger, M.D. With a preface by Maurice Lenz, M.D. English translation by Reuben Gross, M.D. (Pp. 360; illustrated. 30s. net.) New York: Elsevier Publishing Company, Inc. Distributors: Nordeman Publishing Company, Inc. Obtainable in the United Kingdom from H. K. Lewis and Co.

This book was published in German in 1935, and was an attempt to present the results and problems of radiation biology in such a way as to demonstrate that the therapeutic application of radiant energy depends upon the same basic principles already established in pharmacology. In this English translation the work has been brought up to date by the inclusion of references up to April, 1940.

In a short introduction the principal effects of radiation upon the cell are outlined. Part I, of 118 pages, deals with the effects of x rays and gamma rays upon the various normal tissues, organs, and systems of the body, and then gives a brief account of the changes produced in inflammatory and infectious conditions, and in hyperplasia and neoplasia. Part II gives a short account of corpuscular radiations and the administration of radio-active substances, and includes a note upon radio-active springs. Parts III and IV devote 106 pages to the effects of light, the ultra-violet portion of the spectrum taking the major part of the space allotted. Part V considers the general principles of radiation therapy, as based on the facts derived from experimental radiation biology reviewed in the preceding sections. Radiosensitivity, the time factor, the principal radiotherapeutic techniques, and radiation injuries are among the subjects discussed. A bibliography of 1,100 references to the literature between 1930 and 1940 occupies 47 pages, and there is an index to authors and an adequate subject index.

The author calls his work a textbook, but as such it cannot be recommended; for there is very little critical comment upon the mass of often contradictory observations which have been abstracted, and a sense of proportion between what are generally accepted theories and what are merely wild speculations is almost entirely lacking. Moreover, the English translation is not always happy—for example, "Analogously in humans a burn resulting from an overdose of ultra-violet light was accompanied by a radiation injury in the form of a serious irritation of the stomach, persisting for several months. Overdosage of ultra-violet light, therefore, is by no means a matter to be taken lightly." Misprints are few, and the 79 illustrations have been well chosen and well reproduced. As a reference book to original sources and an aid to further investigations the book will be of value to the specialist.

Notes on Books

Your Teeth: Their Past, Present, and Probable Future, by Prof. PETER J. BREKHUS of the School of Dentistry, Minnesota University, gives in plain language an outline of facts and theories about the teeth of civilized man. As the title suggests, it is intended for public enlightenment, and Prof. Irvine McQuarrie, head of the department of paediatrics in the same university, writes a foreword. Prof. Brekhuis dispassionately notes the conflicting views on the aetiology of caries and pyorrhoecia, and concludes that the direct cause of our most common tooth troubles cannot yet be named. The theory he favours—

that decreased functioning is mainly responsible for dental deterioration—is merely advanced as a possible point of departure for future research. In essence the book is a reasoned appeal for proper dental care, especially during childhood, and for intensive research soundly based on the fundamental sciences. In his chapter on the relation of dental to general health the author condemns the injudicious application of the truth embodied in the theory of focal infection, and says that this problem is one that must be solved by close co-operation between patient, doctors, and dentist. His attitude towards biological and mechanical factors in loss of teeth is summed up in this sentence: "By all means let us continue to keep our mouths clean and our bodies well nourished, but let us not delude ourselves that by so doing we can keep our teeth from disease and avoid our periodic visits to the dentist." He holds that the most vital function of dentists is to fill the small cavities in children's teeth, and discusses ways and means for enforcing early, universal, and constant care in this direction. This very readable book on dental hygiene is published by the University of Minnesota Press, Minneapolis, at \$2.50.

Within ten years of its first appearance a fifth edition has been published of Miss I. STEWART'S *Medical Handbook for Nurses* (Faber and Faber, 6s. 6d.). The author is now matron of the Victoria Infirmary, Glasgow, and her book links up instruction given in medical lectures with its practical application at the bedside. As before, the keynote is struck in the opening paragraph: "The medical nurse must work in close co-operation with the physician and with the patient. She shares with the doctor the responsibility for the management of the case. He depends on her for carrying out efficiently the treatment he has ordered, for exercising intelligent observation, and for keeping accurate records." The text has once more been revised in the light of modern advances in methods of diagnosis and treatment, so that the nurse may be aware of special points to be noted and reported.

Die Nervenkrankheiten des Rindes, by a comparative neurologist, Dr. E. FRAUCHIGER, and a veterinary pathologist, Dr. W. HOFMANN, both of the University of Berne, is published in that city by Hans Huber, medical librarian, at the price of 24 Swiss francs. This well-illustrated book on the nervous diseases of cattle is described in the sub-title as presenting "a basis for a comparative neurology of man and domestic animal." It falls into two parts: in the first the anatomy of the nervous system is briefly surveyed, with particular attention to methods of neurological investigation in cattle and their differences from those in men; in the second part the nervous diseases of cattle are set out in detail, with full discussion of their relation to the nervous diseases of other domestic animals, and particularly to those of man. To the student of veterinary medicine the book will give guidance in the far from simple subject of nervous disorders of domestic animals; it should also be of value to comparative pathologists and neurologists.

The Department of Scientific and Industrial Research has issued No. 4 of volume 12 of the *Index to the Literature of Food Investigation*, dated March, 1941 (H.M. Stationery Office, York House, Kingsway, W.C.2, 4s. 6d.). It is compiled by Agnes Elisabeth Glennie, B.Sc., assisted by Gwen Davies, B.A., and Catherine Alexander, B.Sc. The abstracts are arranged along the usual lines in fifteen sections, with an alphabetical key to authors at the end. These periodical indexes are of much value to scientific workers and technologists concerned in the preparation, storage, and analysis of food products and in the safeguarding of food supplies, as well as to those who study the physiological, chemical, and physical changes undergone by food and the bacteriology of ripening and putrefaction. The references in this member of the series run from No. 1448 to No. 2032.

It is good news that a second edition has already been called for of Miss MINNIE RANDELL'S valuable book *Training for Child-birth from a Mother's Point of View* (J. and A. Churchill, 10s. 6d.). The new preface mourns the loss, when the massacre department of St. Thomas's Hospital was bombed, of the gallant Barbara Mortimer Thomas, who had contributed so much to the preparation of the book, especially the photographs. These are

superlatively good, both artistic and informative. The only changes seem to be a few additions to mothers' diaries of their own confinements, some of which portray an enthusiastic interest in the sequence of events, and further reports upon the effects of the physical exercises used. Of the value of the latter there can be no question, for if the mother's interest in the use and control of her muscles has been awakened during pregnancy her approach to labour is much more confident and her own efforts during it become rightly directed. Towards the problem of popularizing such training this attractive book is the best possible contribution. It is up to obstetricians to recommend it, which they can do with confidence because the doctor's authority is upheld throughout.

Preparations and Appliances

ENDOSCOPIC RESECTION OF THE PROSTATE: AN IMPROVED TECHNIQUE

Mr. H. T. Cox, M.D.Camb., F.R.C.S.Ed., resident surgical officer, Withington Hospital, Manchester Municipal Service, sends the following account of an improved technique to avoid injury to the external sphincter during endoscopic resection of the prostate.

The generally accepted method of avoiding injury to the external sphincter is based on accurate visualization and localization of the verumontanum with the urethroscope and resectoscope. The small but almost universal incidence of incontinence, together with the reported twenty-fold increase in the sale of incontinence-clamps in America since the adoption of endoscopic resection,¹ shows that this principle is easier to observe in precept than to follow in practice.

Seeing the verumontanum with the urethroscope is no guarantee against cutting beyond it with the resectoscope. Three factors, it would appear, are contributory: (1) The verumontanum is a posterior structure lying exactly in the midline, and therefore must pass out of the field of vision when the resectoscope is rotated. In cutting strips in any position except in the midline posteriorly the verumontanum ceases to be of the slightest value as a landmark, as it cannot be identified. (2) Haemorrhage may obscure the view. (3) When the distal end of the telescope is in actual contact with the prostate a complete "black-out" follows. This I have found to occur in making the initial cuts in those rare cases of prostatic enlargement with marked encroachment into the urethra.

It is for these reasons that I have devised the following technique as a more certain and practical method of avoiding injury to the external sphincter.

Technique and Instruments

The principle embodies a mechanical check applied to the cutting process before the cutting loop reaches the external sphincter. This method depends for its success on the observation of three points: (1) Accurate measurement of the distance between the internal meatus and the verumontanum (the cutting distance) with the posterior urethroscope. (2) Accurate measurement of this distance on the rack of the resectoscope. (3) Fixing this distance on the rack of the resectoscope in such a way as to constitute a mechanical check against overcutting and consequent damage to the external sphincter.

At the risk of adding to the "vulgar ingenuity of gadgets" I have modified the Canny Ryall-McCarthy resectoscope and the Millin posterior urethroscope in order to achieve these objects more easily. These modifications are three in number:

1. A scale graduated in centimetres marked on the resectoscope rack (Fig. 1).
2. A sliding check fitted on the resectoscope rack (Fig. 1).
3. A similarly graduated rack and pinion attached to the posterior urethroscope, which is also fitted with a handle (Fig. 2).

The posterior urethroscope is introduced into the bladder and slowly withdrawn without rotating the pinion until the edge of the prostate at the internal meatus is just visible. The left hand

grasps the handle and holds it stationary; with the right hand the pinion is rotated, thus withdrawing the urethroscope until the verumontanum is visible. The distance the instrument has travelled is the distance from the internal meatus to the verumontanum, and is shown in centimetres on the graduated scale of the rack. This is read off, and the same distance is marked and fixed on the resectoscope rack with the sliding check. The resectoscope is thus set for each individual patient before the cutting process is begun.

Two further points require emphasis. It is essential to make absolutely certain that each cut starts at the internal meatus. It is therefore advantageous to leave the most prominent part of the prostatic ledge at the internal meatus until the end of the resection, thus retaining an easily identifiable landmark during the operation. For obvious reasons the resectoscope sheath must

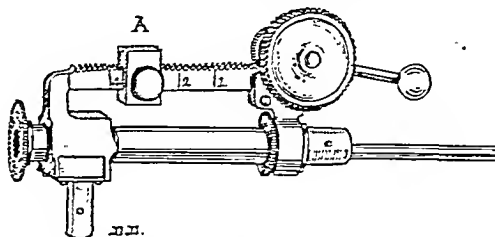


Fig. 1.—Resectoscope with graduated rack and sliding check (A) set for a cutting distance of $2\frac{1}{2}$ cm.

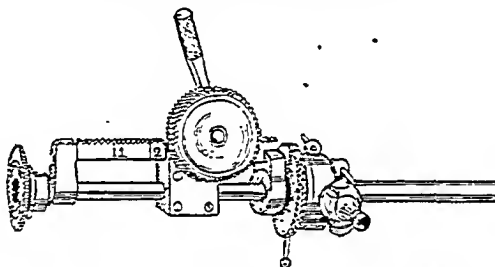


Fig. 2.—Posterior urethroscope with pinion and rack graduated in centimetres from its ocular end.

be held stationary during the resection—i.e., it must not be permitted to move in or out.

A further advantage of this method is evident in two-stage resections. The distance between internal meatus and verumontanum is written on the case sheet at the conclusion of the first operation; at the beginning of the second operation the instrument is set at this distance, thus avoiding the necessity for further localization of the verumontanum.

Results

Previous to the adoption of this technique three cases of partial incontinence were encountered. One patient returned his penile clamp three weeks after discharge from hospital, normal micturition having been recovered. The other two regained control before discharge. Since adopting the technique I have performed forty-eight resections, removing a total of 537 grammes from twenty-seven patients (average weight per patient, 19.8 grammes). Three were carcinomatous prostates, two fibrous (5 grammes each), and the remainder adenomatous. In no case has there been even a transient degree of incontinence. The protection of the external sphincter has been complete. The results of the resection have been most satisfactory: many patients without hope of survival after suprapubic enucleation have been restored to normal micturition.

I express my sincere thanks to Mr. Southam, senior consulting surgeon, and to Mr. Holt and Mr. Simmons for permission to operate on their cases; to Dr. Greenwood, medical superintendent, I am indebted for permission to report them. Messrs. Chas. F. Thackray Ltd. of Leeds have kindly made the necessary modifications to the instruments, in spite of the exigencies of the present conditions.

¹ Bailey, Hamilton, *Medical Annual*, 1941.

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HOSPITAL PROVIDENT SCHEMES

Lord Nuffield has yet once more made a far-sighted contribution to the hospital services of the country. As announced last week, he has created a Provident Guarantee Fund of £150,000 with the object of increasing the formation of mutual insurance schemes to assist the middle and professional classes to meet the cost of illness requiring specialized or surgical treatment in hospital pay-beds or nursing homes. The fund will be available to guarantee the financial solvency of provident schemes in provincial areas, in Scotland, and in Northern Ireland. The condition of the guarantee is that the schemes are approved by the trustees of the fund and provide "substantial cover" for subscribers and the members of their families on a contributory basis; no doubt a model scheme will be constructed. Such provident schemes, it is hoped, will "have a close alignment with the area Hospital Councils which have been created in various parts of the country, and with which the Nuffield Provincial Hospitals Trust is associated."

With the exception of the British Provident Association, which supplies a grant in aid to its contributors and applies no income limit, provident schemes are of only recent development. There can be little doubt that the system of mutual insurance as a method of paying for specialized medical and surgical services is the most satisfactory way of meeting the great financial strain which the cost of such treatment throws upon the middle classes. But lack of funds and of beds in voluntary hospitals has barred progress on these lines. In 1934 the British Medical Association, anxious to promote the provident scheme movement in connexion with pay-beds, held a conference at which all interested bodies and existing provident schemes were represented. Out of this conference came the publication of a model provident scheme with draft memorandum and articles, and the establishment, with the financial aid of the B.M.A., of a National Federation of Provident Associations, to which Mr. W. Hyde acted as honorary secretary. Since then the Federation has worked consistently for the aims established. So far as the Provinces are concerned, Lord Nuffield's generous benefaction may be looked on as placing the National Federation on a firm financial footing, under a different name but with the same energetic and able secretary, Mr. Hyde. It is as well to recall that the model scheme agreed on in 1934 provided full cover for professional fees and nursing-home charges in the event of illness requiring specialized institutional treatment for persons within defined income limits and paying agreed annual premiums. An excellent example of this scheme working in practice was the Oxford and District Provident Association, Limited.

Simultaneously with the publication of Lord Nuffield's scheme there appears an announcement about another provident scheme. The short published statement in the Press records the appointment by King Edward's Hospital Fund of a committee under the chairmanship of Sir Bernard Docker to sponsor a provident scheme designed to cater for the requirements of the middle and professional classes in the London area. Such a scheme, for middle-class and professional persons within a defined income group, was practically complete just before the outbreak of war. Voluntary hospitals and their staffs had been consulted, and at a meeting of London consultants called by the B.M.A. general approval was given to the outline of the scheme, which was to give full cover for specialized treatment in beds set aside for the purpose. In the larger London hospitals the resources of a scheme with reasonable premiums would not meet the cost of private beds. This being taken into account, the scheme was evolved on the assumption that the members would be accommodated mainly in a new type of bed, intermediate between the general ward bed and the private bed.

At the outbreak of war it was agreed by the King's Fund subcommittee that the prevailing conditions made the moment highly inopportune to proceed with the plan. First and foremost was the fact of the complete reorganization of London hospitals and the redistribution of their staffs. Hospital accommodation in London was severely restricted. Many members of the voluntary hospital staffs were employed whole-time or part-time at hospitals at which they had held no peacetime appointments, and at council hospitals which admit for treatment any patients without distinction of class or income—that is, in circumstances which would make their participation difficult if not impossible owing to the absence of the necessary kind of bed. Since the beginning of the war there has, of course, been a further restriction on hospital accommodation as the result of air raids, and with the prospect of a renewal of the aerial bombardment of London further loss of hospital space is to be expected. There has also been an increase in the number of persons coming within the scope of the E.M.S.—that is, persons who cannot be required to pay private fees or have private fees paid in respect of their hospital treatment. These facts—the limited number of available beds, the difficulty of arranging at the present time for a new type of bed, and the inability of many of the voluntary hospital staffs to take part in the scheme—would seem to have been ignored by the King's Fund committee in deciding, despite the advice of its subcommittee, to launch the scheme now. Finally, it would be a great pity if, at a moment when the relations between the voluntary and local authority hospitals are to be worked out in accordance with the Government's hospital policy announced a fortnight ago, the former were to introduce a scheme which might be suspected to have as its principal aim the grouting of the financial buttress of the London voluntary hospitals. There would seem to be something unreal about the securing by the voluntary hospitals of money for a service which could not be made fully available to those who under the scheme would expect to receive it.

THE INFLUENCE OF CHOLINE ON ANIMAL METABOLISM

The influence of choline—a normal constituent of mixed diet and derived from lecithin and other phospholipids present in animal fat—on animal metabolism was discovered as a result of the observations, by Fisher¹ and by Allan and co-workers,² that depancreatized dogs maintained on insulin and certain mixed diets developed large fatty livers. When fresh beef pancreas was given in the food the livers did not become fatty. Hershey³ found that crude egg-yolk lecithin also prevented the development of fatty livers in depancreatized dogs. Best and others⁴ observed that normal rats could be used as test animals for these investigations, which thereby became greatly simplified. These workers at once showed that purified lecithin was lipotropically active (i.e., having an affinity for fats), and that choline was the active component of this substance.^{5,6} By using simple diets of purified food substances, fatty livers were produced by (1) giving some easily available form of neutral fat, which produced the so-called "fat" fatty livers; (2) giving large amounts of cholesterol in the diet, which produced the "cholesterol" fatty livers; and (3) including large amounts of sucrose and very little protein in the diet. Best and his collaborators in Toronto⁷ and Channon and his collaborators in Liverpool⁸ showed that all these forms of fatty liver could be prevented by giving choline to the rats.

The influence of casein as a lipotropic substance could not be ascribed to the negligible amount of choline which it contained. Comparison with the activity of other proteins led to the conclusion that certain amino-acids influence the deposition of fat in the liver. Curtis and Newburgh⁹ had shown that cystine produced fatty livers. Tucker and Eckstein¹⁰ found that a recently separated amino-acid—methionine—had exactly the opposite effect. Singal and Eckstein¹¹ observed that arachin, a protein deficient in methionine, was without lipotropic action, but the addition of methionine made it as active as caseinogen. Du Vigneaud and others¹² and Griffith and Wade¹³ have also noticed an interrelationship between choline and the ratio cystine/methionine of the diet. Amino-acids without lipotropic activity are serine, lysine, aspartic acid, phenyl-alanine, alanine, proline, hydroxyproline, histidine, valine, leucine, and arginine. Tyrosine has slight activity. The two authorities on this subject—Best of Toronto and Channon of Liverpool—accept the antagonistic action of methionine and cystine, though the latter believes it is at least possible that the lipotropic activity of casein is due to an unidentified contaminant. Synthetic homocholine has been found to be more effective than choline itself, and certain analogues

of choline (e.g. betaine) have been found to have some effect. Other substances similar to choline but without the hydroxyl group have been found to cause an increase in liver fat and even to be extremely toxic.

Some workers still claim lipotropic activity in pancreatic extracts which is not due to the presence of choline or protein. One such preparation has been called lipocain; it seems to affect depancreatized dogs but not normal rats. György and Goldblatt¹⁴ found that the addition of vitamin B₁₂ to the diet of rats used in experiments on acrodynia killed many of their rats after 11 to 15 days. They subsequently realized that the diet was deficient in choline, and concluded from microscopic examination of the liver and kidneys that vitamin B₁₂ accentuated the influence of a deficiency of choline by causing necrosis of the renal cortex.

Choline does not prevent the deposition of fat in the liver in cases of phosphorus poisoning (though it may hasten its dispersion when the administration of phosphorus has ceased), nor when injections of anterior pituitary extract have been given. Choline and some analogues reduce the deposition of cholesterol esters in the liver as well as true fats. Though choline prevents the accumulation of fat in the liver, it increases the deposition of fat in other parts of the body. McHenry¹⁵ has shown that the actions of choline and vitamin B₁₂ on the weight of young rats are complementary. Mucopolysaccharin and little choline result in the deposition of fat in the liver. Lack of choline also seems to affect the liver's ability to store glycogen, but whether this is the result or the cause of the accumulation of fat is not known. Best⁷ suggested that choline accelerates the oxidation of fat in the liver. Raab and Strauber¹⁶ have indeed found that giving choline by mouth to normal dogs produced an increase in blood sugar and keton bodies, but no increase in blood fats. It has been suggested, but not proved, that choline is changed to lecithin or some other phospholipid to remove fat from the liver, but fat can also be removed from the liver by fasting. Perlman and Chaikoff¹⁷ by the use of P³², have shown that choline given in the diet increases the rate of turnover of phospholipids, the rate being proportional to the amount of choline given. Its possible relationship to the methionine/cystine ratio of the protein of the diet is still more obscure. There is no evidence to show whether it acts independently of this ratio or whether it is interwoven with it.

ANATOMICAL STUDIES ON HUMAN TUBERCULOSIS

Repeated morbid anatomical observations often serve as a brake to theoretical speculation by the clinician. New methods of investigation—for example, post-mortem radiography—or the study of environmental factors such as general malnutrition associated with war may also throw fresh light on hitherto accepted data. This is especially true in the field of tuberculosis, and

¹ *Amer. J. Physiol.*, 1924, 67, 634.

² *Brit. J. exp. Pathol.*, 1924, 5, 75.

³ *Amer. J. Physiol.*, 1930, 93, 657.

⁴ *J. Physiol.*, 1932, 75, 56.

⁵ *Amer. J. Physiol.*, 1932, 101, 7.

⁶ *J. Physiol.*, 1932, 75, 405.

⁷ *Ibid.*, 1934, 81, 409.

⁸ *Biochem. J.*, 1935, 29, 169.

⁹ *Arch. Intern. Med.*, 1927, 39, 828.

¹⁰ *J. Biol. Chem.*, 1937, 121, 479.

¹¹ *Proc. Soc. exp. Biol. N.Y.*, 1939, 41, 512.

¹² *J. Biol. Chem.*, 1939, 131, 57.

¹³ *Ibid.*, 567.

¹⁴ *J. exp. Med.*, 1940, 72, 1.

¹⁵ *J. Physiol.*, 1935, 85, 343.

¹⁶ *Biochem. J.*, 1937, 31, 1616.

¹⁷ *Z. ges. exp. Med.*, 1936, 89, 227.

¹⁸ *J. Biol. Chem.*, 1938, 127, 211.

the excellent morbid anatomical studies¹ of Kornel Terplan, formerly a disciple of Ghon and now working at Buffalo, are therefore welcome. These studies were carried out at necropsy on 698 children between the ages of 5 weeks and 18 years, and on 289 adults up to 90 years of age, a relatively small percentage of whom died from chronic pulmonary tuberculosis. A careful anatomical dissection was accompanied by complete histological examination of all lesions, full use being made of post-mortem radiography.

Dr. Terplan found tuberculous lesions in 5.9% of children under 6, and in 19.4% of those between 7 and 18. In most fatal cases death was due to haematogenous dissemination, with tuberculous meningitis following more or less closely the establishment of a caseous pulmonary lesion; this was found in both infants and older children. In three cases intrabronchial progression had occurred almost simultaneously with haematogenous dissemination, which, though decidedly less marked, nevertheless led to meningitis. In three others with wide intrabronchial spread in direct connexion with primary lesions, haematogenous seeding was minimal or absent; such intrabronchial spread may closely mimic the features of the so-called adult type of tuberculosis. In yet three other cases meningitis as almost the only manifestation of haematogenous tuberculosis followed exacerbation of the tuberculous process within one or more lymph glands close to an old calcified lesion—examples of endogenous lymphoglandular "reinfection." Other of Dr. Terplan's cases showed that the primary tuberculous infection may occasionally restrict itself to one or more typical parenchymatous lesions without any anatomical evidence of further spread to regional lymph glands. Complete healing of these primary foci may even more rarely be followed by additional reinfection from without, which may cause haematogenous dissemination and death.

In the 289 adults tuberculous lesions were absent in only 3% of those over the age of 50. Terplan says it was futile to attempt to estimate the absolute age of calcified or osseous tuberculous lesions, as Sweeney has done.² In seven adults between the ages of 19 and 63 there was a recent primary complex with intrabronchial and/or haematogenous tuberculosis. In sixteen others, aged 28 to 80, necropsy revealed incidental typical primary complexes in the caseous, fibro-caseous, or partly calcified state. These changes pointed to a late primary infection, and, contrary to views expressed elsewhere, lymph-gland involvement was extensive, and thus did not appreciably differ from that seen in primary complexes among children. In ten adults two tuberculous complexes of very different structural ages were found, each in a different lung, or, in a few cases, in a different lobe—one in a completely stony state, the other, of recent structure, mostly caseous or partly calcified, the caseous lesion resembling a typical primary complex. Thus the finding of multiple calcified lesions does not necessarily indicate that they were formed simultaneously by a single primary infection. In yet two other adults, aged 33 and 54, who showed calcified remnants of an old tuberculous lesion, a relatively recent

lesion of true exogenous reinfection led in one case to death from haematogenous dissemination and in the other to intrabronchial progression (haematogenous seeding being also present). Finally there were cases among the adults, as among the children, of healed primary foci without glandular involvement; in some of them there were typical reinfection "primary" complexes.

It is evident that primary infection is by no means rare among adults at all ages, and that it follows much the same course as it does in children. The primary nature of the lesions and not the patient's age determines the anatomical characters of the lesions. Further, some exceptional features in primary infections and in reinfections are yet common enough to call for care in dogmatizing on epidemiological observations based on tuberculin or radiological surveys. It is still premature to attempt to correlate humoral data (such as allergy) with anatomical findings in the classification of tuberculosis, as has been done by Ranke.

Dr. Terplan draws attention to the confusion in the use of certain terms. Thus the "primary focus" is the reaction of tissue to, or the structural change brought about by, the tubercle bacillus at the site of the first recognizable lesion, and the term should not be used for tuberculous lesions in lymph glands. A primary focal lesion is always present (in the lung or intestine and very rarely in other organs such as the tonsil), though it may not be recognized from casual anatomical observation. The term "primary complex" should be applied to the primary focus, wherever it may be, and to the tuberculous lesions in the corresponding lymph glands near the focus—to the two component lesions together. Any other lesions, except those developing in immediate association with the components of the complex in its active state, should be referred to as post-primary lesions. The term "reinfection" should mean a new infection with bacilli from without, and should exclude "any formal genetic relationship to the primary infection"; it does not imply that the former—primary—infection must have been completely healed anatomically and biologically. Terplan wishes the term "endogenous reinfection" to be abandoned; it clearly refers to endogenous exacerbation—that is, to a local recurrence or reawakening of an older, usually quiescent, process, with or without evidence of further lymphatic, haematogenous, or intrabronchial spread. "Superinfection," if used at all, should be applied only where an additional infection from without can be proved in an individual who still harbours an active tuberculous lesion. Terplan criticizes the statements on childhood tuberculosis by J. A. Myers,³ to whom development of sensitivity to tuberculin is the criterion of "reinfection," and the misleading use of the terms "childhood type" and "adult type" by Opie and others—terms that "have dominated the teaching of tuberculosis in the English-speaking countries in recent years." More recently Miller⁴ and Pinner⁵ in America, and Kayne, Pagel, and O'Shaughnessy⁶ in England, have stressed that if these terms were dropped we should better understand the pathogenesis of tuberculosis.

¹ *Amer. Rev. Tuberc.*, 1933, 28, 93; 1935, 32, 631; 1937, 36, 355.

² *Ibid.*, 1936, 34, 301.

³ *Ibid.*, 1937, 35, 41.

⁴ *Pulmonary Tuberculosis: Pathology, Diagnosis, Management and Prevention*. London: Oxford University Press, 1939.

⁵ *Amer. Rev. Tuberc.*, Supplement, August, 1940, 42.

⁶ *Amer. Rev. Tuberc.*, 1938, 37, 484.

VIRUSES AND INFECTION THROUGH THE SKIN

For many years it has been common practice to administer antirabic vaccine to persons whose hands have been licked or otherwise contaminated by the saliva of dogs suspected of being rabid, despite the fact that there is no very convincing experimental evidence that rabies virus readily passes through the unbroken skin. There is, however, growing evidence that certain other viruses may readily pass through the skin. Bauer and Hudson¹ infected rhesus monkeys by rubbing yellow-fever virus on the apparently unbroken skin. However, no attempts were made to exclude the possibility that the monkeys scratched the virus into the skin or transferred it to mucous membranes. Findlay² subsequently showed that when the virus of Rift Valley fever is placed on the lightly scarified skin of the mouse fatal infections are produced. The viruses of yellow fever and Rift Valley fever, however, are normally transmitted by the bites of insects and may thus be specially adapted to passage through the epidermis. More recent evidence shows that viruses not usually carried by insect vectors may penetrate the skin. Findlay and Stern³ showed that when lymphocytic choriomeningitis virus was rubbed on the lightly scarified skins of mice the animals did not exhibit apparent infection, but the virus could be recovered from their spleens and kidneys: when the same virus was rubbed on the lightly scarified skin of two rhesus monkeys one had a febrile reaction. Subsequently Shaughnessy and Milzer⁴ demonstrated that guinea-pigs developed the typical picture of the disease when the virus was placed on skin so lightly scarified that blood was not drawn. Shaughnessy and Zichis⁵ have now shown that lymphocytic choriomeningitis virus is able to infect the guinea-pig when it is merely placed on the intact skin. The most consistent results were obtained when the virus was suspended in broth, while virus suspensions in water and saline possessed lower infectivity, a fact which may be correlated with the greater filterability of viruses suspended in broth as compared with suspensions in distilled water or saline. Although minute abrasions, not visible with a hand lens, may have been present in the skin of the guinea-pigs, such a condition would naturally be a factor encountered in any normal skin. These experiments suggest that other viruses may be able to pass through what is to all intents and purposes normal skin.

TUBERCULOSIS IN WALES: A GRIM OUTLOOK

In the annual report for 1940-1 of the King Edward VII Welsh National Memorial Association Dr. D. A. Powell, the principal medical officer, makes the following arresting statement, whose implications should give much food for thought: "The stress of war is showing itself most wearily in an increasing shortage of staff, and the position in our institutions is so serious that all our beds—and the need for them was never greater—cannot be utilized. The shortage affects all sections of staff, particularly nursing, and the restrictions of the Ministry of Health on the recruitment of Civil Nursing Reserve personnel to tuberculosis institutions are not making things any easier. The demand for beds is so clamant, however, that every attempt is made to keep the maximum number going in spite of the risks that have to be run, the uninformed criticisms which may have to be refuted, or, worse still, the possible commission of admitted blunders that will have to be condemned." Is it not really all there is to be said about this deplorable

situation (blame for which cannot, however, be laid at the door of the association itself)? Almost half the patients seen at the dispensaries had a positive sputum on first examination, and of these nearly 60% were classified as advanced cases. Dr. Powell adds: "When it is remembered that owing to our shortage of beds most of the cases have to wait for a long time, and therefore the ground still further before they can be admitted, the grimness of the position can be appreciated." Owing to the need for economy in the use of paper the present report is in abridged form, and it was not possible to include separate reports by medical officers, but among the points brought forward by them and summarized by Dr. Powell the following must be mentioned: (1) "As regards rationing, the consensus of opinion is that so far no definite effects upon patients have been detected, but it should be borne in mind that the patients themselves, thanks to the self-sacrifice of other members of the family [our italics] particularly the womenfolk, would probably be the last to feel the pinch." (2) An increase has been noted in the incidence of tuberculous glands in the neck, and particularly of tuberculous meningitis. (3) Fear is expressed about the importation of new infection into isolated hamlets and rural districts by evacuees, etc. (4) Disquieting signs of trouble arising from the effect of war work upon young women are evident in the occurrence of an unusual number of cases of pulmonary tuberculosis, many of an acute type, in a certain factory. Finally, as in previous years we note with satisfaction the great increase in the use of radiography, and deplore once more the inadequate contact examinations: in 1940 nearly 16,000 new cases were examined for the first time, but only just over 1,800 new contacts. This represents even a smaller ratio than in the previous year. In view of this, and in view of the disquieting shortage of bed accommodation, it appears premature to stress, as is done by Lord Davies in his address to the Board of Governors, the immediate application of mass radiography on a large scale. Mass radiography should be introduced, and the sooner the better, but must be preceded by the provision of adequate beds for those discovered to have active disease and of facilities for the full investigation of the large number of people with suspicious radiographs.

EPIDEMIOLOGY OF AMERICAN Q FEVER

For some years a febrile infection has been known to occur in Queensland chiefly among dairy farmers and slaughterhouse men. The cause of this disease was found by Burnet and Freeman⁶ to be a rickettsia, which was termed by Derrick⁷ *Rickettsia burneti*. A series of mild or subclinical laboratory infections was described both in Melbourne (Burnet and Freeman⁸), where no natural infections have ever been reported, and in Brisbane (Smith, Brown and Derrick⁹). The epidemiology of the disease in Australia would seem, however, to be associated with infection of a tick, *Haemaphysalis numerosa*; the Queensland bandicoot *Isodon uropygus* is a reservoir, though other wild animals in Australia may play a similar part.

In 1938 Davis and Cox¹⁰ described a filter-passing agent from ticks *Dermacentor andersoni* collected near Nine Mile Creek in Montana. The organism was described by Cox and classified as belonging to the rickettsia group, the name *Rickettsia diaporica* being proposed (Cox¹¹). Dyc

¹ *Amer. J. Trop. Med.*, 1928, 2, 371.

² *Trans. Roy. Soc. Trop. Med. Hyg.*, 1931, 25, 229.

³ *J. Path. Bact.*, 1936, 43, 327.

⁴ *Amer. J. Publ. Hlth.*, 1939, 29, 1103.

⁵ *J. Exp. Med.*, 1940, 72, 331.

⁶ *Med. J. Austral.*, 1937, 2, 299.

⁷ *Ibid.*, 1939, 1, 14.

⁸ *Ibid.*, 1939, 1, 11.

⁹ *Ibid.*, 1939, 1, 11.

¹⁰ *Publ. Hlth. Rep. Wash.*, 1938, 53, 2239.

¹¹ *Ibid.*, 1938, 53, 2270.

¹² *Ibid.*, 1939, 54, 1522.

¹³ *Ibid.*, 1938, 53, 2277.

reported the first proven human infection in America in a laboratory worker, and pointed out that there was a close similarity between Australian Q fever and the disease produced by the rickettsia isolated from ticks in Montana.⁹ Both Australian and American workers are now agreed that the diseases in the two continents are identical, and that the rickettsias are two strains of one and the same organism. In these circumstances it seems inadvisable to apply two names to one and the same organism, and since *Rickettsia burneti* was proposed by Derrick² on January 7, 1939, while the name *Rickettsia diaporica* did not see the light of day till October 6, 1939, it follows that the latter should be dropped and the former used. If a distinction is desirable between the Australian and American strains the latter would become *Rickettsia burneti* var. *americana*.

At first sight it would seem that American Q fever must rank as an ordinary tick-transmitted rickettsiosis. Recent events may, however, modify this view. Two cases are recorded by Hesdorffer and Duffalo¹⁰ of patients who gave no history of tick bites, though it is true they had been in the woods in Montana. One case, however, occurred in October and the other at Christmas, when it was most unlikely that ticks would be present. A striking event in the history of this infection is recorded by Hornibrook and Nelson¹¹ from the National Institute of Health at Washington, D.C., where an institutional outbreak of Q fever occurred among the workers, from whom Dyer and his colleagues¹² were able to isolate *Rickettsia burneti*. Altogether there were fifteen proved cases of infection among the 153 persons employed in one building, but there were no instances of infection in the wing of the building where work has been in progress on Q fever since the spring of 1938. Whether or not this unit served as a focus of infection is open to question, for the personnel of the unit itself was spared and the cases were widely distributed throughout the building. No valid evidence was obtained that personal contact or the intervention of an arthropod vector was in any way responsible for the transmission of the disease. The most remarkable feature of the institutional outbreak was a central pneumonia or pneumonitis, detected only on x-ray examination. This condition was also present in the cases described from Montana. It is of particular interest, because in the past year or two a number of cases have been described from widely scattered areas in the U.S.A. in which pneumonitis was associated with clinical symptoms like those found in proved cases of American Q fever. This infection may therefore be not uncommon, with a distribution far wider than was at first imagined.

THYROIDECTOMY IN DIABETES INSIPIDUS

The diuretic effect of desiccated thyroid in nephrosis is well known, but its relation to water balance in general has not been completely understood, though some association with the pituitary has been suspected. As long ago as 1889 Rogowitsch showed experimentally that the cells in the anterior lobe of the pituitary increased after thyroidectomy, and this was later confirmed clinically. In 1920 Strauss described a case in which diabetes insipidus gradually disappeared as the patient developed myxoedema. It was also found that experimental diabetes insipidus in dogs was checked by thyroidectomy but returned when thyroid extract was administered. In cats the same sequence of events occurred after cutting the supra-opticohypophyseal tracts. It would appear, therefore, that in the relation

between the thyroid and pituitary the former is a factor in the regulation of water balance. This suggested to H. Blotner and E. C. Cutler¹ to apply such observations to the treatment of diabetes insipidus by total thyroidectomy, which they accordingly carried out on three patients in 1935; since then reports of four other cases have appeared. Of the first three two were relieved; these happened to be cases of post-encephalitic Parkinson's disease. The remaining one was unaffected, but there was reason to believe that accessory thyroid tissue was present. Of the second group two were relieved, both post-encephalitics, and in these the parathyroids were also removed. Administration of thyroid re-established the polyuria but dinitrophenol did not, showing that the relapse could not be attributed merely to raising the basal metabolic rate. The authors' conclusion is that in the normal person there is a balance between a diuretic principle in the anterior lobe of the pituitary and an antidiuretic one in the posterior lobe, and that the former acts through the medium of the thyroid. This does not conflict with the observations of S. W. Ranson and his associates to the effect that the supra-opticohypophyseal tract controls the secretion of the posterior lobe hormone. Blotner and Cutler accordingly advocate total thyroidectomy in cases of diabetes insipidus associated with post-encephalitic Parkinson's disease. Though they have established a point of theoretical interest and importance, the number of successful cases is too small to be a basis for recommending such a drastic procedure.

ECONOMY IN PHENOL AND ITS DERIVATIVES

The attention of the Ministry of Health has been drawn to the need for economy in phenol and certain allied compounds, and a circular on the subject was issued on October 10 to all hospitals connected with the Emergency Medical Service. Medical officers are requested to be as sparing as possible in the use and prescription of the following substances and preparations containing these substances: (a) phenol; (b) salicylic acid, acetylsalicylic acid (aspirin), sodium salicylate, and methyl salicylate; (c) phenolphthalein. Steps are being taken through the machinery of the E.M.S. to ensure that medical officers, nurses, and dispensers are made aware of this need for economy, and we are asked by the Ministry to give the widest publicity to the matter, so that the profession as a whole may co-operate in limiting the use of phenol and its derivatives.

The Lister Medal for 1942, which is awarded in recognition of distinguished contributions to surgical science, has been granted to Professor Evarts A. Graham, professor of surgery in the Washington University. He will deliver the Lister Memorial Lecture in 1942, or later, under the auspices of the Royal College of Surgeons of England. This is the seventh occasion of the award, which is made by a committee representative of the Royal Society, the Royal College of Surgeons of England, the Royal College of Surgeons in Ireland, the University of Edinburgh, and the University of Glasgow.

We regret to announce the death of Mr. H. Edmund G. Boyle, F.R.C.S., late senior anaesthetist to St. Bartholomew's Hospital.

⁹ Publ. Hlth. Rep., Wash., 1939, 54, 1229.

¹⁰ J. Amer. med. Ass., 1941, 116, 1901.

¹¹ Publ. Hlth. Rep., Wash., 1940, 55, 1936.

¹² Ibid., 1940, 55, 1945.

¹ J. Amer. med. Ass., 1941, 116, 2739.

THE FUTURE OF MENTAL HEALTH

BY

KARIN STEPHEN, M.A., M.R.C.S.

The report of the Mental Health Committee of the B.M.A., recently published, comes at an opportune moment when problems of post-war reconstruction are beginning to be discussed. As was pointed out in a leading article in the *Journal* of August 23 (p. 269), there are a very large number of patients, both old and young, who require care and treatment from medical practitioners trained in mental medicine, and our present facilities are by no means adequate to deal with them satisfactorily. The demand for reconstruction, which exists already and will gather strength as victory approaches, may give the opportunity for a great step forward in psychological medicine, on the results of which success in many of our other plans for a better world may depend—even success in the prevention of war itself. But plans must be well laid, and schemes which only sound like an advance and lack the essentials must not be allowed to go forward and be embodied in legislation. So we must not blind ourselves to the difficulty of our task. The possibility of setting up the model scheme for the treatment of mental illness described in the B.M.A. "Grey Book" makes an excellent start as regards the general organization required, but the scheme does not deal with the crucial question of how the doctors who are to carry it out are to be selected and trained. The success or failure of the whole plan, however, centres round this vital point, since even the best organization cannot give good results unless those who are to administer it are capable of performing their task. The selection and training bristle with difficulties.

Two Types of Doctor to Train

There are two types of doctor to consider, whose training involves quite distinct problems. In the first place there are the specialists who propose to devote their whole time to the actual practice of psychological diagnosis and psychotherapy: in addition there are the general practitioners, who would need only to know enough about psychological medicine to make a provisional diagnosis, since they could then refer the cases to the specialist for a further opinion and for treatment when this was required.

Taking the case of the specialists to begin with, how should they be trained? Stress has rightly been laid on the length and complexity of the treatment in mental illness and the knowledge and highly specialized skill required. There is also the further difficulty, when any scheme for setting up the right kind of medical service in mental medicine comes to be worked out, that the question as to what sort of training is suitable to qualify a doctor to undertake this difficult task is a matter of hot dispute between the different schools of psychotherapy. Even if this dispute could be settled, a further problem would arise in choosing the candidates to be trained, since not everyone who has a medical degree possesses the type of personality needed for making a good psychotherapist. The problem is indeed formidable, but if we are prepared to be bold it may not be insoluble.

There is one point, at any rate, on which, in spite of all their other differences, most schools of psychotherapy now agree, and that is that any doctor who means to specialize seriously in this branch of medicine must himself undergo some form of personal treatment before he can hope to have the self-knowledge which is requisite for the proper understanding and safe handling of his patients. This would mean that the training of psychotherapists would involve a double procedure, of which the intellectual understanding of psychopathology, which can be learnt from books, lectures, and clinical demonstrations and tested by examinations, would only be the less important, though still necessary, half. The now-established D.P.M. would supply this part of the training, provided more extended facilities for obtaining the necessary teaching were made avail-

able, and provided also that the syllabus were revised to cover the new requirements. As it stands the syllabus appears to be overweighted with neurology, since, although the standard here is admirable, the nervous system is, after all, only one among the many systems of the body which are liable to disturbance from psychogenic causes and in which it is important for the psychiatric specialist to be able to make a differential diagnosis between organic and psychogenic disease. This problem of differential diagnosis does not appear to be given sufficient weight in the D.P.M. as it stands at present: even in respect of the nervous system, the important question of psychogenic pain, for instance, seems to be neglected. The questions on psychopathology are not all up to the same high standard. Some of them, however, would afford an excellent opportunity of testing the candidate's knowledge, but much would depend on who the examiners were and whether their own knowledge of psychopathology was wide enough to enable them to pass an adequate judgment on the candidate's attainments.

Personality and Psychotherapy

Assuming, however, that the revised D.P.M. will provide for the intellectual instruction of the doctors who wish to qualify as specialists in psychological medicine, we now come to the still more difficult half of their training. It was pointed out in the above-mentioned leading article that the personality of the doctor is important in psychotherapy, and that it would only be worth while accepting for training those whose personality was suitable. This is an important point, and it may well be that some of the discredit in which psychotherapy is apt to be held results from neglect of this wise precaution. It would thus be necessary to set up a very carefully chosen selection board to decide on the suitability of candidates.

In selecting these candidates it would be important to take into consideration their previous development, much as one does in taking a psychiatric case history: how were they regarded at home, at school, by their associates; how did they get on with their work and in their social and emotional lives; also, why do they want to take up this exacting career of psychotherapy? A strong inclination for this work may be a favourable indication in many cases; but unfortunately it would seem that a number of people are attracted to the study of abnormal psychology because they themselves are in difficulties; and, while some degree of psychoneurosis does not appear to be any absolute bar to the successful practice of psychotherapy, the work is definitely interfered with if, as sometimes happens, the doctor is really seeking for the solution of his own difficulties via the treatment of his patient.

Choosing the Trainers

Skilful selection along these lines would eliminate the wrong type of candidates and ensure that only suitable personalities were chosen; but this would only be the first step, since, as has been said, it is now fairly generally agreed that even the right type of personality needs further modification and further insight before the candidate is fit to undertake the highly responsible and specialized task of psychotherapy. For the second half of the training—the personal experience of being treated, aiming at producing the necessary character development and self-knowledge which the psychotherapist requires even more than he requires theoretical knowledge—a completely new system would have to be created, and it will be extremely difficult to find reliable trainers in sufficient numbers to cope with the demand. The same board as was appointed to select the candidates would no doubt supply the most suitable trainers also, but there will be the utmost difficulty in arriving at any agreement as to who are themselves qualified to undertake this central task. The success or failure of the whole plan for the development of psychotherapy will probably turn on the constitution of this selecting and training board. The supporters of the different schools of psychotherapy will dispute hotly about its constitution; each will perhaps be partly right, at least in its condemnation of the others. The ideal personnel for such a responsible task as this board would be called upon to undertake actually does not exist, either in this country or elsewhere. Something very far short of perfection must be accepted, but who is to choose this board which will itself have to select and train the candidates? *Quis custodiet ipsos custodes?* Should

it be made up by proportional representation from the various rival schools? Few, it must be confessed, would feel sanguine about the success of such an approach to our problem. How, then, should the board be chosen? Should it be elected democratically by the whole body of competent psychotherapists now practising? Should it be reconstituted at frequent intervals; and by what methods? These are most difficult questions, and yet it is absolutely vital that the best answer should be found, and the people most nearly suitable for the task should be chosen.

At least we know this much, that the same requirements as are essential in the candidates held to be suitable for training in psychotherapy would be needed in the members of the selection and training board: to begin with, the right personality, itself a somewhat rare quality, together with a thorough intellectual grasp of psychopathology. But even these, alone, are not sufficient. The further requirements are that the personality should have been modified, and the intellectual understanding expanded so as to include the emotional realization which comes with deepened self-knowledge and full insight, and which is achieved only when the doctor is able to recognize how this theoretical knowledge applies, not only to patients, but to himself. Only such realization can bring about the resolution of personal conflicts, the full character maturity, and the intellectual clarity and objectivity that are needed to complete the personality and theoretical-knowledge qualifications required for the difficult tasks which even the ordinary psychotherapist, and still more the members of the selection and training board, will be called upon to undertake.

No doubt the standard set by such requirements is appallingly high, but nothing short of this standard will enable psychotherapy to fulfil its possibilities, and if we content ourselves with too little our attempts at reconstruction will fail.

Programme for the G.P.

Turning now to our second question—the training in psychological medicine suitable for general practitioners—here the requirements are different, and the standard, both in personality and in knowledge, need not be so exacting. What these doctors require to know is principally how to recognize the presence of psychogenic factors in their patients' illnesses. They would need to be able to make a rough differential diagnosis between the following:

(a) Straightforward organic illness and so-called "functional" illnesses the symptoms of which often closely resemble those of true organic disease, but which seem to be concerned merely with changes of function, and in which no true organic lesions or irreversible alterations of the bodily organs can be demonstrated: the group, in short, of the hysterical conversion symptoms which may show themselves in the form of psychogenic disturbances either of over- or under-action of any of the bodily systems (nervous, vasomotor, alimentary, urogenital, respiratory, endocrine, or metabolic, etc.), together with those other disturbances of function—e.g., the numerous physical symptoms seen in anxiety neurosis—which appear to be the bodily effect of abnormal emotional conditions rather than symptoms of true conversion hysteria.

(b) Illnesses whose origin is wholly or partly psychogenic but in which organic lesions or irreversible bodily changes may occur—e.g., gastric and duodenal ulcer, mucous colitis, asthma, again possibly some kinds of endocrine and metabolic disturbances, and many more, some already familiar to psychological medicine, others no doubt still to be discovered.

(c) Complicating psychogenic factors in illnesses of purely organic origin.

Lastly, they would need to have a working knowledge of the common symptomatology and diagnosis of the psychoneuroses and psychoses. This programme is formidable enough, but quite a lot of the ground could be covered adequately by instruction in the hospital out-patient departments and psychological clinics if these were staffed by really competent teachers. It is possible that at any rate the clinical papers of the revised D.P.M. could be so framed as to test these candidates as well as the specialists, for whom the whole examination would be primarily designed.

As regards the papers devoted to psychopathology, however, it is highly questionable whether the general practitioner should be required to know much about the theory of psychopathology itself. A strong case could be made for confining this instruction to those who mean to specialize in psychotherapy. The others, with only at best an intellectual knowledge of the subject, would not be qualified to treat patients, and attempts to apply theoretical knowledge, without the personality qualification, self-knowledge, and insight demanded of the specialist, might only prove harmful to patients and bring psychotherapy into disrepute.

ANGLO-SOVIET MEDICAL COMMITTEE

A meeting of the vice-presidents and executive committee members of this organization was held at the house of the Royal Society of Medicine on October 8. The President, Sir Alfred Webb-Johnson, P.R.C.S., took the chair, and in opening the proceedings expressed the satisfaction of the committee at the visit of Sir Charles Wilson, P.R.C.P., to Moscow; he was sure that on Sir Charles's return his advice would be invaluable. The honorary secretary, Dr. Elizabeth Bunbury, reported that in the four weeks since the inaugural meeting a good deal of ground-work had been done. The provisional committee had already forwarded some material to the Soviet Union, including a complete set of the *Bulletin of War Medicine*. A very full summary of recent work on typhoid vaccines, together with an offer to supply good Vi strains for culture, had also been sent. The letter published in the *Lancet* and *British Medical Journal* on September 20 had brought in about seventy-five offers of help. Twenty-six doctors knowing Russian had offered to translate for the committee. A new and immediate problem had arisen—that of giving advice on the purchase of medical supplies for the U.S.S.R. A number of lay organizations had raised considerable sums of money, and there was urgent need for a co-ordinating body on equipment. The President thought that the Anglo-Soviet Medical Committee should accept responsibility for giving advice on medical supplies, but should not be responsible for making purchases or for arranging shipments. Mr. Somerville Hastings agreed about the urgency of this matter; he had found that there were many rival organizations in the markets for the available drugs and equipment. Lord Horder thought that a representative of the Red Cross should be asked to join the committee. Lord Dawson agreed with the President that the committee should advise only and should endeavour to co-ordinate its work with the Red Cross, the Ministry of Supply, and the Embassy. Prof. Ryle suggested that a letter be sent to the Press stating the committee's preparedness to give advice to lay organizations on such questions. It was agreed to set up a subcommittee to explore the situation and make recommendations for action.

BRITISH PHARMACOPOEIA

British Equivalents for Proprietary Drugs

The General Medical Council has approved names for certain substances which are now being produced, or are likely shortly to be produced, by British manufacturers, in some instances under licences granted by the Comptroller-General of Patents, Designs, and Trade Marks. These substances have hitherto been known under other names, which are given below together with the names now approved. The question of including these substances in the *British Pharmacopoeia* is under consideration and, if any of them is included, the intention is that the approved name given below will be its official title. It is hoped that the early publication of these approved names may lead to their general adoption.

Approved Name
Amethocaine hydrochloride
Menaphthone
Pethidine hydrochloride
Soluble phenytoin

Sulphacetamide

Other Names
Decicaine
2-methyl-1:4-naphthoquinone
Dolantin
Epanutin; eptoin; sodium di-phenylhydantoinate; solantran; soluble dilantin
Albucid

Reports of Societies

FAT AND CARBOHYDRATE METABOLISM

The presidential address in the Section of Therapeutics and Pharmacology of the Royal Society of Medicine was delivered on October 14 by Dr. R. D. LAWRENCE, whose main subject was the interactions of fat and carbohydrate metabolism. He prefaced it by a tribute to his predecessor in the chair, the late Sir William Willcox, and by what he called some sobering reflections, to which his controlled experiments in diabetes had led him, on clinical research.

The Dangers of Hypothesis

Dr. Lawrence said that in medical research, especially in the rapidly progressing subjects of metabolism and chemistry, any guess that was made—or any hypothesis, if that word was preferred—would generally be wrong. The best they could strive to do was to establish a new fact, which as often as not was merely a new interrelationship of two already known phenomena. Any total explanation or any large hypothesis built up around this new fact would almost certainly be proved later to be wrong or only half right. Such imaginative processes were fascinating and inevitable to the inquiring scientific mind, and were integral stepping-stones in research, but it was all too easy to become biased in favour of one's own hypothesis, to plan a series of experiments to yield confirmatory results, and to harden one's mind against contradictory results and thus perpetuate error. Another great difficulty was the impossibility of reading and digesting all old and new work on the problem. Such width of reading and knowledge seemed possible only to a whole-time worker in a limited field.

For his own part, working in a field in which error was almost inevitable, he had at least tried to guard himself against two tempting "crimes" in clinical research: (1) the premature publication of improperly controlled and half-proved facts which it might take a whole generation to disprove; and (2) building up wide generalizations and hypotheses, even on true evidence, which were bound to lead others astray for a long time.

Diabetic Metabolism

No one (said Dr. Lawrence) had produced a very clear picture of either fat or carbohydrate metabolism alone. It was certain that plants and animals built up reserves of fat from carbohydrate, but the reverse process was still unproven in animals. In normal human metabolism fat-carbohydrate interaction was always hidden, and laborious studies of the respiratory quotient could give only broad indications. In starvation and diabetes, however, these interactions were more obvious. The last few years had brought to light important new experimental facts which had changed and simplified their ideas regarding diabetic metabolism. It was clear that either carbohydrates or fat could be used as the main source of body fuel, but their metabolic course was very different in both chemistry and function. Carbohydrate storage was poor; on the other hand the fat stores of the very obese could provide fuel, theoretically at least, for about six months. Carbohydrate appeared to be the preferential fuel of muscular activity. This contrast between fat and carbohydrate was also manifest in the blood and internal organs, especially the liver. The carbohydrate-fed liver showed a high percentage of glycogen and a small amount of fat, but as soon as carbohydrate was not available the glycogen virtually disappeared and fat accumulated. The liver might become palpably enlarged, the spleen might enlarge, with lipid deposits; also, at any time when the switch-over occurred from a carbohydrate to a predominantly fat metabolism ketone bodies accumulated in the blood and urine.

The Ketone Bodies

Ketone bodies occupied a most prominent place in the diabetic picture, not only theoretically but in the therapeutic aspect. It had now been shown conclusively that ketone bodies were burned peripherally independent of carbohydrate oxidation. He considered this fact of such importance as to warrant men-

tioning the experimental evidence. Under the commonest normal conditions of diet carbohydrate was predominantly and preferentially used for metabolism, but as soon as carbohydrate was cut off or became insufficiently available for the needs of metabolism depot fat went to the liver and was metabolized to ketone bodies, which then provided adequate fuel for the body. Ketosis was specially harmful when it appeared suddenly, as when insulin was cut off from a fat diabetic dog or human patient. He had been often struck by the ease with which a patient who had supported a severe gradual ketosis succumbed to a sudden one which seemed to be milder than the condition he had tolerated for a long time. Normal men and animals developed an intense ketosis when first changed over to fat metabolism. It appeared that, as with other functions commonly in abeyance, it took some time for the full and efficient use of the new function to be developed. Insulin in the diabetic and sugar in the starved animal switched the metabolism straight back from fat to carbohydrate, and ketonuria usually disappeared in from three to six hours.

He next described an unusual case of diabetic lipaemia in which the lipaemia proved to be dependent on the blood-sugar concentration and not on the diet. From this it was suggested that diabetic obesity was produced directly by hyperglycaemia. The reason why the case he described showed a raised blood fat as the result of a high blood sugar was that this patient had lost the power of subcutaneous fat storage.

Diabetes and Obesity

A very large proportion of diabetics were obese before the manifestation of the symptoms of their disease. This applied not only to the middle-aged who had been obese for a long time but also to many people who developed diabetes in their second, third, or fourth decade. For a year or two before the diabetes came on they might be weighing ten or twenty pounds more than they had ever done before, but as soon as the symptoms got worse that weight disappeared. The explanation often offered was that obesity in some strange way had overstrained the pancreas. He thought this was to put the cart before the horse. These people had been mild diabetics, and it was the hyperglycaemia which had made them fat. Later, as carbohydrate tolerance failed and excretion of sugar rose, they developed all the typical symptoms and lost their excess of weight. It seemed to him that if enough insulin were given to utilize a sufficient food for an active life and to prevent ketosis, but insufficient to prevent a raised blood sugar for several hours a day, then from this high blood sugar obesity developed with which it was very hard to cope. There appeared to be two types of lipaemia—anabolic and katabolic, the latter being the usual condition observed in the disease, and the former a condition which, apart from a few hours after a heavy meal, was never really visible.

Finally Dr. Lawrence spoke of various lipotropic factors such as choline. He described the occurrence of large fatty liver in diabetic children, and the therapeutic possibilities of these factors in such a condition. His personal experience of the syndrome of "hepatomegalic dwarfism" was very slight. He had seen many diabetic children with enlarged liver, but as a rule this was only temporary and quickly disappeared with adequate treatment. In only two out of 500 cases had he seen a persistent and severe development of this syndrome. It was a syndrome which could not be mistaken—the protuberant belly, the halted growth, the infantile face and hands. These cases were strenuously treated with choline without the slightest effect on the liver, but after a few weeks in hospital with zinc-protamine-insulin and some other insulin the liver was brought down. He had also tried lipocae extract, introduced and used in America, but without any useful result, and in his view this condition of hepatomegalic dwarfism was due to bad diabetic control.

There was much evidence, but little exact information, pointing to the influence exercised by other endocrines and even vitamins on both fat and carbohydrate metabolism. The pituitary gland had clearly a most important influence. But in conclusion Dr. Lawrence said that it was quite probable that one day it would be proved that his disjointed remarks on this occasion were well-meaning but erroneous guesses in a difficult subject.

Correspondence

Head Injuries in Motor-cyclists

SIR.—In his important communication on "Head Injuries in Motor-cyclists" (October 4, p. 465) Prof. Hugh Cairns stresses the importance of a crash helmet in minimizing the effects of head injuries in accidents to motor-cyclists.

In 1914, when medical officer to the Brooklands track, I had a profile view of a motor-cycle crash during a race, and through the clerk of the course I was put in touch with the manufacturers of police helmets and designed a crash helmet that was used for the Tourist Trophy Isle of Man Race of that year. The reply of the medical officer attending that race to my inquiry as to how the helmet had worked was brief and to the point: "Every year the humdrum of medical practice in the Isle of Man is relieved by interesting concussion cases in our hospital from the Tourist Trophy Race; this year, thanks to your damned helmet, we have had none."

After the last war, although changes were made in the shape of the helmet, its principles remained the same. It was built of layers of linen soaked, I believe, in shellac, and this was attached to a lining of web slings which were sometimes padded and which fitted closely to the rider's head. The lining came down over the back of the neck and was continued on to a chin strap which retained the helmet in position. This helmet was practically unbreakable, and even after most severe impacts, in which the rider escaped without injury, I have seldom seen more than a partial tear slightly separating the individual layers from each other. The surface was polished and undentable, so that almost any impact due to a fall was deflected. It came into use in 1920, and during the following sixteen years I admitted only two head injuries to hospital from accidents sustained by motor-cyclists when riding at Brooklands and wearing a properly constructed helmet. Both of these were exceptional, one man being thrown with great force at right angles against a vertical face of concrete, and the other striking the side of his head when his motor-cycle fell over sideways when he was too high up the banking. Both these men, one unconscious for eleven days and the other for five weeks, made complete recoveries and returned to their full ordinary work.

Unfortunately, I have kept no record of the number of crashes that happened at Brooklands, but except for five Saturdays in each season when the track was in use for other purposes motor-cycle races were held nearly every Saturday afternoon from April till October. It was seldom that at least one rider was not flung from his machine in these races, and there were other crashes there in the course of the year at long-distance races. Every week the track attendant reported to me one or two accidents during the almost daily practice on the track where nothing more serious than trivial abrasions had been received, and there were, of course, numerous accidents at other meetings in various parts of the country, again with a notorious absence of serious results.

It became obvious that any projection on the surface of the helmet was dangerous, and the wearing of badges stuck on to it was prohibited. At one meeting three men were hurt who were wearing a new type of helmet, the base of which was encircled by two parallel strings which prevented it from splaying outwards and helped to retain its shape (see Fig. 6 in Prof. Cairns's article); these cords slowed the helmet when skidding on the trackway. I reported the accidents to the Auto-Cycle Union Committee, and they were at first rather sceptical about their being due to such an apparently trivial cause, but it was soon found that men wearing these helmets did get hurt when they were thrown from their machines, and one was killed in the Isle of Man, where the friction of the cords against a wall slowed the passage of his head against it, allowed his body to swing round and fracture his cervical spine.

I do not know if there is more than one pattern of helmet issued to Army motor-cyclists, but those I have seen have not embodied the lessons learnt in track racing. They had an outer shell separated from an inner lining by a layer of felt. The outer shell was hardened, but a moderate impact could crack it, dent it, or otherwise damage it, and the underlying felt being soft the whole helmet would be compressed and crushed, with

serious or fatal associated injury to the skull. I recently saw one of these helmets that had been flattened by a motor-cycle passing over it when the wearer was lying on the ground; his skull was crushed and the brain extruded, an injury the Brooklands helmet would certainly have prevented.

I feel that a properly constructed helmet would have resisted the impact that punched out a hole in the outer casing referred to in Prof. Cairns's Case II and prevented the severe damage noted in Case III. Case IV shows how easily the helmet fractured, as the impact took place at only 25 m.p.h., and in many accidents at Brooklands the riders crashed at over 100 m.p.h. In Case V the dent on the helmet showed how inefficient was the surface hardening, which allowed dangerous localization of the force of the impact: that could never happen on the hard undentable Brooklands model.

I am fully in agreement with Prof. Cairns that in the cases he has cited the helmet worn has lessened the effect of the impact, but I am sure that the injuries described would have been still further minimized by a model conforming more closely to the principles of that so long in use at Brooklands. It would be a pity if his valuable article tended to suggest that enough had been done in the matter of head protection and that finality had been reached in the construction of crash helmets.—I am, etc.,

Weybridge, Oct. 15.

ERIC GARDNER.

Increase in Fatal Road Accidents

SIR.—The opening paragraph in your leading article on head injuries in motor-cyclists (October 4, p. 481) may give the impression that the number of adult pedestrians killed in road accidents in wartime has not increased. It is a fact that during the second twelve months of war there was a slight decrease in the number of such road users killed as compared with the first twelve months of war, but the fatalities still exceeded 4,000, or nearly 2,000 more than in pre-war years. In fact, of the 5,300 additional victims in the first two years of war, some 4,300 were pedestrians, 550 were passengers on vehicles, and 400 were motor-cyclists.—I am, etc.,

J. A. A. PICKARD,
General Secretary, Royal Society for the
Prevention of Accidents.

Oct. 7.

Science and World Order

SIR.—The article on the British Association conference on "Science and World Order" (October 11, p. 516) stated that "the plan was to have a few papers to be discussed by British scientists . . . but men of science of other nationalities . . . proffered contributions." This does not correspond to the facts. On the contrary, the British Association advertised this conference as international, formal invitations were sent to foreign Governments (I have one such invitation on my desk), and in all official messages and communications to the daily papers the presence of delegates of all nations was stressed.

I agree, however, with your contributor that the conference was amorphous; it was on the whole, in my opinion, a failure. And this because, although widely advertised as scientific and international, it was neither. It was not scientific because, although some scientists took part, the "headliners" were distinguished politicians, diplomats, and a famous novelist. It was not international because, although in all governmental communications "famous scientists from all nations" were to be made welcome, no place was made for foreign delegates in the work and discussions, and on the whole few Allied and foreign scientists participated.

For this reason the main scientific problems of these terrible days have not been touched. The disaster of the European populations dying of starvation and threatened by epidemics has been mentioned by only one speaker, Dr. Kodicek, and his speech was, of course, not in the newspaper headlines. This, however, is the great problem to be solved by the scientists of to-day, and I suggest the convocation of another conference, purely scientific and really international, to concentrate on its solution. I hope that British scientists will take the lead in this. It should not be said that science is once more divorced from reality, and that to the danger of the civil populations of the Nazi-occupied countries it responded only with empty phrases and post-war Utopias.—I am, etc.,

London, W.I, Oct. 15.

A. P. CAWADIAS

Clinical Manifestations of Exposure to Tetryl and T.N.T.

SIR.—The article by Drs. J. Hilton and C. N. Swanton (October 11, p. 509) raises points of special interest at the present time, when the early recognition and treatment of industrial disease are of great importance to medicine and the national production effort.

Two of the conditions described in this article—namely, toxic jaundice and aplastic anaemia—carry a high mortality, yet from the authors' description of toxic jaundice this in its early stages may simulate the benign cyanosis which they also describe. We are not clear how the authors differentiate (a) "mild cases in which the patients are otherwise well" and who "remain in contact under observation" from (b) those cases of symptomless cyanosis which "herald" toxic jaundice; and whether the absence of symptoms is the criterion employed for allowing the cyanosed worker to remain in contact.

In our experience, T.N.T. contact workers showing either lilac or ashy-grey cyanosis may admit, on inquiry, to no symptoms. We initiate treatment, and according to the clinical findings arrange for contact or non-contact work in each case. With this treatment improvement is visible in the course of a few days, and we have been struck by the fact that in this initial phase of recovery the worker notices his improved condition, and realizes by contrast his previous ill-health. He comments spontaneously on the fact that he has been feeling "giddy," "dopey," "drunk," "tired out," for some time now. We have found in these workers a mental and physical torpor, insidious in onset, which they neither realize nor express.

The routine treatment we employ, and which so far has proved successful with these patients, has been outlined with illustrative cases in detail by Dr. J. H. Watson in a paper as yet unpublished. Briefly, it consists in the early use of vitamin C and sodium carbonate, supplemented where necessary according to the type of poisoning present. The patients remain at work and receive treatment daily at the factory surgery, the choice of work being determined by our clinical findings.

The investigation in all cases comprises a clinical examination of the patient, with a careful note of their work history and previous occupation, a blood count and differential white cell count, Webster's urinary test for T.N.T., and urinary tests for bile and urobilinogen. In certain cases a spectroscopic examination of the blood is made. Any patient who does not show a normal blood and urinary picture is temporarily removed from contact. Hitherto we have been fortunate in having encountered no cases of toxic gastritis as described by Drs. Hilton and Swanton.

In conclusion, we should like to endorse their statement that factory medical officers are anxious to co-operate with general practitioners in helping to diagnose these conditions. We believe that the detection and prompt initiation of treatment in workers showing the earliest signs of T.N.T. toxæmia will arrest the course of a condition which may otherwise progress to a fatal issue, or incapacitate the worker for a long period.—We are, etc.,

E. K. WILLIAMS.
G. H. THOMSON.

Oct. 15

SIR.—I was interested to note that Drs. J. Hilton and C. N. Swanton (October 11, p. 509) had found common gastric signs and symptoms in exposure to tetryl (or C.E.) and T.N.T. I consider the probable explanation is that both C.E. and T.N.T. stimulate the appetite. There are a certain proportion of the new entries to the factory who suffer from dyspepsia, and the stimulation of the appetite by C.E. and T.N.T. thereby aggravates the already established gastric condition. Many of these people have previously suffered from total or intermittent unemployment, with resultant dietetic restriction. The better economic state, superadded to the stimulated appetite, requires in those people a short time to rectify. At the same time many of these people have to travel long distances to work, and either through distaste for breakfast or lack of time to take breakfast the result is that they have to start work on an empty stomach. We experienced this difficulty, but excellent canteen arrangements solved this, and I believe we outstrip all other factories, as 65% of our employees take a hot cooked meal each day at the factory canteen, whereas at other factories the highest total is 25%. We have here none of this so-called T.N.T. gastritis.

Here it is interesting to note that Viscount Chetwynd during the last war reduced his gastric cases from 11.6% to 0.7% by suitably feeding his employees.

Regarding methaemoglobin, I have made an extensive investigation which has been cross-checked by experts, and we have not discovered, up to date, methaemoglobin. In some cases a pigment resembling sulphaemoglobin has been found. I have been specially interested, as I have wished to connect up whether this condition might be due to the Mackenzie-Wallis nitroso bacillus, which has the power of reducing nitrogen compounds. This bacillus is found in the saliva and the faeces. Splenic dysfunction should not be overlooked. The cyanosis is the mauve or purple cyanosis of sulphaemoglobin, as distinct from the chocolate-brown cyanosis of methaemoglobin.

Regarding toxic jaundice, the high 30% mortality and the fact that recent advances in therapy have not been used in treatment suggest that no progress in the outlook has been made since 1914-18. This is certainly not the case with us, as our mortality for the seven months before the perfection of new methods of treatment was very much less than 30%, but since the standard of treatment we have now attained the results have been that we have had no fatal case in this last six months. The early diagnosis and treatment of what I term the pre-toxic jaundice and the pre-aplastic state is our aim. The pre-aplastic state is a definite macrocytic type of anaemia in which a polymorphonuclear leucopenia is microscopically found.—I am, etc.,

Oct. 15.

JOHN H. WATSON, M.B., Ch.B.

The Aqueous and Glaucoma

SIR.—Your leading article on "The Aqueous and Glaucoma" (October 11, p. 515) is, I submit, *ex parte* and not in your best judicial manner. Before such definite claims can be made on behalf of dialysis, criticism such as I have brought forward from the outset must be met and answered, not merely ignored. These objections I have summed up in two recent articles, "The Mechanism of Aqueous Secretion in Mammalia" and "The Mechanism of the Intra-ocular Pressure in Mammalia," which appear in the current volume of the *British Journal of Ophthalmology*.

Admittedly dialysis appears superficially as a straightforward physical process. In the eye, however, dialysis cannot take place, for the simple reason that the mechanical—that is, anatomical—conditions are such that it is a physical impossibility. The dialysis of aqueous is, in short, the conception of function operating without a mechanism. This is only one, though I suggest a somewhat fundamental, obstacle to the theory of aqueous dialysis and all its implications.—I am, etc.,

Nottingham, Oct. 13.

THOMSON HENDERSON.

Voluntary Hospitals

SIR.—May I claim two fundamental virtues for the voluntary hospital in addition to those so well presented by your recent correspondents.

I divide doctors into medical artists and medical tradesmen, and the present tendency is for the latter to predominate. I submit that the peculiar mental atmosphere which has evolved in voluntary hospitals tends specially to foster the growth of clinical artistry. The impelling motive in their doctors (and hence in their nurses) is not primarily to earn money or please a committee but to satisfy their individual sense of artistry in every job well done, and if any of the staff can find a better method of alleviation or cure he is gratified in his artistic sense and also by the appreciation of his fellow artists on the staff—especially if the new method is worthy of publication. This spirit of artistry automatically secures the best interests of the patient, for perfunctory medical work can easily satisfy a committee or the lay public. They mistrust striving and originality, preferring a comfortable economical routine, with no complaints or questions asked. Such an atmosphere is deadening to medical aspiration.

My second point is that medical psychologists are constantly preaching the benefit to be obtained from altruistic actions—so cleverly taken up by the Boy Scout's good action every day. Now the voluntary hospital system from top to bottom provides an enormous field for altruistic effort—for each hard-

working member of the lay board down to the humblest subscriber. If all our hospitals were run by the State or municipality the whole of this invaluable and satisfying outlet for altruism would be swept away—a real though imponderable disaster on a national scale. For neuroses batten on selfishness and yield to altruism: the human mind is never satisfied to live for itself alone.—I am, etc.,

Hull, Oct. 9.

FRANK C. EVE, M.D., F.R.C.P.

Tuberculosis Rampant

SIR,—Though I have been practising in England for only three years, I should be glad if you will allow me to make a few observations in your correspondence columns.

Much has been done for tuberculosis in this country, and quite a lot written about "carriers" in the columns of your *Journal*, but still the fight against the tubercle bacillus seems a hopeless one, as the enormous toll shows every year. During my short stay here I have met a few patients with active pulmonary tuberculosis who are allowed to leave the sanatorium if and when they wish. They mix with their friends and relations, and, in one particular case, with a family on whom the patient and his family were billeted—all eating and associating in a common room. Representations to both the sanatorium and local authorities were of no avail, the sanatorium authority declaring he cannot keep a patient in against his will.

The seriousness of such a state of affairs is only too obvious. A patient classified as T.B. II+ with cavities in both lungs was allowed to return to his work because "he was very anxious to go back to work." With a decided increase in tuberculosis, a definite decrease in resistance after two years' war conditions, and the forthcoming influenza epidemics with such potent "carriers" about, one dreads to think how much greater the increase in tuberculosis will be in the near future. More rigid control seems the only answer.—I am, etc.,

Maltby, Oct. 11.

A. H. BARTLEY.

Treatment of Haemorrhagic Disease of the Newborn

SIR,—While not claiming "a much wider experience" of the treatment of babies who bleed in the newborn period than Dr. J. J. Robb (October 11, p. 526), I yet venture these comments.

The rational treatment of any patient who bleeds depends, whatever his age, on the cause and the severity of the bleeding. When a newborn baby bleeds it may have a hypoprothrombinaemia, a peptic ulcer, rarely even a thrombocytopenia, or there may be an abnormal condition of the erythropoietic tissues or a severe general infection. This far from exhaustive list may present great difficulties in differential diagnosis. We need at least a full examination of the patient, a complete blood count and study of blood films, and a prothrombin estimation.

Without this information the treatment of bleeding in the newborn baby remains empirical and the assessment of new treatments impossible. The indication for vitamin K is a hypoprothrombinaemia; for a transfusion of whole blood, anaemia. Of the ritual injection of blood, citrated or not, intramuscularly or subcutaneously, whether from a blood relation, male or female, or from a friend of the family, I remain sceptical; there are too many cases where the patient recovers without treatment of any kind.

Haemorrhagic disease of the newborn is a time-honoured label but an insufficient diagnosis. A closer study of these cases is essential before the value of any one method of treatment can reasonably be discussed.—I am, etc.,

ALFRED WHITE FRANKLIN.

St. Albans, Oct. 13.

Organization of E.N.T. Department in E.M.S.

SIR,—Many will have read with much interest the article on this subject by Mr. V. E. Negus (October 11, p. 519). My experience in an E.M.S. hospital—though perhaps less extensive—has been essentially similar to his, and I endorse his views as to the need for a fully developed E.N.T. department in a general hospital of any size. Unfortunately my experience of the need for equipment has also been exactly the same. Mr. Negus writes: "Unfortunately the equipment which I consider

necessary has not been provided. That supplied is insufficient in quantity for the many patients who must be examined, treated, and operated upon in this sector, and is in many instances of a different pattern from that to which my colleagues, my assistants, and I have been habituated. The return of civilians to their war work and of soldiers to their units should not be impeded by lack of equipment. We have had to improvise instruments and use privately owned ones to fill the gap."

Before war was declared, and as soon as I knew that I should be working at an E.M.S. hospital, I began trying to obtain the simpler surgical instruments for the E.N.T. department at that hospital, but unfortunately they have not even now been provided. I wrote many letters to the Ministry, and interviewed personally each of the three Ministers of Health who has held office since the war began, but simple instruments in daily use in every E.N.T. department are still lacking in the hospital in which I work. Mr. X, who chooses E.N.T. instruments for E.M.S. hospitals, may be able to do first-class work with the aid of, or in spite of, the instruments he selects for us, but it does not follow that Mr. Negus or I can do even passable work with them. I can say with truth that since the commencement of the war I have never done an E.N.T. operation in an E.M.S. hospital without using some at least of my own instruments. This may work moderately well if I know beforehand the exact nature of the operations which I have to perform. If I do not, I have either to send for my instruments or postpone the operation to another day—thereby wasting public money.

I wonder if the experience of Mr. Negus and myself has been shared by others.—I am, etc.,

London, Oct. 15.

SOMERVILLE HASTINGS.

Mobile First-aid Posts

SIR,—To-day I had the privilege of being present with a competing unit at a regional competition at Cambridge for mobile first-aid posts from the Eastern Counties. Though beaten by better teams we had a pleasant and instructive day and a valuable opportunity of discussing our work and methods with members of other units. As a result, I should like to comment on some points which seem to me to be important.

1. The present functions of mobile first-aid posts, as I understand them, are: (a) to supplement or replace overworked or damaged fixed aid posts; (b) to set up temporary aid posts in bombed rural areas, or at points where there may be a concentration of casualties beyond the capacity of local services; (c) in case of invasion, to set up advanced dressing stations for civilian, Home Guard, or Army casualties, wherever required.

2. For these purposes equipment is issued in portable cupboards, which have to be dismantled, unpacked for work, and finally reassembled and embarked before moving off. This postulates a sizable room or hall, with suitable lighting and black-out and the expenditure of a good deal of time and exertion.

3. Of the large number of mobile aid posts in the counties represented at the competition a very small percentage has seen active service, though a number of the districts to which they are attached have had their share of "blitz."

4. Now for my own experience. After trying out the method of working described for nearly a year, during which many practices were carried out in village halls, country houses, and industrial works, I was so impressed by the difficulty (a) of finding adequate accommodation, and (b) of getting into action in time for treatment for shock to be of much use, that I acquired a fourteen-seater bus, and arranged permanent fittings for equipment, heating, lighting, and washing, with suitable black-out. We can now arrive at an incident with everything prepared for immediate action, can deal with one stretcher case or three sitting cases at a time in the bus, and can land out requisites for as many more as may be necessary, for treatment in any room or cottage, however small.

At the meeting referred to this arrangement was rather frowned upon by authority as being a variation from the official technique, but conversation with medical officers of other units gave me the impression of concurrence with my views. I submit that, using methods such as I have suggested, more use might be made of mobile aid posts in urban districts.

to supplement and assist hard-pressed first-aid parties, thereby putting into the collar necks which are worn hairless by straining at the leash of long-deferred opportunity. In the rural work with which I am familiar I am convinced that the ability to arrive ready to work anywhere and to move on quickly, given by the method I now use, outweighs all other considerations.—I am, etc.,

Oct. 12.

C. GRANTHAM-HILL.

"First Aid to the Injured"

SIR,—Would you be kind enough to publish in your correspondence columns the following letter which I am sending to the secretary of the St. John Ambulance Association?

"SIR,—For the last fourteen years it has been my pleasure and privilege to lecture and to examine on behalf of your Association. While I have always thought that your authorized textbook, *First Aid to the Injured*, is extremely satisfactory as a training manual in time of peace, my studied opinion during the last three years has been that it is inadequate in time of war, when the basis of first aid must be simplicity, flexibility, and improvisation. In peace the interval between the accident and the casualty receiving professional attention has been measured in minutes; in war, more particularly during a period of invasion, the interval may be one of days. This is especially true in the rural areas, where the only skilled help available for casualties, even for as long as ten days, may be St. John and Red Cross personnel, working in isolated houses without any surgical supplies, or in the casualty collecting posts of the Home Guard and A.R.P. points and posts with limited supplies of dressings. I would therefore appeal to your Association to consider whether a supplementary pamphlet on 'First Aid in Time of War' should not be considered an urgent and immediate necessity. My tentative suggestion would be that haemorrhage, shock, wounds, fracture, pain, burns, and the evacuation and accommodation of casualties are the necessary subjects for reconsideration, with particular emphasis on the use and abuse of the tourniquet. The immediate reaction of the first-aid student to the treatment of bleeding should not be the tourniquet—it is not a fool-proof weapon. It is my intention to send a copy of this letter to the Editor of the *British Medical Journal* with a view to publication and professional criticism."

—I am, etc.,

JOHN C. HODGSON, M.D.,
Battalion Medical Officer, Kent Home Guard

Oct. 12.

Sulphonamides for Cerebrospinal Fever

SIR,—Dr. N. Much, in his article on "A New Sulphonamide" (October 11, p. 503), refers to 154 cases of cerebrospinal fever in Wrexham. May I point out that all of these cases were treated by me at the isolation hospital, and not by "various doctors." With the exception of seven cases, all were treated with sulphonamides. Of these seven exceptions, four were moribund on admission and died within a few minutes. It may be of interest to note that up to date we have had 222 definite cases with twenty-two deaths, or a mortality of 9.9%. Of the 222 cases all except eight were treated with sulphonamides.—I am, etc.,

T. P. EDWARDS, M.D., D.P.H.,
Medical Officer of Health and Medical
Supt., Isolation Hospital.

Wrexham, Oct. 11.

J. R. Sprague and R. A. Srigley (*Ohio med. J.*, 1941, 37, 843) record four cases of intussusception due to a Meckel's diverticulum. All recovered from the operation, which is remarkable in view of the usual large mortality—56% in children under 5 and 36% in those over 5 years of age. Of the five classical symptoms—(1) sudden onset, (2) projectile vomiting, (3) shock, (4) abdominal mass, and (5) melæna—an abdominal mass was felt in only one case and none of the patients had melæna. Also in contrast with ordinary intussusception the average age of these cases was 13.8 years. In three cases the intussusception was reduced by stripping downward with the fingers, and in the last case a longitudinal incision through the constricting edge of the intussusception permitted reduction.

Obituary

ALEXANDER GOODALL, M.D., F.R.C.P.Ed.

Physician, Royal Infirmary of Edinburgh

We regret to record the death on October 16 of Dr. Alexander Goodall, who was senior physician to the Royal Infirmary of Edinburgh in length of continuous service and in age. He had held office for three years as President of the Royal College of Physicians of Edinburgh, and was for many years lecturer on clinical medicine in the university.

He was born in 1876 at Barr, in Ayrshire, the son of the Rev. Charles Goodall, B.D., minister of that parish, and was educated at George Watson's College and Edinburgh University, where he graduated M.B., Ch.B. in 1898 and M.D. with high commendation in 1901; three years later he was elected F.R.C.P.Ed., after holding the Freeland Barbour research fellowship and winning the Cullen prize. In his younger days he was closely associated with the late Prof. D. Noel Paton and lectured in physiology at the School of Medicine of the Royal Colleges. He was appointed assistant physician to the Edinburgh Royal Infirmary in 1913 and lecturer on clinical medicine in the University in 1914. He collaborated with the late Prof. Lovell Gulland in the production of three editions of a standard book on diseases of the blood, and when the Edinburgh Post-graduate Courses were instituted he lectured on haematology. Dr. Goodall was an early worker in the laboratory of the Royal College of Physicians of Edinburgh and published numerous articles, chiefly on blood diseases and the testing of drugs; he renewed his active interest in the laboratory when he became Vice-President, and again when President, of the College in recent years. During the last war he served in the R.A.M.C. with the rank of major in charge of the medical division of No. 66 General Hospital at Salonika, and while working there contracted an illness from which he never fully recovered. In 1921 he accepted the appointment of physician to the Ministry of Pensions Hospital at Craigleith. He had been a member of the British Medical Association for just on forty years, and at the Annual Meeting in Dublin in 1933 held office as vice-president of the Section of Physiology and Biochemistry.

A colleague in the course of an appreciation printed in the *Scotsman* writes of Dr. Goodall as a shy man, who disliked the ordinary type of medical committee work, where discussions are apt to be prolonged and tedious. He was happiest, in so far as his work was concerned, in teaching and in looking after his patients, to whom he gave of his best from an active brain, wide experience, and a keen clinical sense for the essentials of a case. Those who enjoyed his close friendship were aware of his intense love of his home, his children, and his grandchildren. He was a keen supporter of the Royal Scottish Pipers' Society, and amid many professional duties found time for shooting. He loved the country and all its associations.

WILLIAM KERR RUSSELL, M.D.

William Kerr Russell died on October 4 at the age of 50, after a few weeks' illness. His passing at such a relatively early age is a serious loss to the speciality of physical medicine, which he practised for the greater part of his life.

He was born at Newcastle-upon-Tyne, the son of the late Dr. Frank Russell, a greatly respected practitioner of that city. He was educated at Ackworth School, at Bootham School, York, and the University of Durham College of Medicine, Newcastle. He did extremely well in all examinations, obtaining the coveted Goyder scholarship in clinical medicine and surgery, and first-class honours in the final examination for the degrees of M.B., B.S. In 1921 he received his M.D. for an essay on chronic traumatic osteomyelitis. Qualifying in 1914, he joined the R.A.M.C., S.R., shortly after the outbreak of war, and served in France from early in 1915 till the end of the war. Thereafter he held a surgical appointment in the Military Orthopaedic Hospital, later the Pensions Hospital, at Newcastle.

For several years he was in general practice in his native city, but early in his professional life became interested in electro-therapy, for the technical aspects of which he showed marked aptitude. He was enthusiastic concerning the potentialities of ultra-violet therapy and did pioneer work on that subject. With his wife, Dr. Eleanor Russell, he published in 1925 *Ultra-Violet Radiation and Actinotherapy*, a popular book which ran to three editions. A further book on this subject came from his pen in 1930, and in 1932 he published a monograph on colonic irrigation. He started and superintended a large sun-ray clinic for the benefit of an industrial area of Newcastle. In 1928 he moved to London and entered upon specialist practice in physical medicine. He held the appointments of honorary medical officer to the light department and later the electrical department of the Miller General Hospital, physician in charge of the physiotherapy department, National Temperance Hospital, and assistant in the electrotherapeutic department, Royal Free Hospital. At the Miller Hospital he was co-director of the Almeric Paget School of Physiotherapy from its opening in 1930 until the school was closed in 1936, and for ten years he examined for the Chartered Society of Massage. In 1928 he became assistant editor of the *British Journal of Physical Medicine*, and for a year from 1933 was editor of that journal. He was one of the few people in this country who interested themselves in fever therapy by physical methods, and in 1937 he was official representative of the Ministry of Health at the first International Congress of Fever Therapy in New York. He travelled widely in pursuit of knowledge of his specialty, and was British secretary of the Comité International de la Lumière, and a member of the Ultra-violet Light Committee of the British Standards Institution.

A curiously modest and self-effacing man, Kerr Russell had deep enthusiasm and faith in his work and high ideals. After the outbreak of war, owing to the dislocation of London specialist work, he took the wise decision of transferring to general practice at Ross-on-Wye for the duration of the war. Thus he had a very full and varied life and a wide experience to bring to bear on the problems of special interest to him.

F. J. N.

THOMAS MILL, C.M.G., C.B.E.

M.B., F.R.C.S.Ed.

Tom Mill was the son of a New Zealand shipowner, but himself chose to follow a professional career, and received his medical education at Edinburgh. Immediately after he spent a year as an assistant at Keswick, and there acquired a life-long affection for the place and the people of the Lake District. Then he returned to practise in New Zealand, where his chief preoccupation was with gynaecology. The war of 1914-18 brought him back to England in command of the 2nd New Zealand General Hospital at Walton-on-Thames, where he showed his flair for administration. At the end of the war he studied laryngology and otology in London for a year or two before returning once more to New Zealand, where he held the appointment of aural surgeon at the Christchurch Hospital for ten years. He wrote nothing, but was a wide though fastidious reader, and being, as a New Zealander would be, a man of sterling character and a staunch friend he exercised great professional influence, and held the office of president of the New Zealand Branch of the B.M.A. at a critical period. However, the trend of political events worried him, or at least he thought so. It is probably nearer the truth that a combination of gall-bladder and cardiac disease had begun to undermine his health and made him restless. He resigned at Christchurch and then practised quietly for a time in Jersey, but he had no real ties there, and he left a few days before the Germans took over the island. In the end he returned to Keswick, which he loved so well, and was busily engaged in practice until a coronary occlusion cut him off in a few hours. He will be sadly missed by many besides the New Zealanders whom he served so loyally.

L. C.

Dr. H. S. BURNELL-JONES, D.P.H., died at Worle, Somerset, at the home of his mother on September 17 after a long illness. He had recently been acting as tuberculosis officer for Worcester. Dr. Burnell-Jones received his medical education at Cardiff, Leeds, Bristol, London Hospital, and University College, and had been in practice at West Wickham, Kent, in North London, and, earlier, in Birmingham. He always had leanings towards laboratory work, and was intensely interested in tuberculin treatment, on which subject he had done much research and written several papers. He was at one time a clinical assistant at the Central London Throat, Nose, and Ear Hospital, and after the death of Mr. Juler he ran the throat department of the Croydon General Hospital for some months. He worked for a time in the skin department at the Royal Northern Hospital. Burnell-Jones (writes A. E. S.) was a well-known figure at the meetings of the North London Medical Society. He was a genial personality of spruce appearance, and was an accomplished organist. He leaves a widow, three daughters (one a Bart's nurse, now in the Army), and three sons (two in Canada), all in the Services.

We regret to announce the death at the age of 62 of Dr. ALEXANDER ROBERTSON, medical officer of health for the Burghs of Elgin, Lossiemouth, and Rothies. A graduate of the University of Aberdeen, he took his M.B., Ch.B. degrees in 1902 and his D.P.H. in 1905. Dr. Robertson held an appointment as Government medical officer in Kenya for seven years; on returning to this country he worked for the next four years at the Bermondsey Infirmary in South London as assistant medical officer. Since 1914 he had been engaged in private practice and public health administration at Elgin. At the time of his death he was senior surgeon to Dr. Gray's Hospital. Dr. Robertson was a keen and active member of the British Medical Association from the time of his election in 1920; he served as honorary secretary of the Banffs, Elgin, and Nairn Division for three years and was its chairman in 1931-2, and in 1936 the Northern Counties of Scotland Branch elected him its president. He had been a member of the Scottish Committee of the Association continuously for the past ten years. He was an elder of St. Giles's Church, Elgin, and took a fatherly interest in the local football club, of which he was vice-president and honorary medical adviser.

Dr. HENRY GERVIS, formerly a very well-known Brighton practitioner, died on October 13. Born in London in 1863, he was educated at Mill Hill School and Trinity College, Cambridge, graduating B.A. in the Natural Sciences Tripos of 1884. He then went on to St. Thomas's Hospital and qualified M.R.C.S., L.R.C.P. in 1889, and in the same year took the M.A. and M.B., B.Ch. degrees of Cambridge. He served at St. Thomas's as house-surgeon and resident assistant before starting general practice in Brighton. Dr. Gervis reached high rank in Freemasonry, becoming Provincial Grand Master of Mark Master Masons in Sussex. He took a prominent part in the public life of Brighton and was mayor for one year and afterwards an alderman for eight years; he was also a J.P. for the Borough of Brighton. On the outbreak of the last war he was mobilized on the staff of the 2nd Eastern General Hospital, Brighton, with the rank of Captain R.A.M.C. (T.F.), which he had held since 1908, and in March, 1918, went to serve with the 20th General Hospital at Camiers. On returning to civil life he published some reminiscences of his life in khaki under the title *Arms and the Doctor*. Dr. Gervis was a member of the British Medical Association from 1891 until his retirement from active work five years ago at the age of 73.

Dr. ROBERT THIN (writes Dr. G. M. Greig) was a general practitioner with abilities far beyond the average. In spite of being a busy man with a very large practice he found time for many other activities in connexion with the profession and the Church, and he wrote papers on various subjects. His great personal popularity, his capabilities, and the esteem in which he was held were recognized by his election to the Presidency of the Royal College of Physicians of Edinburgh, and by the honorary ferring on him by the University of Edinburgh of the honorary degree of LL.D. But it is as the family doctor and friend that those of us who were his patients will think of him and remember him. At one period the work he did must have seemed almost too much for even his great capacity, but he never appeared to

be hurried. His examination of the patient was always systematic and thorough, and his visits left his patients cheered and full of confidence. No man was ever more kind and sympathetic. We remember these words of Savonarola: "The physician that bringeth love and charity to the sick, if he be good and kind and learned and skilful, none can be better than he." And we know that no man ever more deserved them than Dr. Thin.

The Services

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Temporary Surgeon Lieut. ARTHUR CHARLES SHELFORD, R.N.V.R., who was announced as "Missing" in the *Journal* of September 21, 1940 (p. 402), is now reported to have died as a prisoner of war and to have been buried on Pellworm Island on September 26, 1940. He was born at Alnwick in 1914 and began his medical studies at the University of Edinburgh in 1932, graduating M.B., Ch.B. in 1937. He had held the posts of house-physician and house-surgeon at Sunderland Royal Infirmary. Soon after the outbreak of war he was granted a temporary commission as surgeon lieutenant in the R.N.V.R., and early in 1940 was posted to H.M.S. *Express* and assisted in the Dunkirk evacuation. He joined the British Medical Association soon after qualification.

ROYAL ARMY MEDICAL CORPS

Prisoner of War

Lieut. John Campbell.

DEATHS IN THE SERVICES

Colonel LEONARD WOOD, late R.A.M.C. (ret.), died at Westbury, Wiltshire, on September 27, aged 67. He was born on July 20, 1874, was educated at Mason College, Birmingham, and took the M.R.C.S., L.R.C.P. in 1898. After filling the house posts at the General Hospital, Birmingham, he entered the R.A.M.C. as lieutenant in 1899, becoming full colonel in 1926. In 1910-11 he served as adjutant of Territorial Army units. He served throughout the South African War of 1899-1902, when he took part in the relief of Kimberley and in operations in the Orange Free State, receiving the Queen's medal with three clasps and the King's medal with two clasps. In the war of 1914-18 he served as a D.D.M.S. and was mentioned in dispatches in 1917. After retirement he was employed at Trowbridge. He leaves a widow.

Universities and Colleges

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The President of the Royal College of Surgeons, Sir Alfred Webb-Johnson, gave a luncheon party on October 9 at Claridge's. The company included members of the Council and officers of the College; the Presidents of the Royal College of Physicians and the Royal College of Obstetricians and Gynaecologists; the Medical Directors-General of the Services; and Viscount Dawson of Penn and Lord Horder. Among the many other distinguished guests were the President of the Czechoslovak Republic, the Soviet Ambassador, the Egyptian Ambassador, and the Czechoslovak Minister of the Interior and Education; the First Lord of the Admiralty and the Minister of Health; the High Commissioners for Canada, Australia, New Zealand, and South Africa; Captain Crookshank, M.P., Major Lloyd George, M.P., and Colonel the Hon. John Astor, M.P.; Brigadier R. Luton, D.M.S., Canadian Forces, Wing Commander A. R. Tilley, R.C.A.F., Lieut.-Colonel J. H. Anderson, R.A.A.M.C., Squadron Leader E. H. Anderson, R.A.A.F., Captain W. M. Anderson, U.S. Navy, and Colonel Paul R. Hawley, U.S. Army.

In his speech Sir Alfred gave a special welcome to the President of the Czechoslovak Republic and said that the Royal Colleges were proud to have the privilege of conducting examinations for the medical degrees of the University of Prague. He spoke of the admiration felt by all present for the gallant Soviet Army, and their sympathy for the sacrifices and sufferings of the Russian people; the College was grateful for the Ambassador's personal support in its endeavours to establish closer liaison between the medical services of the two countries. The Egyptian Ambassador was an old friend of the College, for it had had close associations

with the Egyptian University for many years, and its Rector was an Honorary Fellow. The presence of the High Commissioners for the four Dominions was a reminder that our Royal Colleges had an imperial as well as a national importance and significance. Welcoming Admiral Dudley, General Hood, and Air Marshal Sir Harold Whittingham he expressed the hope that one outcome of this war would be that the heads of the Ministries of Defence would realize that their Medical Directors-General should have a place at the highest Council table; the war had made it clear that in tactics as well as strategy nearly every phase had its medical aspect. After a word of special greeting to medical representatives in this country of the Dominion Forces and of the United States, and to the Hunterian Trustees who attended the luncheon, the President made reference to the loss the College had sustained by enemy action. Though it might seem trivial compared with the losses and sacrifices of our Allies, yet it was a calamity of the first order—a loss to science. The Museum was unique in the world. "Our loss is serious, but in the great event it is but an incident and one which we may consider it a privilege to repair. We have a summons to a high duty, a mighty and noble task, in which we are encouraged by offers of help from all parts of the world. What high destiny to be on the Council now, when every step we take is history! It may be that this disaster will pave the way to the finest hour in the history of our College. The first step towards repair was taken with dramatic promptitude, for at the very first regular meeting of the Council after the disaster we received an inspiring message from the Bernhard Baron Trustees offering a gift of £40,000 to endow a research professorship at the College, so that, in our preoccupation with the restoration of the Museum, research should not suffer. . . . We have Hunter's plan and the inspiration of his example. On these foundations we must rebuild the superstructure—not perhaps exactly as it was, but as he would have built it had he been equipped with all the aids we have to-day."

The First Lord of the Admiralty and the Minister of Health replied to the President's toast: "To the Hunterian Tradition; to the restoration of our Museum; to the success of our Allied Arms; and to the attainment of Victory, for it is only through Victory that our goal can be won."

Council Meeting

At a quarterly meeting of the Council of the Royal College of Surgeons of England, held on October 9, with Sir Alfred Webb-Johnson, President, in the chair, Mr. D. L. Kerr was admitted as a Macloghlin Scholar.

Prof. John Beattie was appointed Bernhard Baron Research Professor.

It was decided not to fill the post of Conservator of the Museum at present. Prof. A. J. E. Cave, Assistant Conservator, will continue in charge for the time being.

The following awards were reported: A Proffit Studentship to Dr. J. Clark Davidson and a Mackenzie Mackinnon Research Fellowship to Dr. Geoffrey Bourne.

It was decided to recognize the posts of resident surgical officer and one house-surgeon at the Kent and Sussex Hospital, and the house-surgeon at the Walsall General Hospital, for the six months surgical practice required of candidates for the Final Fellowship examination.

A Diploma of Fellowship was granted to Peter Smith, M.B., B.S. Diplomas of Membership were granted to F. X. Darne, J. D. C. Gowans, D. K. Sambrook, A. L. H. Smith, and Glenys J. Wade.

Diplomas in Child Health were granted, jointly with the Royal College of Physicians of London, to the following eleven candidates: A. W. Abramson, W. W. Burnett, Winifred McK. Davidson, W. G. Daynes, Mabel A. Henderson, S. L. Mohan, D. Morris, Lorna C. Petersen, G. Prasad, I. D. Riley, Margaret M. Strange.

UNIVERSITY OF SHEFFIELD

At a meeting of the University Council, held on October 10, Prof. G. A. Clark was reappointed representative of the University on the General Medical Council, and Mrs. Margaret G. Hapley, M.B., Ch.B., was appointed assistant bacteriologist.

The Council received the resignation of Dr. R. W. John of the posts of research assistant and honorary demonstrator in pathology with regret, and accorded its thanks to him for his services to the university.

The Faculty of Medicine reported that the success which attended two short courses in industrial medicine, held during

the summer vacation, had demonstrated the growing realization of the importance of reducing health hazards among industrial workers. Lectures and demonstrations were given by some of H.M. Medical Inspectors of Factories, by members of the teaching staff of the Medical School, and by the staff of the Mines Research Board, and visits were paid to the works of Messrs. Edgar Allen and Co., Ltd., and Messrs. Hadfields, Ltd. The Faculty was glad to have fostered the spirit of co-operation between industry and medicine, and hoped to have further opportunities of doing so in the future.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh, held on October 15, with Dr. H. M. Traquair, President, in the chair, the following who passed the requisite examinations were admitted Fellows:

W. V. Beach, D. W. Bracey, M. S. Campbell, I. Chand, C. D. Coode, H. K. Dastur, H. De, J. C. Dick, H. L. Duncan, M. Gamal el-Din, T. Gibson, W. H. Kirkaldy-Willis, M. A. M. Labib, H. A. McDonald, W. C. McGuire, G. MacKay, J. W. Morgenthal, J. M. H. Ross.

At the annual meeting of the College, held on October 15, the following officers were elected for the ensuing year:

President, Mr. J. W. Struthers. Vice-President, Dr. H. M. Traquair. Secretary and Treasurer, Mr. K. Paterson Brown. Representative on the General Medical Council, Mr. Alex. Miles. Convener of Museum Committee, Mr. W. Quarry Wood. Librarian, Dr. Douglas Guthrie.

Medical Notes in Parliament

Psychiatry in the Army

On October 7 the Parliamentary Medical Committee, with Sir Francis Fremantle in the chair, was addressed by Colonel J. R. Rees, Director of Army Psychiatry and head of the Tavistock Clinic. He gave an account of the psychiatric work now done in each Army Command and showed that the classification of difficult cases had a good effect on Army morale. These cases seemed more prone to appear in military service than under civil conditions.

Return of Tuberculous Soldiers from South Africa

Captain MARGESSON denied on October 9 that any special orders had been issued by his Department for forty military tuberculosis cases in the Addington Hospital, Natal, and 120 similar cases at Oribi, to be returned to this country. He said there were general instructions regarding the return to this country from South Africa of soldiers suffering from tuberculosis. On arrival in this country soldiers suffering from tuberculosis were sent to a military hospital, where they received treatment as necessary until handed over to the care of the local health authority.

Medical Services of Soldiers' Dependants

On October 14 Dr. HADEN GUEST asked the Secretary of State for War why the privilege of medical and dental treatment accorded to the families of regular soldiers now serving, and to those of reservists called up for service, was not given to the families of the soldiers enlisted or called up since the beginning of the war. Captain MARGESSON replied that the extension to the families of soldiers enlisted since the war of the facilities for medical and dental treatment at present enjoyed by the families of regular soldiers or reservists now serving would involve an enormous increase in the numbers of Army medical and dental officers, which could only be effected at the expense of the civil medical services. Moreover, the families of regular soldiers were not eligible for medical attendance in their homes unless they lived within a mile of certain fixed points, and if the concession were extended to the families of wartime soldiers its value would therefore vary according to the family's domicile.

Scotland's Post-war Hospital Policy

On October 14 Mr. MCNEIL asked the Secretary of State for Scotland if he could give further details of the Government's post-war hospital policy for Scotland in relation to voluntary and emergency hospitals. Mr. JOHNSTON said that he proposed

to have consultations at an early date with the various organizations, including the associations of local authorities, concerned with hospital services in Scotland. In the meantime he could not add to the statement made in the House of Commons by the Minister of Health on October 9.

Increase of Tuberculosis

Mr. ERNEST BROWN announced on October 16 that, on the basis of provisional mortality figures for 1939 and 1940, the percentage increase in pulmonary tuberculosis in England and Wales for the population as a whole was 9.7% higher in 1940 than in 1939. The highest rate of increase was 15% among women between the ages of 15 and 25. In the first quarter of 1941 there had, however, been a reduction of 7% for the population as a whole, and of 4% for women between the ages of 15 and 25. With the co-operation of the Medical Research Council he had arranged an expert investigation into the possible causes of increase. Everything possible was being done to maintain the tuberculosis service.

Alien Doctors' Employment

In an answer on October 16 to Sir Henry Morris Jones Mr. BROWN announced that the number of alien doctors registered under the Medical Register (Temporary Registration) Orders, 1941, by virtue of employment in approved services, was 470, apart from American doctors dealt with under the Order of 1940. Of the total of 470, 385 were employed in hospitals, 33 in public health appointments, and 52 as ship surgeons or in other miscellaneous posts. In addition, 24 received commissions in our Services, apart from those serving in Allied Forces. He recalled that the Order made on September 23 last provided an avenue of service in general practice by enabling alien doctors to be registered by virtue of employment as assistants to doctors already on the permanent Medical Register. The number of doctors still available was approximately 500, including those who had only recently become eligible for registration under the amended Defence Regulation 32B.

First-aid Equipment of Home Guard.—Mr. GROVES alleged on October 2 that the only dressing suitable for dealing with burns which had been issued to the Home Guard was tannic acid jelly, and that this jelly was by medical men considered to be more dangerous than useful in cases of burning of the hands or face or any exposed part of the body. Captain MARGESSON said he was looking into this question. Answering further questions he said all first-aid dressings issued for immediate use at Home Guard posts were impregnated with an antiseptic. Asked whether he knew that wooden splints issued to the Home Guard were so short that they would be useless for the proper control of a fractured leg, Captain MARGESSON replied on October 2 that arrangements were in hand for provision of suitable splints at regimental aid posts.

Hospital Domestic Staffs.—In a reply on October 9 to Mrs. Rathbone, Mr. BROWN said he had for some time been concerned because many voluntary hospitals were seriously hampered owing to lack of ancillary staff such as stokers, porters, and wardmaids. He had recently discussed these difficulties with representatives of voluntary hospitals. Domestic work in hospitals was recognized as one of the services of most urgent national importance for which recruitment was to be carried out by the Minister of Labour. He had issued a poster for circulation to hospitals to make this important clear to those already employed in hospitals.

Special Examinations for Employment Exchanges.—On October 11 Mr. GROVES asked the Minister of Labour if he was aware that doctors were being required by certain employment exchanges to undertake urine tests over a period; if such examination was part of the ordinary services of the doctor; and if a special fee was to be paid. Mr. BEVIN: I understand that such action was taken in one district at the request of the medical board. The action was unauthorized, and steps have been taken to prevent its recurrence.

Notes in Brief

Mr. Ernest Brown hopes to issue within three or four weeks report for 1940 of the Chief Inspector of Factories.

In accordance with the general decision to suspend the inter-departmental reports not immediately essential to the war effort regular series of reports of the Ministry of Health and of the Medical Officer will be suspended until after the war. Mr. E. Brown hopes, however, that a summary will be ready within the next two months.

Publication of the annual reports of the Chief Medical Officer of the Board of Education will be deferred till after the war.

No. 40

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended October 4.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	109	5	34	3	5	112	9	37	1	3
Deaths	—	—	—	—	—	—	—	—	—	—
Diphtheria	997	58	227	37	45	1,163	61	395	31	22
Deaths	26	3	3	1	1	31	1	11	—	2
Dysentery	103	9	175	—	—	63	3	76	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	4	—	1	—	—	5	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Enteric (typhoid) fever*	34	5	4	7	—	77	3	4	2	4
Deaths	3	—	2	1	—	2	—	—	—	—
Erysipelas	—	—	59	9	1	—	29	48	3	4
Deaths	—	—	—	—	—	—	—	2	—	—
Infective enteritis or diarrhoea under 2 years	33	—	13	47	9	44	8	16	9	5
Deaths	—	—	—	—	—	—	—	—	—	—
Measles	715	34	14	84	—	8,852	184	384	—	41
Deaths	—	—	—	—	—	12	—	1	—	—
Ophthalmia neonatorum	80	4	15	2	—	91	4	23	1	3
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid	87	6	11	—	—	—	—	—	—	—
Deaths	1	1	—	—	—	—	—	—	—	—
Pneumonia, influenza†	629	16	1	—	6	651	50	6	2	—
Deaths (from influenza)	14	21	1	—	6	9	2	3	—	1
Pneumonia, primary	—	—	141	8	—	—	—	133	10	8
Deaths	—	—	—	4	—	—	—	9	—	—
Polio-encephalitis, acute	2	—	—	—	—	2	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	31	1	6	5	2	34	1	10	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Putrefactive fever	2	2	18	1	—	2	2	16	4	—
Deaths	—	—	—	—	—	—	—	—	—	—
Putrefactive pyrexia	149	5	11	—	2	138	8	10	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	1	—	—	—	—	1	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,217	44	249	52	16	1,872	64	231	45	55
Deaths	1	—	—	—	—	2	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	2,078	223	56	43	1	1,332	15	75	1	5
Deaths	11	—	3	—	—	11	—	1	—	3
Deaths (0-1 year)	276	15	75	71	20	301	56	57	32	19
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths)	3,598	466	505	219	100	5,691	1,493	590	180	114
Annual death rate (per 1,000 persons living)	—	—	11.0	14.5	2	—	—	11.9	12.0	10.0
Live births	4,593	450	898	397	195	6,096	709	819	334	222
Annual rate per 1,000 persons living	—	—	18.3	26.4	2	—	—	16.6	22.3	19.4
Stillbirths	204	16	33	—	—	206	19	45	—	—
Rate per 1,000 total births (including stillborn)	—	—	35	—	—	—	—	55	—	—

* Includes paratyphoid A and B for Northern Ireland.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Owing to evacuation schemes and other movements of population birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of the Table

The feature of this week's returns for England and Wales is the large increase in the cases of pneumonia—144—although a sharp increase during this period of the year is not an unusual experience. The notifications of the common infectious diseases—scarlet fever, whooping-cough, diphtheria, and measles—were all below the totals of the preceding week. No marked deviation in the geographical distribution of scarlet fever occurred, but the fall in the incidence of diphtheria was mainly due to the decrease in the Northern Counties, where the incidence had been rising lately. The large increase in the notifications of scarlet fever reported in Scotland was due to a general rise in the incidence throughout the country.

Fewer cases of paratyphoid were recorded in England and Wales. Six cases of typhoid were notified in Kent (Orpington U.D.).

Dysentery

Nineteen cases in excess of the previous total occurred in England and Wales. Small increases were returned by ten counties; 17 cases were notified in Bristol C.B. A serious increase was recorded in Scotland—175 cases compared with 71 in the previous week: an outbreak in the county of Lanark. 103 cases, was responsible for this.

Cerebrospinal Fever

The only changes of any note in the distribution of the notifications of this disease in England and Wales were those shown by Durham and Lancaster. Durham had 9 cases (Sunderland C.B. 6), compared with 3 in the preceding week, and Lancaster had 22 cases, against 10 in the previous week. In Lancaster the cases were scattered throughout the county, and with the exception of Manchester C.B., 7, no administrative area notified more than 2. A small rise (4 cases) occurred in Scotland, but with the exception of the city of Glasgow, 13, no district had more than 2 notifications.

Poliomyelitis

The 31 cases recorded in England and Wales were 7 below the total of the preceding week. For the second week in succession 5 cases were notified in Berkshire, in four administrative areas. Three further cases were reported from Oxford C.B. The 4 cases reported in Middlesex were from three separated districts. Two cases were notified in Surrey (Caterham and Wallingbam) and Lancaster (Manchester C.B.). In Scotland an outbreak in Dumfriesshire County accounted for 4 of the 6 cases notified. In Eire 2 cases occurred in Dublin and 3 in the urban district of Ballina, County Mayo. The 2 cases notified in Northern Ireland were from the rural district of Ballymoney.

Quarterly Return of the Registrar-General for Scotland

The vital statistics for Scotland for the second quarter of 1941 show some considerable variations from the average trend. The birth rate of 18.3 per 1,000 live births was the lowest ever recorded in a second quarter. The infant mortality, 84 per 1,000 live births, was 17 above the average for the quarter, and the maternal mortality, 5.3 per 1,000 live births, was 20% in excess. The death rate was 15.4 per 1,000, and when adjusted for the effect of the withdrawal of a large number of males for active service still remained 2.0 above the average for the second quarters of the five preceding years. The excess of deaths was most apparent among infants and at the highest ages. Deaths from tuberculosis, cerebral haemorrhage and allied conditions, and heart disease were considerably above the average. The excessive infant mortality was due to marked increases in deaths from diseases of the respiratory system and whooping-cough (301 deaths against an average of 133). Deaths from premature births also showed a considerable rise. Six hundred and fifty-three deaths were attributed to the principal epidemic diseases, and of these 94% were due to whooping-cough, diphtheria, influenza, and cerebrospinal fever, which had 269, 117, 117, and 113 deaths respectively.

Returns for the Week Ending October 11

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1,336, whooping-cough 1,970, diphtheria 1,034, measles 787, cerebrospinal fever 110, poliomyelitis 38, dysentery 207, paratyphoid 64, and typhoid 23.

Medical News

A Chadwick Public Lecture on the cleansing of towns and cities will be given by Mr. J. C. Dawes of the Ministry of Health, at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W.1, on Tuesday, October 28, at 2.30 p.m.

Dr. John Parkinson will deliver a lecture on "Cardiac Diagnosis in Wartime" at the Weston Hotel, Bath, on Thursday, October 30, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

A meeting of the Maternity and Child Welfare Group of the Society of Medical Officers of Health was held at Tavistock House South on October 4, the president of the group, Dr. E. Virginia Saunders Jacobs, being in the chair. Dr. Wilfrid Sheldon, physician to out-patients, Hospital for Sick Children, Great Ormond Street, opened a discussion of much interest on the effect of war conditions on young children. All speakers were unanimous in reporting the absence of deficiency diseases (rickets and scurvy), and the general evidence went to show that the health of young children had improved rather than deteriorated since the onset of war—a profoundly satisfactory result. Tributes were paid to the Government's policy in inaugurating and maintaining the national milk scheme and to the work of the welfare authorities in supplying extra vitamin preparations. The value of the national dried milk for infants was emphasized. While the Government's evacuation scheme had proved of great benefit to the health of children as a whole, Dr. Sheldon raised an important point in drawing attention to the danger of children being billeted in any house where there was a case of open tuberculosis and to the need for liaison between billeting officers and the health departments.

The Polar Medal (bronze) has been awarded to Dr. Edward Hillis Marshall, D.S.O., for good services between the years 1925 and 1939 in the Royal Research Ships *Discovery II* and *William Scoresby*.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Function of the Vocal Cords

Dr. GRACE McLINTOCK (Glasgow) writes in reply to the query by Dr. John Donald (October 4, p. 496): There is a paragraph in *The Story of Medicine*, by Victor Robinson, on page 132, where Galen's descriptive passage is produced.

R. S. S. writes: In reply to Dr. John Donald, the best edition of Galen's *De Usu Partium* is Kühn's, published by Teubner, Leipzig, in 1893. Dr. Jonathan Wright's *History of Laryngology and Rhinology* (Philadelphia, Lea and Febiger, 1914) will tell him a great deal about Galen's observations on the larynx, but not the point about which he asks. Galen described accurately the cartilages of the larynx, six pairs of intralaryngeal muscles, the laryngeal ventricles, and the innervation of the larynx, but is somewhat confused and long-winded about the production of the voice. He understood, however, that the voice was produced at the glottis. "As the pipe would be useless without the reed, so voice could not be formed unless the passage is narrowed. . . . In order

that the animal may emit voice it requires no doubt the movement of the breath, but none the less the narrowing of the channel in the larynx, not a simple narrowing, but one which can by degrees be constricted and by degrees relaxed" (*De Usu Partium*, Book VII, chapter 17). Galen gives himself credit for many anatomical discoveries, such as the recurrent laryngeal nerves and the laryngeal ventricles, but he was a collector of and commentator on the discoveries of his predecessors, as well as being one of the few experimental physiologists.

Benzyl Benzoate Therapy

Dr. SIONEY LOCKET (Plymouth) writes: As benzol and benzoic acid do frequently cause hypoplasia and aplasia of the bone marrow and aplastic types of anaemia, might not the frequent use of benzyl benzoate for scabies have a similar effect on sensitive or abnormal people?

Income Tax

Appointment under Emergency Medical Service

"MIDLAND": An inspector of taxes claims to include the value of board and lodging supplied, on the ground that if it were not supplied then £100 per annum would be received in cash and would admittedly be assessable.

Income tax must be assessed according to the facts of the particular case, and arguments that if those facts were other than they are then liability would be clear are irrelevant. In the case of *Cordy v. Gordon* the court drew a distinction between (a) an agreement under which the employer paid £x and provided board and lodging worth £y, and (b) an agreement under which £x+£y was payable less a deduction of £y for board and lodging provided. The liability is on £x in the former case and on £x+£y in the latter case, and unless, on the terms of the agreement, express or clearly implied, the particular case in question falls within the former type the inspector's view appears to be incorrect. If he declines to reconsider it we suggest that the facts be reported to the Board of Inland Revenue and their ruling on the question sought. We cannot see that liability to frequent removal can affect any question of liability to assessment in respect of board, etc., supplied in kind, although it might negative the Revenue contention that a cash allowance for board, etc., was assessable.

LETTERS, NOTES, ETC.

Treatment of Incontinence in Children over Four

Dr. CHARLES PEDDIE (Chorley) writes: Might I suggest a much simpler method of curing enuresis in children than that of Dr. J. Hartsilver (October 4, p. 496). I use light hypnosis and, in this condition, suggest that when the bladder requires to be emptied, no matter how deeply asleep they are, they will waken up, get out of bed, sit on the chamber, get back into bed, and sleep until the usual time for getting up. It is over six years ago that I had my last case—a girl of 16 who used to wake up wet to the armpits. The family consisted of herself and brother, and the mother lavished all her love on the boy, and so the bed-wetting started through jealousy and continued up to my using this method. Explanation was given of the origin of her trouble. To-day she is on war work and doing it well. Children are easy subjects in whom to induce light hypnosis.

This Certification Business

Mr. E. WATSON-WILLIAMS (Bristol) writes: The question of medical certificates for glucose seems to need some attention. Quite a number of patients seem to think that if they want to supplement their sugar ration it is the doctor's duty to help them. About a fortnight ago I attended a (gratis) patient for epistaxis. To-day I was asked to call and see her (my diagnosis had been menopause plus complete lack of exercise). I found her taking tea and toast, buns, and having declined an invitation to join her, the following dialogue took place. Patient: "I want you to give me a certificate so that I may get some glucose." Reply: "But why do you need glucose?" Patient: "I think it would do me good. I feel dreadfully tired. Miss Q. and Katie R. and Sally S. take it and find it is so helpful." Reply: "Shall I order you some malt extract?" Patient: "Oh no! That is so fattening." Reply: "But a spoonful of malt extract will have the same effect as you took glucose." Patient: "Well, why can't you give me a certificate that I need glucose?" You haven't examined me, so you can't possibly tell that I don't need it."

Corrigendum

In Dr. Leslie Ballon's letter on "Perfect Sight Without Glasses" on page 562 of our issue for October 18, the word "gently," in lines from the foot of column 1, should have read "generally." "a line of treatment delivered generally may be harmful."

THE CORRELATION OF PATHOLOGY, PHYSICAL SIGNS, AND X-RAY APPEARANCES IN THE DEVELOPMENT OF LUNG CAVITATION*

BY

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The correlation of pathological findings with physical and radiological signs is an unfailing source of interest to the diagnostician. In diseases of the chest such a study is a fascinating game. It is still a game, in the nature of a jigsaw puzzle, in that the answer we continue to seek assiduously in most of the problems set is the individual living pathology, the pathogenesis at the moment of diagnosis, which shall act as the basis of that wider problem of individual treatment, ever the ultimate aim and true reward of the happy physician. Not every player plays the game with the same pieces. Some claim ability to find the answer with a limited number; some even despise certain sets of pieces.

Controversial articles on the value of mass radiography recently appearing in the medical press serve to illustrate this point. Certain writers have professed to be independent of x-ray aids in the diagnosis of tuberculosis; they say that to them clinical history and stethoscopic signs are all-sufficient. Some have gone to the other extreme and have relegated the stethoscope to the scrap-heap. Both classes may, as individuals, be entirely truthful in their statements, the first having ears to hear and the second eyes to see. We do well, however, to ignore deaf advocates of perpetual ear stops, however well they can see, and preachers of permanent blinkers, however well they can hear. The "useless" club in our golf outfit is too often the one we have never learnt to use. The truth is, we still require every possible aid—pathological, radiological, and stethoscopic—in the diagnosis of chest disease if we would belong to the class of the happy physician "who stops, and who looks, and who listens."

Let us consider how these principles affect the discovery of cavitation, throughout its development, in bronchiectasis, abscess of lung, and tuberculosis.

Bronchiectasis

We will leave aside the much-discussed subject of congenital bronchiectasis and confine ourselves to the disease in its acquired form. Even here there is controversy on the intrabronchial or extrabronchial origin, but it is generally accepted that the first recognizable pathological change is dilatation of the bronchus, due to obstruction plus infection, and that this dilatation is the first step in the production of the bronchiectatic abscess cavity.

In children the process is usually very acute, taking the form of ulcerative bronchitis, which breaks down the bronchial wall and invades the lung substance so rapidly that all the clinical and radiological findings of an advanced stage of adolescent and adult forms of the disease present almost from the first symptomatic evidences.

From adolescence onwards the progress of the disease is generally much slower. Here chronic upper respiratory tract infections and chronic bronchitis are early secondary invaders of the damaged and weakened bronchi, and cause a loss of muscle tone that in its turn produces further dilatation. The normal action of respiratory widening by comparative negative intrathoracic pressure, exerted by the pleural vacuum, is not now followed by normal contraction of undamaged elastic tissue, and this vicious circle is continued by the resultant accumulation of debris in the lumen, interfering by its dead weight with the natural sweeping movements of the cilia.

Microscopical examination shows affected bronchi to be chronically inflamed and slowly breaking down and atrophying. In some parts only the epithelium will be affected; in others muscle and elastic tissue are fast disappearing: while in an advanced area every element of the bronchial wall is mixed beyond recognition into a dense fibrous mass, and the ciliated columnar epithelium is beginning to show squamous-cell infiltration. Surrounding areas of the lung show compensatory emphysema.

At this stage the physical and x-ray findings are in most cases bilateral and basal. The heart is central; there is no mediastinal displacement; and clubbing of the fingers, if recognizably present, is still at the first stage. This consists of an excess of tissue at the root of the nails—cyanotic, and with an unnatural shine as from continual polishing. The movement of the chest is heaving in the lower zones rather than lateral, owing to compensatory emphysema. The note to light percussion is impaired, but the overlying emphysema may very easily produce a deceptive tympany. In most cases, as there is still some airway in the bronchi, rhonchi and sibili are heard through the whole inspiratory phase: but they are most insistent in the first half of the phase, and return equally loudly in the middle and last phases of expiration. If such added sounds remain after cough they are lessened in intensity and practically confined to the early phase of inspiration. In addition, there are heard throughout the whole of inspiration, both on ordinary breathing and after cough, fine to coarse sounds of a dry character. The characteristic appearance of increased striation on the film and the microscopical finding of increased deposition of connective tissue in and around the bronchi and their associated alveoli have taught us to recognize these as the stethoscopic finding of established fibrosis.

The x-ray film taken at this stage shows heavy, rather fluffy linear shadows towards both bases, irregular in their loss of translucency, but more or less faithful to the normal branchings of the larger bronchial bundles. We are viewing the increased blood supply of chronically inflamed bronchi, and occasionally slight invasions of lung tissue through penetrated bronchial walls.

* Read before the Ely Medical Society of the R.A.F. on June 8, 1941.

The introduction of lipiodol would show enlarged bronchi, slowly increasing in width from the upper border of the affected area downwards towards the bases, occasionally pulled into small nodular sacculations, and now and again without true definition in the shadows of their edges.

The further stages, so well demonstrated in children, constitute a picture of rapid deterioration. Increased inflammation produces complete destruction of the elastic and muscle fibres; resultant debris brings occlusion of the lumen; the cilia give up the unequal struggle, and their consequent paresis is followed by organization, shown in the replacement of their columnar by squamous-cell epithelium. Endarteritis of the vessels in the walls brings increased fibrosis; areas of atelectasis in the alveoli of the neighbouring bronchioles add to the negative intrathoracic pressure already pulling the dilated lumen into sacculi, until finally there is complete destruction of all elements, including the cartilage, and perforation brings further sepsis to surrounding parenchyma.

The x-ray picture changes with these developments. Linear densities previously noted become more irregular and extensive, and fibrosis is demonstrated by the shift of the heart and mediastinum to the affected or more affected side. Septic extensions through the bronchi to lung tissue are seen as ill-defined areas of loss of translucency, like blobs of cotton-wool, around and intimately mixed with the shadows of chronically inflamed and dilated bronchi. These, at first small and more or less discrete in the acute state, later become confluent, and are often entirely similar to the shadow now called that of pneumonitis; they have, however, a distinctive and diagnostic difference in that the accompanying fibrosis produces mediastinal shift. Such shadows come and go with the onset of and recovery from the well-known exacerbations of the established disease. But temporary recovery only adds to the vicious circle of dilatation of the bronchi as new areas of atelectasis repeat the previous process, so that the basic and diagnostic appearances of marked peribronchial vascularity are still heavier, more grossly contorted, and less and less associated with the linear distribution of normal bronchi.

Examination with lipiodol will show exaggerations of the anomalies previously noted on its introduction. Enlargement is much more pronounced, the edges of the bronchi will be more confused and nodular; some will show nothing comparable with normal outlines, but be replaced by gross sacculations, while still others will be completely indistinguishable and lost in a ragged cavity invading surrounding parenchyma to greater or lesser degree.

Physical signs have also altered. The mediastinum has moved to the affected or more affected side. Such shift is most easily demonstrated by the "sterno-mastoid sign." This consists in gentle palpation of the band of the sterno-mastoid towards its origin at the inner end of the clavicle while the patient is lying or sitting in a relaxed position with the head central to the thorax. On that side to which the mediastinum is either pulled or pushed there will be found marked tension. The scaleni on the same side of the neck may be similarly affected. Simple scoliosis can produce such a sign in minor degree, but can be excluded very easily by chest inspection alone.

Developed osteo-arthritis is now an evident sign. This is "septic" in type: the whole terminal phalanx is involved, enlarged in all diameters, gross, clumsy, and "drumstick" in appearance. Such clubbing is entirely different from the usual finding in tuberculosis, where the enlargement is "dorsal-palmar" in type, and tends to give a more claw-like, tapered, and refined look to the fingers.

Marked lack of movement and dullness are present over the affected areas. Added sounds take on a new and distinctive character. Coarse rhonchi may be heard between exacerbations, as there are areas of incomplete blockage of the lumen; but the most diagnostic signs in such conditions are rales, exceedingly coarse and metallic, best heard in the first phase of inspiration, and remaining post-tussive. They tail off in the second half of inspiration to those already described as evidence of fibrosis, and tell us our patient has reached the stage of sacculation and abscess-cavity formation. Destruction of all elements of the bronchial wall is active and progressive.

During exacerbations the areas with surrounding pneumonitis may be quite silent owing to complete blockage of the lumen and the filling of communicating lobules with pneumonic exudate, but examination repeated after a period of rest in bed will show further increase in numbers and intensity of the characteristic metallic rales, which enroach more and more into the middle phase of inspiration, showing that the patient has now developed lung abscess of bronchiectatic origin.

Lung Abscess

The cavitation of lung abscess which is not bronchiectatic in origin is entirely different in physical and radiological signs throughout its development, although its pathology is rather similar in its main features. We have seen that in bronchiectatic cavity formation the primary process may be followed from an intrabronchial origin and that the abscess is an involvement of parenchyma by extension. Such an abscess cavity is met with in overflow, by proximity plus pressure, in cases of empyema, and is common in the interlobar type. It is similarly found after aspiration of foreign bodies and septic material into the bronchi—for example, after operations on the upper respiratory tract.

We will not deal here with multiple small abscess formation due to dissemination of septic emboli through the blood stream, where the breaking down is an extension of connective-tissue destruction, but will confine ourselves to that type of abscess which has its beginnings in the alveolar spaces and follows bronchopneumonia and, more rarely, pneumonia as the primary disease. We find that the branches of the more vertical right lower bronchi are more frequently involved than the left in bronchopneumonic cases: for the same reason the upper lobes are more rarely affected than the lower. The site of the lesion is far more often peripheral than central. The majority of the abscesses are superficial, and so immediately under the pleura that it is affected from the onset. At an early stage they are not easily determined in outline post mortem, being merely mushy gangrenous-looking areas in the middle of bunches of alveoli occluded by typical pneumonic exudate. There is, however, a very distinct change in the film associated with the causative disease. If this has been pneumonia, the loss of translucency, previously equal from periphery to heart shadow at any one level throughout its extent, becomes greater in the abscess area, and comparatively less to entire absence, in other areas of the affected lobe. The denser area is generally in the outer zone of the lung field. There is no shift of the trachea or mediastinum to the diseased side.

If the previous condition has been bronchopneumonia the alteration in shadow is just as dramatic. In place of scattered areas of loss of translucency, never confluent and yet never entirely separated by normal translucent areas, and generally much more evident over one lower zone than the other, there appears the shadow described above. This is confluent, ill defined in its edges, and heaviest in its central zone.

To physical examination there is definite lack of movement of the affected side and a fairly limited impairment of note. The diagnostic stethoscopic sign is a coarse pleural rub, usually far more extensive than the area of dullness, and out of all proportion to symptoms; indeed, it may be entirely painless. Such a finding over the right upper lobe, especially if it be post-operative to upper sinus infection and anterior and below the clavicle, is almost by itself diagnostic of abscess formation. When actual cavitation occurs the pleural rub either becomes very localized and annular in distribution to the underlying lung lesion, or disappears entirely, as the pleura has become adherent and thickened in its layers. But a new and equally diagnostic stethoscopic sign appears.

In pneumonic cases, in place of the redux crepitations of reopening alveoli, coarse metallic rales of the character already described in bronchiectatic abscess are heard, this time most insistent in the mid-phase of inspiration. They are, so far as their appearance in inspiration is concerned, the signs we heard in the last stages of abscess formation in bronchiectasis, where the lung involvement was secondary to bronchial sacculation: there they were a continuation to the mid-phase from the first phase of inspiration; now they begin in the mid-phase as lung involvement by sepsis precedes bronchial involvement. Accompanying them throughout inspiration there may be high-pitched sibilant and coarse rhonchi, of the type commonly found in partial blockage of the bronchi. Where bronchopneumonia has been the preceding disease these metallic rales replace the moist rales, of definitely less intensity, heard in the same phase of inspiration in all ordinary uncomplicated cases.

There is still at this stage no shift of the mediastinum to either physical or radiological findings, but the latter change within the area of the actual lesion. Towards the centre of the dense area a translucency becomes apparent, either ill defined or with a linear edging only, oval or rounded in shape. A fluid level may appear, but is unusual at this stage. Its outline is no more marked by viewing the film at the distance of some six feet than it is on close inspection, nor does any change appear at differing distances in the surrounding area of loss of translucency. In both such features, as we shall see later, the film differs considerably from that of fibro-caseous tuberculosis with cavitation. The reason for this we can find by examination of the cavity at such a stage post mortem. The wall is not fibrotic but ill defined and ragged, and is heavily infiltrated with large mononuclear phagocytes and polymorphs. The surrounding alveoli are filled with typical pneumonic exudate. Should such a cavity not be evacuated further changes will appear. Generally within three to four weeks of its first formation dense fibrous tissue appears in its wall, shutting it off from surrounding lung. Similarly, organization of their pneumonic exudate is followed by induration of surrounding alveoli. Bronchi become infected and bronchiectasis supervenes; we are witnessing the reverse process, albeit in a restricted area, which we followed in the formation of abscess cavity in primary bronchiectasis.

Film now shows a well-defined cavity wall, rounder and smoother in outline than the chronic tuberculous cavity, and more apt to contain a fluid level. Further in comparison with such a cavity, it changes more suddenly from its well-defined inner wall to a generalized loss of translucency in surrounding lung tissue, and therefore still alters but little by distant viewing as against close inspection. Pathology tells us why: induration and organization are confined in lung abscess to alveoli close to the circumscribed lesion, but in fibro-caseous tuberculosis acinar collapse and fibrosis are widespread in comparison, and generally

scattered throughout at least the major part of the diseased lobe in which the cavity develops.

Commencing mediastinal shift, now evident on the film, can be discovered by physical examination, and is due to the increasing fibrosis, which adds its stethoscopic signs, already described, to those of the still more insistent metallic rales. They are a definite danger signal; they show that the basis is laid for complicating bronchiectasis, which may persist even with apparent recovery as judged by symptoms. Clubbing of septic type now appears so rapidly that changes can be noted almost from day to day up to gross "drumstick" terminal phalanges.

Disappearance of the annular shadow to ordinary film examination may be entirely misleading in summation of prognosis. Tomography or examination with lipiodol will often show that all that has happened is that the primary lung abscess is replaced by a bronchiectatic abscess, communicating with a dilated and infected bronchus. Herein lies the explanation of what is often misread as a re-exacerbation of the primary symptoms, but is really a secondary and dangerous bronchiectatic process. Stethoscopic signs will aid us to this conclusion. Just as the progress in primary bronchiectasis from dilatation to lung involvement was marked by the forward march of metallic rales from the beginning of inspiration to beyond its middle phase, so is the backward progress now evident, from alveolar spaces to bronchial tube, by the retrogression from mid-phase to beginning of inspiration of these same characteristic sounds.

Tuberculosis

The progress of tuberculosis differs widely from that of both lung abscess and bronchiectasis in physical signs, radiological findings, and pathology. The key to the understanding of all changes leading up to tuberculous cavitation lies in the study of the behaviour of the acini. Until their caseous content breaks down they are completely silent areas, although they impose a lack of movement on the affected side far beyond their actual extent. But Nature attempts to evacuate them immediately they begin to disintegrate, and each discharges into its corresponding bronchiolus respiratorius. Now appears the earliest stethoscopic sign of active tubercle in a fine sibilus heard in the second half of inspiration. As it is increased in intensity the deeper the inspiration, and reaches its loudest and its highest pitch in the last third of inspiration, it is entirely different from the sounds of ordinary bronchitis.

We have now seen how all these differing sounds, interfering with normal inspiration in differing phases, seem to have a definite correlation with the actual site of the initial lesion in each disease producing them. Bronchial dilatation in early bronchiectasis interferes with the first phase; lobular lesions in lung abscess with the mid-phase; and acinar lesions in tuberculosis with the last phase.

A film taken before disintegration of acinar lesions begins is generally of one of two main forms. The first will be typical of the fibro-caseous or proliferative form of the disease, and present a rounded area of loss of translucency, usually in the subclavicular region or near the apex of the lower lobe, on one side of the chest. This is known as the "Assmann focus." The acute, non-fibrous, or exudative type of infiltration will present, on the average, many areas not unlike bronchopneumonia. Although more woolly in their edges, they have more clearly defined translucencies between them than is the case in simple bronchopneumonia. In addition they are more numerous, and are generally more marked in or are confined to the upper and middle zones of the lung fields, as against ordinary bronchopneumonic distribution in the lower lobes.

It is necessary to follow separately these two types of disease in their progress towards established cavitation.

Acute Exudative Tuberculosis

Acute disease seldom produces a large cavity, although several individual vomicae may appear as if simultaneously, or in quick succession. This is because by its nature it lacks the organization, collapse, and consequent increase in intrathoracic negative pressure characteristic of the proliferative type. The inflammatory exudate filling the acini caseates and disintegrates freely, uncontrolled by fibrous tissue and its accompanying numerous giant cells. No barrier is set round it to protect surrounding lung tissue, and as a result disintegrated tissue fills the bronchi, and bacilli flood the lymph nodes in increasing numbers, causing them in turn to caseate rapidly. The disintegrating area has a moth-eaten, ragged outline, but now and again the process is so acute as to give the impression of a large, "ticket-punch" hole. The pleura immediately adjacent is actively inflamed.

On the film such a cavity will appear as an area of comparative translucency among the scattered shadows already described. Sometimes it has no clearly defined edge beyond a ragged outline; but now and again a definite wall is seen, heavy-looking and of the density of pneumonic exudate, which, we have noted, is indeed its structure. It will then differ quite distinctly from that of chronic lung abscess on the one hand and the chronic tuberculous cavity on the other. It lacks the defined, organized inner edge of chronic abscess and does not appear within a circumscribed area of equal loss of translucency in an otherwise generally uninfected lobe. A later description of the chronic tuberculous cavity will be sufficient aid in this differential diagnosis.

Heavy hilar shadows will be noted, indistinct and confused, although the right tracheo-bronchial group of glands may show up as a separate and fairly well defined entity. As there is no fibrosis, shift of the mediastinum is not present towards either side of the chest.

Physical signs are mainly stethoscopic. Clubbing of the fingers is generally absent beyond its first manifestations. There is little true dullness; lung movement is poor. The preponderant part of the infiltrated area is usually silent, although here and there the diagnostic sign of active infiltration will be heard. Over the site of the vomica localized pleural friction may be heard, but the diagnostic sign of active cavitation consists in a very circumscribed coarse bronchitis, which gives the impression to the listener that it comes from the depths of the lung tissue. He is hearing a true tuberculous bronchitis by the flooding of the bronchi with caseating exudate.

Chronic Fibro-caseous Tuberculosis

We have already seen that the usual site of the earliest lesion in proliferative tuberculosis is subapical in the upper lobe. This is the usual site of its cavity, although by the time of its formation infiltration and fibrosis have, in the majority of cases, spread far into the lower lung fields.

Sometimes the Assmann focus breaks almost immediately into cavity formation. It then shows on the film as a well-defined annular shadow, not thick in its outline, and usually with a fluid level. The average case, however, shows a slow disappearance of its regular annular outline: its edge becomes confused, its loss of translucency is no longer uniform, and its lower edges merge into shadows made by the increased blood supply of draining bronchi tracking towards the hilum. Already a slight but definite shift of the mediastinum towards the affected side can be seen, and viewing the films at some distance will throw into relief against a background of generalized loss of translucency

bunches of acini, organized or collapsed, and starting to fuse. This is because, from the first, fibrosis has attempted to keep pace with infiltration. Tuberculous granulation tissue has entered the bronchioles; empty acini have collapsed; others are unable to rid themselves of their exudate, which proceeds from caseation to fibrosis. The bronchial wall weakens, dilates, loses its powers of elastic recovery in expiration, and is pulled more and more outwards by the intrathoracic pressure, which is now aided by the surrounding organization. Neighbouring affected acini combine to a solid fused surround of the advancing cavity; more distant ones are scattered throughout the diseased portion of the lung amid more active and less fibrotic areas. Surrounding lung tissue shows much fibrosis. Bronchi show thickened walls, and overlying pleura is adherent, its layers being organized and increased in depth, often to a considerable extent.

Physical signs are in keeping. Typical tuberculous clubbing is present in a large proportion of cases, although in very advanced and long-standing cases superimposed lung infections may make it approximate to the septic type. There is marked displacement of the mediastinum to the affected side, or a less marked but appreciable shift to the more affected side in bilateral disease.

While the signs of active infiltration remain at the advancing edges of active areas, and the signs of fibrosis may be heard throughout the diseased portions of the lungs, these are generally restricted in extent, as against the real amount of involvement found by film examination. A fairly safe rule of thumb appears to be that signs heard above the clavicle mean that at least one-third of the lung is involved, and that signs heard below the clavicle mean that at least half of the lung is involved. Where laryngeal tuberculosis is present we may estimate the true extent as roughly three times that of our stethoscopic findings.

The development of the cavity is signified by the addition to these sounds of coarse metallic rales, again of the same character and quality as those noted in lung abscess and bronchiectasis, but now heard in the last third of inspiration, increasing in intensity the deeper the breath, and remaining, and even increasing in number and coarseness, after cough. In addition, many cases have showers of fine dry-sounding crepitations with the act of coughing, disappearing immediately inspiration begins. They are evidence of thickening and adhering pleura, which is shown on the film as a generalized, even, slight loss of translucency over the infiltrated and fibrotic lung.

The chronic tuberculous cavity shows up on x-ray examination as no other cavity does. It has usually a fairly wide but always well-defined wall, which on close inspection may be hazy in its distal borders, where changing densities show how the scattered nodules of organized and collapsed acini of the barrier are lying in a background of fibrosed lung and covered by thickened pleura. Viewing at a distance, however, throws these densities into strong relief against the background, thus producing a picture quite distinctive, and in itself diagnostic, of fibro-caseous tuberculosis.

Conclusions

Such, then, is an attempt at correlation of pathology with physical and radiological findings in one small part of the fascinating study of chest disease. It is, as indeed it must be, an individual attempt. To return to the simile of the jigsaw puzzle, it has placed personal values on the sets of pieces and the single pieces. Part of the charm of the game is that other players may set their own values but arrive at the same answer, which, as already said, must be the physician's decision on the individual patient's pathogenesis at the moment of diagnosis.

We can see how every game from the first has a definite effect on the playing of its successors. We learn gradually to attach special meanings to our own set of pieces which we call physical signs in the light of increasing use of the radiological set; we read new values into our films by applying to them these readjusted physical signs; and we add to both a freshened interest in living pathology. In other words, each game is a new experience, instructive, exhilarating, and whetting to the appetite for further and new problems. The number of these is so large that we need never fear that in our short time we shall solve them all; we have games for a lifetime.

TREATMENT OF HALLUX VALGUS DEFORMITY IN SOLDIERS

BY

R. BROOKE, O.B.E., M.S., F.R.C.S.

Lieutenant-Colonel, R.A.M.C.

A surgeon who has treated with success hallux valgus deformity of the great toe in civilian patients may be disappointed with the results he obtains when similar methods are used in the case of the soldier. Why should there be this difference? There are many possible explanations. One is that usually in civilian life no question of compensation arises in this type of case, and the patient is thus forced by financial necessity to get back to his job as quickly as possible; he will co-operate to the fullest extent in the after-treatment and will make the best of any disability which may remain. In the case of the serving soldier this incentive to get well quickly is absent. He has no financial worries, is usually comfortably housed in an E.M.S. or military hospital, is excused duties, drill, and marching, and yet is not confined to bed and is allowed considerable freedom which he is fit to enjoy. It is not surprising that he takes his time in getting well. He is unenthusiastic, perhaps lazy, and often perhaps completely uninterested in the treatment. This lack of co-operation may lead to a poor result, which soon becomes apparent to the patient, and on occasion he will exploit it to the full. The greatest caution is therefore called for on the part of the surgeon, especially where operative treatment is contemplated. Each case must be considered on its own merits, and those only selected in whom some degree of co-operation may reasonably be expected, after weeding out men who have a grouse against everything—Army life in particular.

An analysis of Army medical categories will show that a man may be placed in Category A1 if he has no foot defects, A2 if he is an A1 man with slight foot defects, C if he would be fit for a higher category but for marked foot defects. The ultimate aim of any form of treatment is threefold: to raise the soldier to a category higher than that in which he is at present; to prevent his being placed in a lower category; and, finally, to prevent his being put in Category E and boarded out of the Army. Even if his ultimate category is not one of the higher ones, treatment will be worth while provided the time taken over it is not too great.

To be eligible for the lowest category, C, he must be capable of carrying out a full day's work in his own arm for continuous periods without going sick. He must be able to wear and march in Army boots. This does not imply that Army boots are an additional burden which he must bear. They may be heavy but they are well designed, and it is not the boots that are in any way at fault. The soldier, it is true, refers all his foot troubles to his Army

boots. He may be boarded Category E because he cannot march in them, but this is only tantamount to saying that no treatment will offer any prospect of his walking in any other than special boots or shoes with reasonable comfort, and probably not even in these. It may perhaps be that through an error of judgment or an accident the treatment attempted has failed in its object, or was possibly unsound in its conception and under war conditions should never have been attempted.

A man working in a sedentary occupation in civil life may for many years carry on in comfort by wearing shoes, only to find that his feet will not stand up to the strain of wearing Army boots. The Army, for self-evident reasons, does not make an issue of shoes. Men who by wearing shoes could be employed in clerical or administrative duties are thus lost to the Service. Special boots, and even such appliances as arch supports, may be obtained in isolated cases, but the formalities connected with their issue are so great that, in practice, attention is confined to an attempt, by palliative measures such as foot drill and massage, and in selected cases operative treatment, to make the patients well enough to wear the ordinary boots supplied without these additions.

Palliative Treatment

In soldiers, in most cases, the deformity is of the acquired type and is moderate in degree, so that much can be done by well-planned and graduated active exercises, with preliminary thermotherapy, and faradism to the invertors of the foot and intrinsic muscles, which are also at fault. Active exercises may be taught to music, and it is an advantage to group patients together into classes for this purpose. Newcomers are encouraged by the progress which they see in others. A course of daily active foot-exercise classes will last for twenty-one days, and the less severe cases may have recovered sufficiently at the end of that time to return to their units. These are, however, long-term cases, and more than one course may be necessary to tide the patient over the period of foot-strain due to the sudden change from a sedentary occupation to an active Army life.

Operative Treatment

The patient is a young man and, speaking generally, the deformity is not in its advanced stages and arthritic changes have not yet supervened. There is a well-marked bunion, an outwardly overriding or underriding great toe, a varying degree of stiffness and pain, and an associated dropping of the anterior arch. The deformity is fixed, and cannot be corrected by passive movement. Operative removal of the bunion will ease the pressure of the boot on the tender and sometimes inflamed soft tissues and, followed by a short course of physiotherapy, may be all that is required to enable the man to return to duty and to wear Army boots with comfort.

Such an operation does not correct the valgus deformity of the great toe; nor, for that matter, do arthroplasties, in which the metatarsal head is partly removed and reshaped or the base of the proximal phalanx removed. Only in older patients with arthritic and painful joints are these operations of Mayo and Brande justifiable—the exception rather than the rule in soldiers—and the most that can be hoped for is that by removing enough bone the joint will be rendered flail and painless. The great toe ceases to act as a lever and is carried as a useless appendage. Failure to remove enough bone gives a painful and stiff joint—rather worse, if anything, than it was before. In both these instances the toe will be shortened but the valgus deformity will persist. It is difficult to understand why so much is expected from an arthroplasty of this important weight-bearing joint when the results of arthroplasties in other

weight-bearing joints, except in the hands of a few, are on the whole so indifferent. It is certain that, in general, such radical operations have no place in the treatment of hallux valgus deformity in the soldier. Apart from the removal of the bunion already mentioned, the less the bone is interfered with the better. If the deformity is fixed, and cannot be corrected by palliative measures alone, operative treatment should be confined to the soft tissues. Some form of tendon-reposition operation, combined with a capsulotomy of the outer contracted part of the capsule of the metatarso-phalangeal joint, such as Silver and McBride's operation, is all that should be attempted.

Tendon-reposition Operation

The valgus position of the great toe is maintained by the contracted parts of the capsule and ligaments on the outer side of the metatarso-phalangeal joint by the pull of the outwardly displaced tendon of the extensor hallucis longus

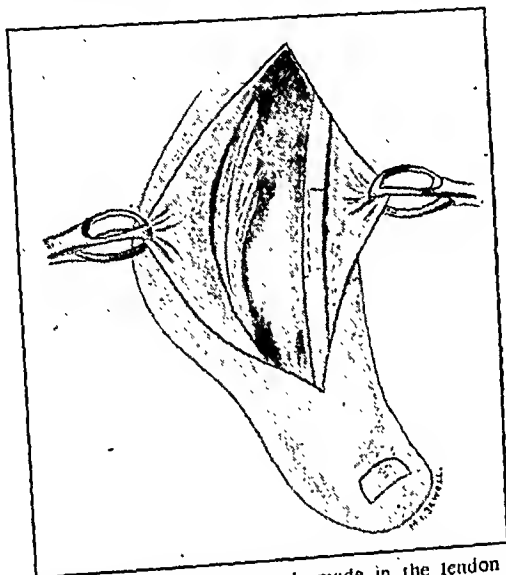


FIG. 1.—A Z-shaped incision is made in the tendon of the extensor hallucis longus. The abductor hallucis is exposed, and is incised near its anterior border.

and by the pull of the innermost tendon of the extensor brevis digitorum passing to the great toe, and, to a lesser degree, by the adductor hallucis muscle. The long flexor tendon is not an important factor, for it is retained in its correct axis by the groove between the two sesamoid bones, and thus the direction of its pull is not altered.

The capsule of the metatarso-phalangeal joint may be exposed through a three-inch vertical incision to the inner side of the extensor hallucis longus tendon, and the soft tissues separated from it round to the outer aspect. Here an incision, half an inch in length and vertical to the long axis of the toe, may be made from the contracted capsule down to bone, when the toe may at once be placed in the over-corrected varus position with the greatest of ease. No attempt should be made to sew up the gap in the capsule thus formed. The tendon of the extensor hallucis longus muscle is next exposed for a distance of three inches down to its insertion and divided by vertical and horizontal incisions as in a tendon-lengthening operation. By retracting backwards the inner margin of the incision the inner part of the abductor hallucis, which in this region is partly muscular and partly tendinous, comes into view. The tendinous portion is traced downwards to its attachment to the inner sesamoid bone, and is then incised horizontally over a distance of one and a half inches, rather nearer the anterior than the posterior margin of the tendon. The

smaller anterior portion of the muscle and tendon can then be pulled forward, and will form a loop through which the divided extensor hallucis longus is threaded from deep to superficial aspect, put on the stretch in the over-corrected varus position, and sewn again to the proximal end with three or four interrupted stitches of fine silkworm-gut (Figs. 1 and 2). The innermost tendon of the extensor digitorum brevis is divided and the wound closed.

The toe is splinted by a small wooden splint (half a wooden tongue depressor serves well for this purpose) placed along the inner margin of the great toe and fixed first to the toe and then to the foot by two pieces of narrow strapping. On the fifth day the patient begins to walk with the splint *in situ*. On the tenth day active exercises are begun, and from that time the patient walks barefoot, both indoors and out. The splints are worn continuously for four weeks

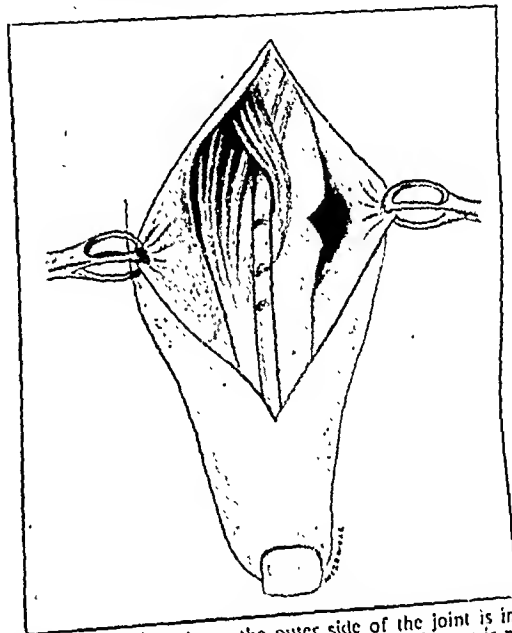


FIG. 2.—The capsule on the outer side of the joint is incised vertically. The tendon of the extensor hallucis longus is passed through the slit made in the abductor hallucis muscle from deep to superficial aspect, and sewn again to its peripheral end by three interrupted stitches.

and are removed only for remedial exercise treatment. For a further three weeks they are worn at night only.

The power of active adduction and dorsiflexion of the great toe returns rapidly, and in from five to six weeks from the date of the operation the patient is walking without pain and without a limp, and is fit to rejoin his unit.

Conclusions

If operative treatment of hallux valgus deformity in soldiers is contemplated, only those cases likely to operate in the post-operative treatment should be selected.

The patients are young, and much more can be done with palliative treatment alone than is the case in civil life.

Bony operations involving removal of the base of the fifth phalanx or partial removal of the head of the metatarsal bone are best avoided.

An operation of tendon reposition with division of contracted capsule of the joint is described.

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"NIGHT-BLINDNESS"—A PSYCHO-PHYSIOLOGICAL STUDY*

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Specific Psychological Data and Characteristics

Certain data commonly found in the whole series, regardless of the personality type concerned, appear worth recording.

1. *Eye Troubles in the Family.*—Of the total of 52 patients 9 stated that another member of the family suffered from night-blindness. In one of them, incidentally one of the best-adjusted of all, the patient's father, two brothers, and two sisters complained of the disorder. Complete blindness in near relatives was reported by 7, injury to the eye by 3, and severe anomalies of refraction by 8.

2. *Nervous Habits.*—Of the patients 23 were nail-biters as children, 1 a thumb-sucker, 15 were stutters, and 23 were fastidious about their food; in all, 38 were either nail-biters or stutters or were fussy about their food as children. As adults, 20 were still nail-biters (their nails were bitten down to the quick), 1 was a thumb-sucker, 9 suffered from speech disorders, and 15 were fussy about their food. Altogether 33 were nail-biters, had an impediment of speech, or were fussy about their food.

3. *Morbid Fears.*—If an allowance is made for minor degrees of fear of darkness (\times), which are so very common in children, fear that must be regarded as excessive ($\times \times$, $\times \times \times$) was found in 24 and very severe fear ($\times \times \times \times$) in 6 of the patients as children. It persisted into adult life to an unusual extent in 22 (very severely in 5). When on rare occasions they ventured out in the dark they kept to the middle of the road, unable to shake off a fear that men might be prowling about ready to pounce on them, and every harmless passer-by was regarded with fear and suspicion. Until they joined the Army four of the men slept with the light burning. The mother of one had to sit by his bedside until he fell asleep; another disturbed his comrades in the barrack-room by getting up at night to stoke the fire or switch on the light.

Unusual fear of injury was pronounced in 32 of the men as children and in 28 as adults. Afraid of getting hurt, they avoided fighting and rough games as children. As adults they are extremely careful in crossing roads and are generally told that they have too much sense of danger. They have an irrational fear of doctors, nurses, and hospitals, and are terrified of minor surgical operations. They cannot stand the sight of surgical instruments, blood, or accidents. An otherwise courageous man, a special constable before joining up, used to "shake like a leaf" if he had to take patients injured in accidents to hospital. Some have an unreasonable fear of dogs, others of being robbed of something precious (of what, they do not know). One man got into a state of panic each time his hair was cut.

In 5 of the patients concern about their eyesight appeared to be related to previous injury or severe visual disorder. In 12 others their fear of blindness was clearly irrational. Long before the onset of their night-blindness they took great care not to throw too much strain on their eyes, never took part in stone-throwing, kept out of dust-clouds, and wore eye-shades at their work. Even if they were of very limited means they con-

tributed generously to charities for the blind. One man always walked stooped; another was laughed at because he closed his eyes when boxing. An airman, previously fond of watching "dog fights" in the air, after his breakdown made himself "as small as possible" if enemy planes were overhead, and felt unable to look up. A man who previously had distinguished himself by bravery, after his breakdown went straight to bed when an air-raid warning was given, and covered his eyes with the blankets. Several of the men were terrified of bayonet practice because of potential injury to their eyes, and one made himself a laughing-stock by wearing his steel helmet all day long; he felt that it gave better protection to his eyes than the forage-cap.

Other fears often encountered in these patients are fear of heights, claustrophobia, fear of water, fire, contamination, and infection.

4. *Conflicts over Aggressiveness.*—Four of the patients were overtly over-aggressive in adolescence or adult life. Two of them liked to provoke brawls, in the course of which, however, they used to faint. Two were criminals: one of these, a practical joker, delighted in tipping water out of windows, tying people to chairs, or screaming in cinemas. The vast majority were unaggressive, over-compliant, soft-hearted individuals. In some of them their aggressiveness was more or less completely repressed. They could not bear to see anyone in pain. One, for example, had not visited the cinema for years because he could not bear the sight of atrocities on the screen. He took a job with the N.S.P.C.C., but had to give it up because he could not stand reading the reports. These men accordingly loathe warfare, and some of them considered seriously reasoning with the enemy if they came up against him. In others the repressed aggressiveness was expressed in fantasy. "Roaming through the fields alone all day," said one, "I would sit at my camp fire at night and think to myself: 'The last generation had a war, why shouldn't we?'" He fancied himself a great explorer, a soldier, a doctor in a slum practice, an adventurer on the high seas. One of the patients had chosen Napoleon as his hero, and another one, a puny little man, wanted to descend as a parachutist in the centre of Berlin and wreck buildings. A great number of men, displacing their aggressiveness from their inner world into the outer, suspected danger everywhere, and were, as already mentioned, subject to numerous morbid fears. Some of the men succeeded in diverting their aggressiveness into channels which were tolerable to them. Two of the most tender-hearted patients took to butchering, and another one similar in type, a solicitor, chose to prosecute people. Others, deprived of an external outlet for their aggressiveness and prone to self-punishing attitudes on account of their inner conflicts, directed their aggressiveness against themselves.

5. *Prying Interests, and Wish to be Taken Notice of.*—It is obvious that the interview method does not lend itself to a careful analysis of early prying interests. Only very few admitted early peeping pleasures. One of them, the practical joker, took a special delight in bathroom intrusions. The majority denied direct prying interests. More than one, however, had gone out of his way to take classes in human anatomy without actual professional interest in the study. Several had volunteered for first-aid work despite their professed horror at the sight of accidents. One made use of his position as an unqualified chemist's assistant to listen to the complaints of his customers and even to examine them. A surprisingly large number of patients (13) reported spontaneously that as children they had repeatedly been "ticked off" for their uncalculated inquisitiveness and curiosity, and that later in life they had an unquenchable thirst for knowledge. With a perhaps relevant frequency they showed as children a predilection for visual activities, such as drawing, sketching, and model-making, which afterwards in some cases had definitely influenced or shaped their lives. In one patient a gross inhibition of visual activity had occurred early in life: he could not bear to look at the sky, and all his life had walked with his eyes fixed on the ground.

Similarly most of the patients were inhibited in their desire to be taken notice of. They liked to keep in the background, and if made the centre of attraction they felt uneasily all eyes focused on them. A fair number were unusually bashful in stripping in front of others. Six patients, by contrast, were only happy if they could show off.

* Concluded from page 575.

Mode of Onset

Nine patients stated that they had been night-blind since childhood, and in 16 it began later in life but before the war; 13 noted their first symptoms when the black-out started, and 14 in the course of the war. The onset was gradual in 31 and acute in 21 patients. No definite correlation between personality types and mode of onset could be established.

In four patients night-blindness started following some eye disease, injury to the eye, or eye operations which themselves, in the opinion of the eye specialist, did not account for the disturbance of night vision. In three cases it was preceded by a serious accident and was accompanied by various nervous symptoms. Eleven times it occurred in the course of a nervous breakdown, with which it was clearly connected. One man, a tin-worker, attributed its onset to the glare in the factory, but there was strong evidence in favour of the hysterical origin of the disorder.

The onset of night-blindness in the course of a nervous breakdown observed in eleven patients deserves special consideration. The setting, in four cases, was that of men of unusual gifts who, after tremendous efforts, came up against a situation which for different reasons was more than they could stand. One man developed an acute anxiety state with night-blindness as a prominent symptom when one day, after many years of happy married life, he caught his wife with his best friend as her lover. In six others their neurosis and night-blindness seemed to be precipitated by terrifying war experiences, such as the sight of mangled bodies, close friends killed in front of them, the sight of destruction of their much-treasured property, etc. Twice night-blindness which had existed since childhood was aggravated by similar circumstances. Here are some brief examples:

ACUTE ONSET

An aircraftman aged 19, who had lived a reckless life and had knocked about the world in an ocean tramp, enlisted in the marine section of the R.A.F. and his ship was blown up by a bomb. He struggled in the water, watching his comrades dying one by one, while he himself felt apathetic, unafraid, and ready to die. After his rescue and return to this country his symptoms came on; he became afraid of everything, was sleepless and unduly fatigued, and at the same time he noticed that his vision in the dark, on which he had formerly prided himself, rapidly deteriorated until he was night-blind.

Another man aged 21, grossly over-dependent as a child but afterwards ostentatiously independent and fond of taking risks and of gambling, had always been keen on aeroplane models and aeroplanes, and was fortunate in securing confidential work in the R.A.F. which thrilled him and gratified his inquisitive nature. On being posted to an aerodrome in a heavily bombed area he, however, was exposed to a severe raid in which a direct hit occurred near him, and he witnessed the spectacle of mangled bodies lying around. Some of his closest friends were among the fatally injured. After this incident he began to have nightmares, tremors, sleeplessness, headaches, and night-blindness. Formerly restless and thirsting for action, he has lost his confidence, ruminates on the fate of the shot-down enemy, reflecting: "These poor blokes had fathers, mothers, and sweethearts."

A corporal aged 29, averse to any "damaging mischief" as a child and professedly unaggressive and unduly soft-hearted throughout his life, chose butchering as his career. He studied anatomy and physiology of cattle in his spare time and, as his interest grew, took classes in human anatomy and physiology. When one of his colleagues disembowelled himself by accident he was completely unperturbed. "Blood is to the butchering business what water is to a man who works on the street mains," he said. The incident prompted him, however, to join the St. John Ambulance Brigade. Anxious to be exempted from use of "aggressive weapons," in case of emergency he enlisted

in the Territorial R.A.M.C. before the outbreak of war. Fearlessly he attended the wounded under fire; while doing so, and just when lifting up a wounded officer, a bomb came down near him and killed the officer in his arms; in fact, the officer's body protected this man against the effect of blast. Shortly afterwards he began to suffer from night-blindness and photophobia.

CHRONIC ONSET

A soldier aged 21, quiet, retiring, shy, unaggressive, passive, and over-dependent, was pampered and spoilt by both his parents because of his delicate state of health. He is still nicknamed by his brothers and the neighbours "Mummy and Daddy's boy." He has always been haunted by morbid fears—fear of infection, of heights, and of policemen. If anyone speaks sharply to him he shakes all over. His main fear, however, is that of darkness. He has always slept with his head covered by the blanket, and he very rarely went out in the dark. His family lives at the top of a tenement. If, on rare occasions, he came home late at night, he called at the house of a neighbour, and she took him home, waiting at the bottom of the stairs until he had safely reached his parents' flat. The boys in the neighbourhood used to laugh at him about his timidity. He has always been short-sighted, and noticed difficulty in seeing in the dark for the first time when the black-out started. When he was on night patrol one of his comrades had to take his hand.

Another soldier, aged 25, had always had an intense longing for love. Resentful of the want of love at home, he repeatedly ran away, but he never got further than a few miles. As he was thin, weak, and miserable as a child, he was an easy prey for teasing and cruelty by other children. He envied other boys who were big and strong, and he hoped one day to be able to protect himself and others. His ambition was to be a boxer. He has always been terrified of darkness and unduly concerned about potential injury to his eyes. Until 12 years of age he was a bed-wetter, and he still sucks his little finger. After a weak attempt at work he gave it up at 16, and he has since been unemployed and unemployable. At 18 he fell off a tree during his first attempt at smoking, and ever since he has complained of backache. Two years ago he was seduced by his present wife. He has never been really potent. His wife called him daft, and said that he ought to be drowned. He somehow managed to get into the Army, but right from the beginning he has been unable to do any duty. N.C.O.s told him he should desert, as he would save money to the country. The patient's nervousness has become worse during the last six years. He complains of sleeplessness, anxiety, depression, and lack of memory. Both by day and by night he gets frightened—of what, he does not know. He has frequent nightmares, dreaming that black people are after him with spears. Before joining up he rarely left his house, because he was afraid of people. If anybody talks sharply to him he trembles and bursts into tears. He has repeatedly considered suicide, but for fear of hurting himself has always desisted from committing it. His night-blindness started two years ago in connexion with eczema of his eyelids.

One case may be given in slightly greater detail.

A soldier aged 25 lost his father when he was an infant. His father was reported to have been a "strong man"; once he had taken up a challenge to wrestle with a Russian bear in a show and had won a cup, which to the patient's great disappointment he failed to inherit. Stories about his father's feats were all the more awe-inspiring for the patient as he himself was sick and delicate as a child. Being of poor health and the only child, he was spoilt and pampered by his mother, to whom he was greatly attached. The punishing authority in the house was his grandmother, who, if he did something wrong, used to lock him in the cellar. "I used to scream the house down," he said.

As a boy the patient was timid, shy, retiring, over-sensitive, and easily reduced to tears. His only companion was a blind uncle, four years his senior. Working in a power station, this uncle had been "dazzled by the light and lost his eyesight." Children used to shout nicknames after them, and call them "Flash and Sparks." The thought that a fate similar to that of his uncle might one day await him struck him at times, and he used to think that he would rather kill himself than accept

anybody's help. In his spare time he liked to lend a helping hand to his mother, who often remarked that he should have been a girl. He preferred girls' company to that of boys. If on rare occasions he went out alone in the darkness he used to imagine that men were following him. "They might molest me; by that I mean force me into a car and kidnap me." Until 13 years of age he was a bed-wetter, and he is still a nail-biter.

For a time he thought of taking up boxing as a career, but being rather short-sighted and unable to see the ropes in the boxing ring, he "cut his throat" and had to give up the idea. He went into the cinema trade and became a re-winder. At 22 he joined the Regular Army "for adventure and excitement."

During the fighting in France he noticed the first nervous symptoms. He jumped at the least sound, trembled if he was addressed by N.C.O.s, and cried a great deal. The sight of "pieces of legs and trunks of men lying about" affected him very badly; he vomited frequently. On his return home people noticed that he had gone very thin; he rejected food and shunned company. He then went to Norway, where again he had a rough time. During a bayonet attack he stabbed three of the enemy and used the butt of the rifle freely. He wiped out two machine-gun nests by the use of hand-grenades. For bravery in this action he stated that he was recommended for the M.M. but did not receive it. Again the "ghastly sights" had a very bad effect on him. After the evacuation from Norway he made the acquaintance of his wife through a pen friendship, and he was more or less seduced by her. The morning after the first connexion with her he felt sore, and he had to hobble on two sticks for three days. Since their first intercourse his wife has refused herself to him and has been unfaithful to him. Although he realizes that he has made a wrong choice his only wish is to be reconciled to her, even if she should deny herself to him. Since then his nervousness has become worse: he shakes at the least noise and cries easily, and when air-raid alerts are sounded he goes to bed and covers his head with the blanket. During a recent leave he heard machine-gun practice; immediately he cowered down in a corner of the room. The patient is anxious to return to civilian life. He wishes to work in the telephone office in his home town, where among a number of women telephonists a job is waiting for him. He feels disappointed in the Army because his application to become a parachutist has been rejected. He would like to descend in the centre of Berlin and wreck important buildings. In case of an invasion he has planned to kill his family, his stepfather included, to prevent them from being raped.

His night-blindness started after an accident in Norway. One night his unit took shelter in the cellar of a house. As he came out of it the house was hit by a bomb and he was blown back into the cellar. Subsequently he was blind for two days, and ever since he has been unable to see in the darkness.

Psychopathology

It can be shown that all the patients examined were disturbed in the early stages of their emotional and instinctual development. Conflicts over dependence, over primitive aggressiveness, and over primitive sexual impulses were found to be prominent. Phenomenologically they were individuals who either had always been over-dependent on their mothers or had adopted an over-compensatory, reactive, and defensive attitude of virile independence. Their attitude towards their fathers was one of admiration mingled with fear and often overt hatred.

In the light of analytical knowledge, these facts, combined with the occurrence of nail-biting, stuttering, and food-fussiness in many of the patients, suggest an unresolved mother-child relationship which, originating at the breast level and continued into adult life, never lost its double-edged destructive and at the same time preserving character. These conflicts were accentuated when at a slightly later stage of development the patient encountered the conflicts arising from the triangular father-mother-son relationships. None of the patients passed through this phase successfully. A persistence of bisexual tendencies could be clearly seen in many of them. Their outward appearance of masculinity was often very delicately poised. On close examination it was found that underneath, throughout their whole lifetime, a continuous struggle against feminine and passive homosexual tendencies had been taking place.

Among their primitive sexual impulses which were prolonged into adult life, scopophilic and exhibitionistic tendencies, usually in a concealed but sometimes in a fairly overt form, were seen to be present to an unusual degree. The eyes of these patients became libidinalized more than is usual. From time immemorial in folk-lore, mythology, and idiomatic language the close association between aggressiveness and seeing on the one hand and incorporating and seeing on the other has been generally recognized. The "evil eye" and the devouring look are well known. Moreover, the importance of the eye as a phallic symbol has been stressed by the analytical school. In consequence it seems conceivable that severe taboos imposed on early sexual impulses related to the eye, as in the classical myth of Oedipus, may lead to self-inflicted blinding—that is, night-blindness. The limitation of the patient's blindness to the night is not surprising, perhaps, when we consider that night is predominantly the time for sexual expression and that darkness is the best ally of the criminal aggressor. In keeping with this it can be shown in many instances that the onset of night-blindness was ushered in and often precipitated by a dramatic incident when the patient, confronted by the horrors of war, was unable to tolerate the sight of the fulfilment of his well-harboured and deeply repressed destructive fantasies. The onset also coincided with the collapse of a painfully and carefully created virile façade, when in the final breakdown gives way to complete feminine submission and reappearance of childlike dependence.

Discussion and Conclusions

1. *G. I. Scott*.—In only one of the 42 cases examined was there a true ocular cause for the symptom of night-blindness.

2. *B. Semeonoff*.—Although the number of subjects in the control group was small, fairly satisfactory standards of normal dark adaptation seem to have been established. There is a distinct break between the lowest adaptation measure (3.0) among the "B" cases in the control group and the cases classified as defective (2.1 and 1.0). In the night-blind group, again, the lowest "C" case (1.5) showed a marked difference from the highest of the "D" cases (0.8). If 3.0 is taken as the lower limit of approximately normal adaptation instead of 2.5, the lowest figure graded "B," 16 of the night-blind cases may be regarded as showing normal or near-normal adaptation. This number is raised to 24 if the remaining "B" cases are included. In other words, 40 to 60% of the night-blind men tested for dark adaptation showed little or no disturbance of this function.

This estimate is made independently of the ophthalmological findings, which account for certain of the cases of defective dark adaptation, and which have also revealed that the present method of testing, based on peripheral vision, was bound in certain cases to give very poor adaptation results.

3. *E. Wittkower, T. F. Rodger, and G. I. Scott*.—Of the 52 patients 34 were submitted to a joint ophthalmological,

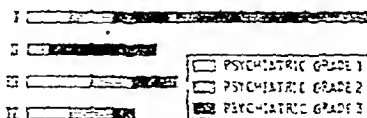


FIG. 2.—Correlation between ophthalmic, dark-adaptation, and psychiatric findings.

I. No or minor ophthalmic findings; no or minor disturbances of dark adaptation.

II. Relevant ophthalmic findings; no or minor disturbances of dark adaptation (22 patients in Groups I and II).

III. No or minor ophthalmic findings; relevant disturbances of dark adaptation.

IV. Relevant ophthalmic findings; relevant disturbances of dark adaptation (12 patients in Groups III and IV).

psychological, and dark-adaptation examination (Fig. 2). Of the 34, 22—i.e., about two-thirds—had no disturbance of dark adaptation on testing or had disturbances within

the limits of those found in a control group of patients not complaining of night-blindness. Moderately high errors of refraction found in 6 of 22 men seem to be irrelevant for the disorder. Since the great majority of the 22 patients (20) suffered from fairly severe or very severe psychological disorders of a specific type, it is legitimate to assume that in these cases the complaint of night-blindness is of purely psychological origin.

Of the 34 patients 12—i.e., about one-third—had, on testing, disturbances of dark adaptation beyond the normal, established by a study of a control group. This group is of particular interest and importance.

Of the four cases showing "severe" disturbances of dark adaptation three exhibited typical tubular "hysterical" fields, although they had no difficulty in orientating themselves in daylight. The remaining man had a marked "functional" disturbance of vision in that he would only admit vision equal to 4/60, although there was no ocular cause to explain such defective vision—i.e., the ocular findings in all of these cases showed evidence of marked functional disturbance.

Of the eight cases showing "moderate" disturbance of dark adaptation, correlation with the ocular findings gives the following results:

1. One case of retinitis pigmentosa—that is, a true ocular cause for the defect.
2. One case of corneal scarring, sufficient perhaps to explain the defect.
3. Two cases showed evidence of functional disturbance in that there was defective vision for which there was no ocular cause.
4. Four cases had no ocular cause for night-blindness and showed no ocular evidence of functional disturbance. Of these four, however, two revealed well-marked evidence (other than ocular) of psychiatric disorder, and one was a very definite case of hereditary night-blindness.

It is therefore unnecessary to assume the existence of vitamin A deficiency to explain the dark-adaptation results; and, indeed, the possibility of vitamin A deficiency can safely be excluded, as all the men had an ample vitamin A supply and, considering the severity of their disturbance of dark adaptation, should have had other objective evidence of vitamin A deficiency such as xerosis of the conjunctivae or Bitot spots. Such evidence, however, was absent. The fact that the dark-adaptation test revealed diminished adaptation in neurotic as well as organic ocular disorders shows that it cannot be relied upon to indicate vitamin A deficiency. It is probable, though hitherto unproven, that the results of dark-adaptation tests may be influenced by mental mechanisms.

On the basis of the present study we venture to express the opinion that night-blindness as seen in this country, though phenomenologically the same, is aetiologically quite distinct from night-blindness due to nutritional causes.

Summary

A series of 52 unselected soldiers complaining of night-blindness were examined ophthalmologically, psychiatrically, and by dark-adaptation tests.

A. Psychiatric Examination.—1. The great majority of the men were found to suffer from severe psychological disorders. Using a modified Culpin scale, the severity of their disorders was classified as Grade 1 in 9, as Grade 2 in 12, and as Grade 3 in 31 patients. Of the 43 patients in Grades 2 and 3, 27 suffered from acute and chronic anxiety states, 8 were cases of conversion hysteria, 4 were cases of depression, and 3 were psychopathic personalities of the schizoid or over-aggressive type. Most of the men, quite apart from their night-blindness, were found to be

unfit for military service because of their psychiatric abnormalities.

2. Of the 52 men 27 gave a lifelong history of over-dependence. They were perpetual children or men with strong feminine tendencies. In 12 others, though he-men in appearance, their ostentatious independence was reactive and over-compensatory in origin. The remaining 13 patients were mixed reaction types.

3. Certain characteristics—nervous habits (nail-biting, speech disorders, food-fussiness), morbid fears (excessive fear of darkness, fear of injury, especially to the eyes), conflicts over aggressiveness and abnormal prying interests—were commonly seen, and long antedated the onset of the disorder.

4. The onset was gradual in 31 and acute in 21 patients. It occurred in 11 patients in the course of a nervous breakdown. In 6 cases it was preceded by terrifying war experiences, such as the sight of mangled bodies.

5. The psychodynamics of the disorder were discussed.

B. Ophthalmological Examination.—Of the patients examined ophthalmologically 42 can be grouped as follows: (1) no ocular findings, 13; (2) one eye defective, other eye negative, 6; (3) minor errors of refraction, 11; (4) marked errors of refraction, 11; (5) severe eye anomalies, 1. In only one patient, a case of retinitis pigmentosa, was there a true ocular cause for the complaint of night-blindness.

C. Dark-adaptation Examination.—Dark-adaptation tests were carried out in 40 of the patients. Of these, 16 showed mild disturbances of dark adaptation and 9 showed none—i.e., in 25, as compared with a control group, the dark adaptation on testing was within the limits of the normal. Moderate disturbance of dark adaptation was found in 11 and severe disturbance in 4 patients.

D. Joint Examination.—1. Of 34 patients studied jointly 22 had no relevant disturbance of dark adaptation on testing. Almost all of them suffered from severe psychiatric disorders of a specific type. Of the remaining 12 patients with definite disturbances of dark adaptation on testing, one was a case of retinitis pigmentosa and another a case of hereditary night-blindness; in practically all of the others, although their psychiatric disorders appeared to be less severe than in the main group, were found severe disturbances of eye function which are generally regarded as "hysterical" (tubular fields, etc.).

2. No evidence of vitamin A deficiency as an aetiological factor in night-blindness could be obtained in the series studied. The value of dark-adaptation tests for the discovery of night-blind patients and as an indicator of vitamin A deficiency appears doubtful. Most cases of night-blindness seen in this country are probably of psychological origin.

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CLOSED-PLASTER TREATMENT OF BURNS OF THE EXTREMITIES

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The treatment of wounds by closed-plaster technique has received much attention of recent years. I have recently had the opportunity of applying the same form of treatment to cases of burns of the extremities admitted to an F.M.S. base hospital.

Following enemy action at sea a number of cases with burns caused by steam were admitted to this hospital. Of these, one which showed partial and full skin loss in feet and ankles was treated by the closed-plaster method seventeen hours after injury. Treatment consisted in cleansing with saline and removing blisters. All burnt areas were covered with vaselined gauze, and plaster-of-Paris was applied from the tips of the toes to the knees. The patient made an uneventful recovery. Plasters were removed on the fourteenth day, when the burnt areas were found to be completely healed and ankle movements were full and painless. A large number of cases which were involved in the same incident were admitted to a hospital elsewhere and were treated by various well-accepted methods. The interval between injury and initial treatment was from twelve to twenty-four hours. Some of these cases developed sepsis, and several were transferred to this hospital, at periods varying from three to twenty-one days after injury, for further treatment.

After admission here the closed-plaster method was applied only to grossly infected cases in which there was no regression of sepsis, the affected limbs being extremely painful on movement and in all instances showing joint deformities. No other method of selection was used for this series. In this manner 16 cases were treated—a total of 26 limbs, consisting of 11 hands and wrists, 3 wrists, 8 feet and ankles, and 4 complete upper extremities. No other form of treatment was applied either externally or internally, with the exception of silver nitrate to burn down the occasional small granulations and liquid paraffin

to maintain pliability of skin after the plasters were removed.

In trying to assess the extent of full skin destruction in the earlier cases a great deal of difficulty was encountered, particularly because of the superimposed infection present. All areas had definitely suffered partial skin destruction. The only occasion on which full skin destruction could be ascertained was when cases required more than one plaster application. An estimate was made from the size of areas of clean granulation tissue seen at the first plaster change. But by this time a large amount of epithelization had undoubtedly taken place, so an accurate estimate of the initial full skin destruction could not be made. Later cases did not offer so much difficulty, as the infection was in a chronic phase and granulating areas were present where there had been complete loss. How much of this was due to destruction by burning and how much to superimposed infection cannot be stated.

Method of Application

All cases were handled in the operating theatre; burnt areas were cleansed with saline, either by douche or sponge, and surrounding undamaged skin with soap and water. The affected areas were then covered with two thicknesses of gauze impregnated with petroleum jelly or liquid paraffin. Plasters were applied, and an endeavour was made to obtain absolute immobilization of the affected part by including the joint above and below it in the plaster. This was not possible in two cases in which the skin of the elbows and upper arms was involved. Absolute immobilization could only have been obtained by shoulder spicas, which were not warranted owing to the general condition of both patients at the time of application.

The position in which joints were immobilized varied with the position of the burnt area and the possibility of contracture formation. It also varied with the anticipated duration of treatment in plaster, bearing in mind that at each plaster change all joints were to be put up in positions different from the previous ones, so as to ensure as much mobility as possible when the areas healed. Early cases, in which a short period in plaster was anticipated, were put up in such a position as entirely to counteract the possibility of contracture. Where longer periods of immobilization seemed likely this was not attempted at the first application, the position being improved at change of plaster so as to reach an optimum position gradually.

A difficulty which arose with the ordinary methods of applying plaster was the danger of injury to the newly formed epithelium by cutting instruments. This was avoided by the use of plaster slabs, especially for hands and forearms. In these cases a palmar slab was applied from the finger-tips to the upper forearm, and was moulded with the joints in the desired position. When this had hardened the edges were greased with petroleum jelly. A dorsal slab was then applied and an ordinary gauze hand-gauge wrapped around the forearm. The hand portion was well moulded between the fingers, which were previously separated by pieces of cotton-wool between the finger-tips. Extensions were made to include the elbow-joint and arm when desired. In this way the plaster could be removed easily by separating the slabs. In cases of feet and legs a fairly thick posterior slab and then circular plaster bandages to a thickness which could easily be cut with a plaster-knife were applied. These plasters included the toes, leaving only the extreme tips available for inspection. Plasters were changed every ten to fourteen days, depending on the amount of discharge and the condition of the plaster. The following outstanding features were noticed during the course of treatment by this method.

Comparative Freedom from Pain

In 13 cases there was immediate relief from pain—so much so that the whole mental attitude of the patient was completely changed. Movements in bed were free and painless. The only complaints in some cases were a sensation of heat, especially in the fingers, for the first two or three days and a soggy inside the plasters several days after application. Previously in most cases strong analgesics had been necessary for the control of pain. It was possible to discontinue the use of these immediately, soneryl and aspirin sufficing to relieve insomnia where present.

In 3 cases, however, there was complaint of pain, but to a much less degree than before the application of plasters. In one of these, a case of burns of the feet and ankles, plasters were removed for investigation. This revealed considerable pocketing of pus under tan which had been applied as initial treatment. The tan was removed and plasters reapplied. This procedure was followed by complete relief of pain. The other two cases had extensive burns of both hands, forearms, and upper arms. These patients complained of pain not in the completely immobilized forearms and hands but in the region of the inner aspect of both elbow-joints, though it was much less severe than before plasters were applied. This pain was remedied by postural immobilization of the shoulder-joints. After the first change of plaster the pain recurred slightly, but soon disappeared.

Ease of Nursing

Before plasters were applied some cases needed changing of outer dressings at least three times a day because of

the profuse discharge, and there was also the periodical complete changes of dressing in all instances. This was entirely eliminated. The ward sisters repeatedly spoke of the ease with which the necessary attention could be given to these patients, who could now be moved about freely in bed without causing pain. No special instruction, supervision, or apparatus was required in the wards, and it was very apparent that large numbers of burns could easily be handled at one time, even in a busy hospital, without causing any undue strain on the nursing staff.

Improvement in General Condition

With the relief of pain and toxæmia there was in all cases immediate improvement in general condition, appetite, and sleep. That toxæmia was reduced to a minimum was evidenced by the speedy return of pulse and temperature to normal. In 10 cases the temperature ranged between 100° and 102° before plaster application. In 5 cases it became normal in two days; in 3 others normal was reached in three days. Where this was not the case septic burns of other areas not treated in plaster were present, but a rapid improvement was noted.

Flexibility of Joints and Absence of Contracture Formation during Treatment

Certain precautions were taken during treatment. To be assured of the greatest flexibility joint positions were changed at each plaster reapplication; and, to prevent contracture formation, joints were put up in a position that counteracted this possibility.

On admission all cases showed pronounced limitation of movement and the rapid progression of dropped wrists

Table Summarizing the Cases

Case No.	Age	Area of Burns Treated in Plaster	Initial Treatment	*Period after Injury	Mobility of Joints	Days in Plaster	Immediate Result	End Result
1	19	Dorsum of foot, Dorsum and lateral aspect of ankle	Closed plaster	17 hours	Limited owing to pain	14	Completely healed. Ankle movements full	Same
2	33	Feet and ankles, Anterior surface of left leg	Triple dye and AgNO ₃	4 days	Movements painful. Tendency to drop-foot	23	Healed. 5 degrees limitation of dorsiflexion	Full movements in 7 days. Walking normally
3	19	Left foot and ankle	"	4 "	Movements very limited and painful. Tendency to drop-foot	23	Two small granulating spots. 5 degrees limitation of plantar flexion and dorsiflexion	Completely healed. Full movements in 7 days. Walking normally
4	47	Both feet and ankles	"	4 "	Feet dropped. No movements, owing to pain	23	Two small granulating areas. Slight limitation of movements	Completely healed. Full movement in 7 days. In on exercises and massage for old-standing pes planus. Full movements in 10 days
5	37	Left foot	Tannic acid and AgNO ₃	13 "	Foot painful and dropped. Very little movement possible	16	Completely healed. Dorsiflexion 10 degrees. Plantar flexion 15 degrees	" " "
6	27	Right hand and wrist	"	6 "	Completely immobile, owing to tan and pain	10	Completely healed. All movements 70% of normal	" " "
7	25	Both hands and wrists	Vaselined gauze	6 "	Wrists dropped. Fingers immobile	20	Healed except for small granulation on dorsum of right hand	Completely healed. Movements 95% of normal in 10 days
8	26	" "	" "	6 "	Wrists dropped. All joints only slightly mobile, mainly due to pain	10	Completely healed. Movements 70% of normal	Passive movements full. Active movements 95% of normal in 7 days
9	30	" "	" "	6 "	" " "	Rt.-10 Lt.-18	Right, completely healed. Left, all but an area on palmar surface of wrist completely healed. Joint movements 80% of normal	Completely healed. Full movements in 10 days
10	25	Dorsum of left hand	Charcoal and AgNO ₃ mixture	11 "	Flexion of m.-p. joints 20 degrees. Finger-joints less limited	16	Nearly full extension. Flexion 50% of normal	Full movements in 7 days
11	28	Right hand and wrist	Vaselined gauze	18 "	Very little movement in all joints. Fingers semiflexed, owing to contracture	10	Healed except for small granulation on right ring finger	Finger extension 95% normal. Finger flexion 70% normal. Wrist movements full
12	35	Both hands and wrists	Tannic acid and AgNO ₃	18 "	Very little movement in all joints. Contractures starting	10	Healed. Dorsiflexion 5 degrees. Palmar flexion full	Completely healed. Full movements in 14 days
13	38	Both wrists	" "	18 "	Dorsiflexion nil on both sides	10	Healed. Dorsiflexion 15 degrees	Dorsiflexion full in 10 days
14	40	Right wrist	" "	18 "	Dorsiflexion 5 degrees	10	Healed except for small granulations. Left elbow 90 degrees of movement. Right elbow 60 degrees of movement	Left limb full movement in 10 days. Right elbow and hand, full movement in 10 days
15	23	Both upper limbs	Triple dye and AgNO ₃	14 "	Movements of all joints greatly limited	Lt.-10 Rt.-25	Still under treatment	Right limb practically healed. All but forearm on Rt. healed
16	22	" "	Tannic acid and AgNO ₃	21 "	All joints completely immobile. Gross evidence of contractures			

* Beginning of plaster treatment.

and feet. This was at first considered to be due to muscle spasm; but it was found, when plasters were first applied, that even under anaesthesia there was still definite limitation, although greater range of movements could be obtained. When changing plaster, and after the termination of treatment, flexibility of joints was quite obvious, particularly in hands and fingers, even after long periods of immobilization. Thus in no case did the immobilization result in increased stiffness; in fact, all movements were much better after the period of rest. This was so obvious that some patients remarked that the limb which had been in plaster felt more useful than the corresponding one which had not been so treated.

No contractures developed in patients who received plaster treatment within the first three weeks. In later cases contractures had already started to develop, particularly in areas where there had been full skin loss. In these plaster provided an excellent method of control.

Healing

As previously mentioned, only grossly septic burns were put in plaster, less severe lesions being treated chiefly with vaselined-gauze dressings. When both types existed in the same case it was repeatedly observed that the severe lesions healed as quickly as the much less severe ones not treated in plaster.

The rate of healing varied with the severity and extent of the burnt area, the degree of sepsis, and the interval between injury and the beginning of plaster treatment. Eight burns of the hands and fingers extending on to the wrists and forearms healed in ten days, except for an area of granulation tissue on the palmar surface of a wrist in one case. This healed in a further eight days in plaster that immobilized the wrist-joint only. Two other hands and fingers with burns and sepsis of greater severity healed in eighteen days. In these, at the time of plaster change, areas of granulation tissue were present on the dorsum of the hands and palmar surfaces of the wrists, involving one-quarter to one-third of those surfaces. Burns of the wrists healed in ten days. All feet and ankles healed in twenty-three days, and showed large areas of granulation tissue when the plaster was changed. In all cases in which granulation tissue was present the ingrowing epithelium did not reveal any signs of limitation, as is seen definitely during other methods of treatment. In most it appeared to be invading the granulation tissue in an irregular protrusive manner, and later these same areas showed epithelization that was complete except for occasional very small granulations which healed in two to three days after application of silver nitrate. This new epithelium was well formed, smooth, and pliable, and there was very little evidence of scarring even over areas which had been granulating. Hypersensitivity of this epithelium was less than in cases not treated in plaster.

In one case of burns involving the whole of both upper extremities plaster treatment was begun three weeks after injury. The right limb showed numerous areas of granulation tissue varying in size from one to three inches in diameter at the first plaster change, and was practically healed in twenty days. The left limb showed clean granulation tissue involving the whole forearm and lower part of the arm at the first change of plaster. At the end of twenty days only three-quarters of the forearm was involved, and it was considered advisable, because of the lateness of starting treatment, to "seed"-graft this area and reapply plaster in an effort to speed up epithelization.

Return of Function

This also varied with the severity and extent of the burnt area and the degree of sepsis, but especially with the

interval between injury and application of the closed-plaster treatment. In cases which were received within one week of initial treatment function that was nearly normal was obtained in seven days and full function shortly after. In cases received later than this return to full function was slower.

Summary

A description is given of a series of 16 cases of infected burns of the extremities in which closed-plaster treatment was used.

The difficulty in assessing the degree of burn in infected cases is commented on.

Details of technique are described.

Certain definite advantages of the method are claimed—namely, freedom from pain, rapid improvement in general condition as evidenced by fall in pulse and temperature, ease of nursing (important where large numbers have to be dealt with), maintenance of joint flexibility, and prevention and correction of contractures.

The results in this series are such as strongly to suggest that epithelization and return of function are quicker than in cases treated by other methods.

My thanks are due to Lient-Colonel G. M. Millar for his co-operation and for permission to publish these cases.

Medical Memoranda

Crohn's Disease with Acute Obstruction

The following case is placed on record because of its uncommon nature.

CASE REPORT

The patient, a soldier aged 27, gave a history of vague attacks of umbilical pain of increasing frequency and severity over a period of three years. These attacks occurred every few months and lasted from one to two days. He never vomited and he had no other symptoms. Two years previously he had sought medical advice, but radiological examination of the gastrointestinal tract was negative. No cause for his symptoms was found at that time, and when he entered the Army a year later he appeared to be quite fit.

While in barracks in February, 1941, he developed pain similar to his previous attacks and was admitted to our care, with the diagnosis of recurrent appendicitis. When seen by us he had had severe umbilical colic intermittently for six hours, and had vomited once. His temperature was 99°, pulse 110, and respirations 24. On examination the tongue was coated and the breath offensive. There was no abdominal pain or rigidity between spasms, but he complained of soreness on pressure of any part of his abdominal wall during a pain. This was no worse at any one point than another. On rectal examination nothing was found. A blood count showed 15,650 leucocytes per c.mm., with a predominance of polymorphonuclear cells.

Acute appendicitis seemed to be the most likely diagnosis, but as this was by no means certain the abdomen was opened through a right lower paramedian incision. The peritoneal cavity contained a considerable amount of cloudy fluid. A bout six inches of the lower ileum was acutely inflamed and thickened; the bowel above this portion was dilated and that below collapsed. One foot of bowel was resected, a side-to-side anastomosis made, and the abdomen closed. The patient made an uneventful recovery.

Examination of the specimen showed an inflamed piece of small intestine, with partial obstruction due to thickening of the wall and reduction of the lumen for approximately two inches. Above this the muscle wall was hypertrophied. The obstruction was completed by a pea in a small pouch immediately above the narrow portion, otherwise the lumen was patent. The mucous membrane was covered by rather ragged ulcers, and the muscular wall was thickened, hard, and rather translucent. Microscopically there was an extensive old fibrosing granulomatous lesion. A few recent typical tubercle follicles were seen in the lymphatics deep to the muscular wall, but no tubercle bacilli were detected.

in the sections. The mucous membrane was partly necrotic. Many large foci of lymphocytes were seen in all the layers, and there was an extensive eosinophilic infiltration. Except for the eosinophilia the appearances were characteristic of tubercle; but this type of lesion is usually regarded as non-tuberculous, and was described by Crohn as regional ileitis. Our patient showed no sign of tuberculosis elsewhere.

COMMENTARY

Crohn's disease is not common, and for it to appear as an acute obstruction is still less so. Usually the patient is operated upon through a small incision for chronic appendicitis, and the appendix is removed without the real nature of the disease being realized. The condition then goes on to fistula formation or the patient has repeated attacks of subacute obstruction. This might well have happened in our case had not the pea caused an acute obstruction at a relatively early date.

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Depressed Fracture of the Sternum

John B. Hartzell (1935) stated that fracture of the sternum is an exceedingly rare condition, and that it is often complicated by fractures of the ribs or spine. Holderman (1928) found sixty-two cases among 46,237 fractures of all types—an incidence of 0.075%. The following case of depressed fracture of the sternum due to indirect injury may therefore prove interesting.

CASE REPORT

The patient, a woman aged 67, was admitted on May 5, 1941, after having fallen downstairs. She was suffering from shock, and had considerable difficulty with respiration. She complained of pain over the upper dorsal region and severe pain and tenderness over the upper end of the sternum, where there was a depression about an inch deep in place of the normal angle of Ludwig. There were no bruises or abrasions of the skin over either the sternum or the dorsal spine. Clinical examination revealed no involvement of the spinal cord. The patient had apparently fallen with her head flexed forwards, as in gambolling, the fracture being due to hyperflexion. A radiograph revealed a fracture of the sternum at the junction of the manubrium and the body (the upper fragment being displaced behind the lower) and a compression fracture of the fifth dorsal vertebra.

On May 7 a plaster jacket was applied in hyperextension; this extended to the mandible anteriorly and to the lower lumbar region posteriorly. Difficulty was experienced in obtaining enough hyperextension owing to pre-existing kyphosis, but the patient was much more comfortable after the application. A later radiograph showed a very satisfactory position: the depression was corrected, and the manubrium and body of the sternum were in line.

I wish to express my thanks to Mr. L. A. Dingley, senior honorary surgeon to the hospital, for his kind assistance and permission to publish this case, and also to Sister Burrows of the x-ray department.

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Reviews

CARDIAC CLASSICS

Cardiac Classics. A Collection of Classic Works on the Heart and Circulation. With Comprehensive Biographic Accounts of the Authors. By Frederick A. Willis, M.D., M.S., and Thomas E. Keys, M.A. (Pp. 858; illustrated. 50s. net.) London: Henry Kimpton. 1941.

To have compiled a work of this character must have involved great labour and research. The authors are therefore to be warmly congratulated on having accomplished so much. In a concise form they have put together important extracts from all the writings of physicians or surgeons who have contributed to our knowledge of the structure of the heart or the diseases affecting it. Such extracts may surely be happily termed "cardiac classics." Omitting all tentative references to the heart in times before Harvey, they begin with the story of the circulation of the blood by giving a full translation of *De Motu Cordis* and end with James Herrick's description of coronary thrombosis. There is a picture of each writer who has extended our knowledge of the structure of the heart or its diseases, together with a short account of his early education and life's work, which is often of particular interest. Then there are a number of excerpts from his writings, sometimes of special value, as in the case of Heberden, where a full account of angina pectoris is given also of Austin Flint, who wrote widely on all phases of medicine, though his name is most thought of in association with the presystolic murmur sometimes accompanying aortic regurgitation.

It is curious to note how in the case of so many of these physicians, apart from their writings in connexion with the heart, they have contributed much of importance to other departments of medicine. Thus Corrigan (1802-80) in addition to his masterly account of aortic regurgitation also wrote on fibroid disease of the lung, which was for long known as "Corrigan's cirrhosis." Again, William Gowers, so distinguished as a neurologist, is here included because of his description of the retinal vessels in cases of hypertension. It might have been well to have given more than a passing notice to Vieussens of Montpellier (1641-1710) and to Albertini of Bologna (1672-1733).

In a useful appendix these cardiac classics are correlated with other historical events. Thus Auenbrugger's introduction of percussion was contemporary with the Seven Years' War, and Laennec produced the stethoscope and auscultation two years before the death of Napoleon. In this way the authors draw medicine into connexion with general history, and prevent it from becoming too much isolated from the main current of the life of the world.

R. O. MOON.

EPILEPSY AND MIGRAINE

Science and Seizures: New Light on Epilepsy and Migraine. By William Gordon Lennox, M.D., Sc.D. Hon. (Pp. 258; illustrated \$2.00.) New York: Harper and Brothers. 1941.

Dr. Lennox, who for more than twenty years has taken the lead in the investigation of epilepsy in the United States, has written this book in order to make available to all who are interested in epilepsy, which includes patients and their relatives and social workers as well as doctors, the latest ideas on the nature of this disorder which recent investigations have brought to light. It is thus a popular book of a kind with which we in this country are not familiar, but throughout it is entirely scientific. Four-fifths of it

At the suggestion of Dr. G. Jedlewski, medical adviser to the Polish President (M. Raczkiewicz), a special medical board has been formed in London to prepare plans for fighting epidemics which may break out in Poland at the end of the war, and thus to prevent the spread of infectious disease to Western Europe and Great Britain. The board, acting in conjunction with the Ministry of Health, will also collect medical supplies so that immediate help may be ready at the end of the war.

devoted to epilepsy, and this is considered in all its aspects. In particular the significance of the disordered brain rhythms which have been revealed by electro-encephalography is explained in relation to the risks of the hereditary transmission of the disease. It is estimated that one in every two hundred inhabitants of the United States suffers from epileptic seizures, but for every single patient there are twenty apparently normal persons whose abnormal brain rhythms show that they are both potential epileptics and potential transmitters of epilepsy. Dr. Lennox aims at replacing irrational fear by humane scientific understanding in both those who suffer from epilepsy and those who have to deal with them.

The section on migraine is much shorter and less comprehensive. The affinities of this disorder with epilepsy are perhaps less close than Dr. Lennox maintains, and electro-encephalography does not seem to have brought them any nearer together. It may perhaps be doubtful whether the benefit which epileptics may derive from being told that their disorder is allied to migraine is not counterbalanced by the effect upon sufferers from migraine of learning that they are afflicted with a disease akin to epilepsy.

The book is well written and contains a bibliography almost exclusively of American work. It makes accessible much recently acquired knowledge not otherwise so easily obtainable.

PRACTICAL GYNAECOLOGY

Textbook of Gynaecology. By Wilfred Shaw, M.A., M.D., F.R.C.S., F.R.C.O.G. Third edition. (Pp. 616; 255 illustrations and 4 coloured plates. 25s. net.) London: J. and A. Churchill, Ltd. 1941.

To celebrate its fifth year this already popular textbook has appeared in a new and third edition. It has been revised throughout, and in spite of rationing the five-year-old is as attractive in appearance as its predecessors. The general arrangement of the book has been preserved, and emphasis continues to be given to anatomy, physiology, and pathology, while the outstanding quality of the illustrations remains a feature. The student who masters the basic subject of anatomy and physiology does not necessarily become a good doctor, and many textbooks which are excellent for reference purposes are but poor inspiration for the embryo clinician because this fact is overlooked. Dr. Wilfred Shaw teaches the importance of accurate observation and attention to detail and guides the reader to those paths of logical deduction which lead to sound diagnosis and treatment. For this reason alone the book can be commended both to medical students and to practitioners.

Those everyday problems associated with irregular bleeding, vaginal discharge, sterility, and fibroids are particularly well surveyed. Conservative critics will with some justification challenge the statement that myomectomy should be performed in preference to hysterectomy only when the patient insists on retaining her uterus. The technical difficulties and dangers of myomectomy in capable hands are exaggerated; they are not sufficient to warrant such an attitude. A useful summary is given of contraceptive methods, but it is surprising to find that the much-discussed "safe period" receives so little attention. Those details which are given are misleading because they are inadequate, and it is to be hoped that this section will be revised for the next edition.

The chapter dealing with gynaecological diagnosis should be read many times. It emphasizes the importance of an accurate history, gives a broad review of symptomatology, and concludes with an excellent account of the technique for investigation of a case.

A guinea spent in adding this book to the library would be money well invested.

Notes on Books

First published in 1917, *Surgical Nursing and After-Treatment*, by Mr. H. C. RUTHERFORD DARLING, has now reached a seventh edition (J. and A. Churchill, 10s. 6d.). The author is surgeon to the Prince Henry Hospital and the New South Wales Masonic Hospital, Sydney, and it was originally written in accordance with the syllabus for the final examination of the Australian Trained Nurses Association. The text has been thoroughly revised in the light of recent clinical experience and with co-operation from surgical and nursing colleagues. As was said in these columns when noticing an earlier edition, the book abounds in useful tips and advice based on well-proven details of technique, and particular attention is paid to post-operative care. While primarily addressed to nurses, it should also prove very helpful to students and junior members of the medical profession.

It is only to be expected that in time of war there should be a spate of small handbooks of psychology written in a popular vein. Dr. K. O. NEWMAN's pamphlet, *Mind, Sex, and War* (Simpkin Marshall, 3s. 6d.) is entertainingly written, if a little too replete with purple patches. He analyses with discrimination the reaction of different temperaments to the war situation. We heartily agree that one of these people is a public nuisance—the man or woman who needlessly interferes with our private existence by unnecessary and sometimes even ruinous restrictions, and who seems to prefer it when people don't like them. To such, war indeed offers abundant opportunity. The publishers do some disservice to the author by claiming too much for him and by unfairly stating that "the practice of [other] popular writers on psychology . . . is to tell the reader what he wishes to hear."

Mr. H. N. Linstead, secretary of the Pharmaceutical Society of Great Britain, has assembled in workmanlike fashion the material for a volume commemorating the centenary of his Society on April 15, 1941. It has eighty-four large pages. The introduction, headed "A Century of Service," takes the form of a general survey of the Society's development rather than a detailed historical record duplicating Mr. Howard Bayles's elaborate review printed at the time of the centenary. The commemoration itself is reported at length, with the full text of Mr. Linstead's play "Jacob Bell and Some Others," which was produced at the Conway Hall, London, on April 15, and afterwards at the Crane Theatre, Liverpool. There is much other interesting matter, grave and gay, and the volume is enlivened with many excellent illustrations.

Six years ago Major F. MITCHELL-HEGGS classified and arranged in subdivisions the papers set at the final examination for the London M.B., B.S. during the preceding fifteen years, and published them in book form with some preliminary advice and information. He has now brought out a new edition (J. and A. Churchill, 7s. 6d.) analysing the questions set during the years 1925-40, omitting those set in 1920-5. In the interval between the two editions the final examination for these degrees of London University has been reconstituted, and now consists of three parts instead of two.

Films picturing the morphology of the lower animal creation have been much appreciated by cinematograph spectators, and the interest so awakened has aptly enough found expression in a demand for more light upon the origins and development of these diverse organisms. The further information desired is contained, as touching the invertebrates, in the sixpenny Pelican book *Cine-Biology*, by three authors (J. V. DUDEN, MARY FIELD, and F. PERCY SMITH). The first type in order is amoeba, sexless and therefore immortal. Next comes paramecium, subject to death but revived by conjugation, which is the dawn of sex. The life history of the liver fluke is called a "desperate survival," which indeed it is. Among the arthropoda figured and described are daphnia of the rolling eye, cyclops with its pair of eyes fused at the last into one to justify its name, the shrimp, which goes back to the Devonian, the king crab, the dragon fly, and the emperor moth. The authors write with a lively enthusiasm, which is communicated to the reader and should serve to carry him through or over the more specialized passages. The text is set off and elucidated by 119 excellent photographic reproductions.

Preparations and Appliances

ELECTRIC PROBE FOR LOCATION OF METALLIC FOREIGN BODIES IN THE TISSUES

Surgeon Lieutenant R. C. J. HILL, R.N.V.R., writes:

The accurate location of foreign bodies in the tissues often proves difficult even when the surgeon has at his command the resources of a well-equipped radiological unit; and to the surgeon in the field, or in a ship, where such facilities are limited, any device which might assist him in his search should be welcome.

Over forty years ago, during the Boer War, an instrument known as the "telephone probe" was devised, and this in principle was probably similar in its mode of action to the "radio probe" described by Dr. James Hall in his letter to the *British Medical Journal* published on November 2, 1940 (p. 611). Practical experience in this ship stimulated research on reading Dr. Hall's letter, but though various types of wireless sets and circuits were tried with the co-operation of the torpedo department, satisfactory results, as described in the letter, were not obtained. After further experiments the electricians finally suggested an instrument which "divined" the presence of metallic bodies by the completion of an electrical circuit when two probes came in contact with it. The instrument went through many vicissitudes before satisfactory results were obtained, but in its final form it has proved its value, with certain limitations, and is light, compact, and easily sterilized.

The instrument consists of two silver-plated probes, one within the other. The outer probe, of 4 mm. diameter, is insulated internally by a fibrous material which is impervious to moisture and heat. The inner probe has a slightly beaded end, which projects to a distance of 2 mm. beyond the end of the outer probe. The latter is secured by a screw to a socket in the handle of the instrument, while the longer inner probe passes further down, and is screwed to a thread on a watch spring. The watch spring and the outer probe are in connexion with a battery within the handle which is also connected to a small torch bulb. Very slight force, such as is experienced when the projecting inner probe comes in contact with a foreign body, depresses the watch spring; and when both probes are flush, and therefore in contact with the metal object, the circuit is completed and

Diagram of electric probe, approximately half size, except for the probes, which have been drawn on a slightly larger scale to indicate clearly the insulation. The fibre insulating material is shown in solid black. A = Bulb. B = Thumb-screw to secure outer probe. C = Torch battery unit cell. D = Watch spring to which inner probe is secured. E = Bayonet catch.

the bulb lights. The handle and fittings are made of brass, and the former holds a unit cell of the ordinary torch type. This can easily be removed from the base of the instrument by releasing a bayonet catch.

The whole instrument can be sterilized by boiling, preferably in oil, but since this appears to have an adverse effect on the tension of the spring, in practice it has been found sufficient to boil the probes and immerse the handle in spirit. Just before

use the handle is covered with a sterile jacket, the probes passing through a small opening, while the light is strong enough to shine through the material.

In actual practice it is difficult to locate small fragments of metal, since they must be of a diameter greater than that of the outer probe, while the force required to depress the inner probe, though slight, appears sufficient to move such particles along the tissue planes. It is considered, however, that the removal of such fragments, in the absence of infection, would not normally be attempted. Where large fragments are concerned it should be possible to locate the metal with the probe and then decide on a line of approach, since so long as the probe is in contact with the metal the light will remain burning.

It is not considered that this instrument is infallible, but it has been of assistance. In any case it is a rough affair, made in the ship from material available, in the spare time of a chief artificer, to whom all credit is due.

INTRAMUSCULAR DRIP GLUCOSE SALINE

Dr. M. SARVAR writes from the War Memorial Hospital, Wrexham:

Intramuscular glucose saline has often been recommended for marasmic infants in whom gastro-enteritis precludes retention of fluids and nourishment either by mouth or per rectum. The usual method used was injection of glucose saline in 30 to 40 c.cm. doses into the flanks every four or six hours. This method had the following disadvantages: (1) danger of sepsis because of repeated injections, (2) frequent disturbance of the very fragile infant, (3) pain. Considering the above I thought a method of continuous administration on the pattern of intravenous drip would be very useful, which I tried and found to work very well.

The details are as follows: the equipment is the same as for intravenous saline administration, namely: (1) a bottle of dextrose saline (vaccolite type), (2) glass dripper, (3) rubber tubing, (4) pinch cock (screw type), (5) glass connexion, and (6) fairly long hypodermic needle (2½-in. size).

Method.—The apparatus is set up as for intravenous drip, with due aseptic precautions. The saline is allowed to run free until there is no air in the tube or the needle. It is then turned off. The skin of the infant's flank is prepared with spirit in the usual way and the needle inserted between the layers of the abdominal muscles. The saline bottle is then raised and hung up at a height of about 2½ feet. The curtain stand at the head of the swing cot usually serves the purpose quite well. The fluid is then allowed to drip at the rate of ten to twenty drops to the minute by unscrewing the pinch cock. The needle is fixed to the skin by bits of elastoplast over the glass connexion. The apparatus can thus be worked for about twelve hours or more as need be. Periodic watch should be kept on the skin, and the drip stopped if the skin is very distended. It can be restarted when the oedema goes down, or the site of the needle varied. Three to five units of insulin can be injected into the bottle and shaken up if deemed necessary.

This plan does away with all the disadvantages of the usual method described above; besides, it delivers the saline at an even, gentle rate, giving it enough time to get spread out under the muscles and making absorption easier. A further advantage is that it reduces the work of the nursing staff.

I have to thank Dr. D. B. Evans for his kindness and for permission to use this method on his patients.

H. C. A. Lasser and J. Bang (*Norsk Med.*, 1940, 81, 2130) state that between January 1, 1934, and January 1, 1940, 9,826 patients were under treatment for scarlet fever at the Blegdams Hospital, Copenhagen. Of these, twenty (0.2%) developed complications in the central nervous system. In 1939 the incidence of these complications was 0.7-0.8%. All the patients showed pleocytosis with predominance of lymphocytes in the spinal fluid. In six the pleocytosis was the only indication of infection of the central nervous system, while ten had clinical signs of meningitis without focal lesions, and four presented evidence of focal processes. The seasonal incidence of the complications did not coincide with that of poliomyelitis.

THE NUTRITION SOCIETY

[FROM A CORRESPONDENT]

The first scientific meeting of the Nutrition Society, of which the foundation was reported in the *Journal* of October 11, and was also made the subject of editorial comment in the same issue, augurs well indeed for its future. It may have been in part a feeling that the occasion will prove to have been a historic one, in part a wish to bear public witness to the importance of nutrition, in part an interest in the subject of the actual meeting—"The Evaluation of Nutritional Status"—and in part just natural human curiosity, but the result was a meeting of some 250 people in the Physiology Department at Cambridge, a meeting as distinguished in many of its personnel as it was representative of the large and diverse bodies of workers in the field of nutrition. Physicians and surgeons lunched with statisticians and experts in animal husbandry; at tea-time opinions and information were exchanged between biochemists, medical officers of health, and plant pathologists: the several interesting demonstrations—including a live sheep complete (or incomplete) with gastric fistula—were visited by dietitians, physiologists, Government officials, organic chemists, and economists. It is doubtful if even in Cambridge or Oxford there have often collected together so varied an assortment of experts for a single symposium on a particular subject.

Programme of First Session

The programme laid down by the energetic organizers of the meeting was closely followed, except for the regretted absence of Sir John Orr, chairman of the Society's provisional committee, away on urgent Government business, and for the usual unavoidable slight lag behind scheduled times. Even so, the inaugural ceremonies, the three main papers, the six subsidiary contributions, lunch, and tea were all disposed of between 11 a.m. and 5 p.m.

It is very much to be hoped that some record of this discussion will be kept and published, as well as the more formal contributions presented by the nine speakers, three on each of the three subdivisions of the main subject. Of these contributions coming in from the wide territory that comprises laboratory research, clinical investigation, and animal experiments in barn and field, it is not possible to give even an outline that could begin to do justice to their interest and importance. For it is just the details, rather than the general broad principles they illustrate, that constitute much of the importance of these contributions. Where, unexpectedly, the same observation or deduction is made independently by experts in widely separated parts of the territory, there is to be found immediately an indication for further investigation, possibly of a collaborative nature, of a problem that has more than a parochial or specialist interest. Thus, for example, Dr. C. Crowther's insistence that the effect of adding a single nutrient to an animal's diet must be dependent on the nature and amount of the other nutrients in that diet seems to be an expression of a more general nutritional law that almost certainly underlies the facts in the minds of later speakers when they stressed the relative importance of multiple deficiencies compared with simple uncomplicated avitaminoses.

The claims of the "laboratory school," represented by Dr. Harris's contribution, and the clinical findings of Dr. B. F. Platt, with his wide experience of deficiency diseases in China and East Africa, find reconciliation, if this is needed, through the intermediary of such analytical minds as Dr. Sinclair's. The wider and correlated use of available methods, bound up with his obvious determination to examine all such methods with ruthless objectivity, will surely reveal that Dr. Harris and Dr. Platt are approaching the same phenomena from different ends. Integration alone will enable us to discover at what stage of a dietary insufficiency the biochemical changes depicted by Dr. Harris's methods become accompanied by the clinical stigmata revealed under Dr. Platt's examination.

Physiological Stress and Subclinical Conditions

A point brought out by all three speakers in the clinical section was the effect of physiological stress in revealing or accentuating those subclinical conditions that are the result of single or multiple dietary deficiencies. Thus Dr. W. C. W. Nixon spoke of pregnancy, Dr. R. H. Dobbs of the rapid growth and intense metabolism characterizing infancy and childhood, and Dr. Platt of heavy manual labour and the onset of hot humid weather as tending to throw up previously masked disturbances due to some dietary imbalance. In some similar way the artificial conditions of stress under which many domestic animals are reared—the goal being, as Dr. Crowther indicated, primarily not the good of the animal itself, but satisfaction of its owner's economic requirements—may themselves accentuate the handicaps already imposed by a diet and environment departing from those natural to the species. The combined strain of intensive milk or egg production and stall or battery feeding might be expected to reveal pre-existing vitamin and mineral deficiencies. But, as Mr. H. H. Green showed, particularly in his references to aphosphorosis, coastal sickness, and swayback, even "natural" conditions of feeding may not prevent the outbreak of indubitable deficiency diseases, only to be combated by raising the status of poor marginal pastures nearer to that of the best. Here it is that the work of the nutritionist concerned with the problems of human and animal health brings him in close contact with the interests of the agricultural expert.

Dr. John Hammond's revelations of how the experimenter may make play with the shape as well as with the weight of adult animals—pigs or sheep, for instance—by submitting them to dietary deprivations at different periods of growth lead one, by perhaps a legitimate line of speculation, to wonder what light such animal experiments may have to throw on the permanence or otherwise of the changes brought about in human infants, adolescents, and young adults as the result of the kinds of nutritional defects discussed by Dr. John Yudkin and Dr. G. W. Robertson, who have been investigating in particular the partial nyctalopia of vitamin-A deficiency, and also the lowered haemoglobin level due to iron lack.

The Society's Prime Functions

Enough has perhaps been written to show that this symposium most certainly fulfilled its two main functions. The first was that to which reference was made by Sir Charles Martin, who took the chair at the morning session in place of Sir John Orr, being succeeded in the afternoon by Sir Joseph Barcroft, and also by Sir Frederick Gowland Hopkins, who at Sir Charles Martin's invitation opened in the morning both the particular work of this symposium and the Nutrition Society's public activities in general. The first function was to bring together the many disciplines required for exhaustive study and effective action in the fields of animal and human nutrition. The second function, clearly felt by the founders of the Society and its energetic committee, though not always explicitly stated, was to make the exponents of these several disciplines realize not merely that they have much to learn from one another, but that many or all of their activities may be frustrated unless they exchange views and information and also actively collaborate in pursuing investigation and in securing the practical application of its results. If for no other reason, this symposium was highly encouraging because it revealed how large a number of the country's most distinguished nutritionists are convinced of the truth of this view. To have at one meeting, all attending with the utmost care to a very varied list of communications, past and present Presidents of the Royal College of Physicians, professors of medicine, physiology, and biochemistry, members of Government scientific staffs and administrative grades, scientists from the laboratories of food and drug manufacturers, teachers of domestic science, the "planners and plotters" from experimental agricultural research stations, public health experts—this made the symposium, despite its essentially unofficial nature, almost a British counterpart, on a smaller scale and covering only a corner of the vast field, of that National Nutrition Conference for Defence at Washington in April last.

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VITAMIN-E THERAPY IN NEUROMUSCULAR DISORDERS

A symposium on vitamin E which was published in 1939¹ was largely concerned with its endocrine and obstetric actions, though Vogt-Möller referred briefly to its employment in disease of the nervous and muscular systems. The value of vitamin E in the prevention of abortion—its original application in man—remains unproven, and during the last two or three years interest has been focused on its action in neuromuscular disease. The occurrence of nervous and muscular disorders in experimental vitamin-E deficiency has been known since 1928, when Evans and Burr² reported paralysis in the offspring of rats which had been kept on a diet lacking this vitamin. In these animals Lipshutz³ demonstrated degeneration affecting chiefly the ascending and descending vestibular, tecto-spinal, rubro-spinal, and dorsal ascending tracts. Several workers subsequently observed a muscular dystrophy, without nervous changes, in young rabbits, guinea-pigs, and dogs reared on a diet deficient in vitamin E. These dystrophies could be prevented, and in the earliest stages cured, by adding the vitamin to the diet. Ringsted⁴ in 1935 and Burr, Brown, and Moseley⁵ in 1937 reported the appearance of paresis in adult rats deprived of vitamin E: a full clinical and pathological account of this disorder was given by Einarson and Ringsted⁶ in 1938. They described pronounced flaccid paralysis and wasting of the hind limbs, with ataxia, some hypo-aesthesia, and loss of hair and trophic ulceration over the hind quarters. Administration of vitamin E could arrest the paralysis in its earliest stages only, without bringing about recovery; in the later stages it had no effect on the progress of the disease. Einarson and Ringsted compared the early changes to those arising in tabes dorsalis, and the later ones to those in amyotrophic lateral sclerosis and progressive muscular atrophy. The purely muscular dystrophy unaccompanied by nervous changes seen in young rabbits and guinea-pigs deprived of vitamin E may be compared to the juvenile muscular dystrophies of man. Antopol and Unna's⁷ observation of foci of muscle atrophy in vitamin-B₁₂-deficient rats, and the production of tremors and convulsions from overdose of it, led to the suggestion that deficiency of this vitamin also might play a part in the pathogenesis of muscular dystrophies.

The resemblance of these experimental disorders to spontaneous nervous and muscular diseases in man was so striking that clinical trial of vitamin E was not only appropriate but imperative. It is true that in the experiments on animals treatment had been disappointing in so far as vitamin E had not cured the disorders once they were established. In adult rats and in puppies the dystrophies can be arrested only in the early stages, though in young rabbits and rats advanced cases of muscular dystrophy have responded to α -tocopherol, the active principle of vitamin E, and Morris⁸ has reported the cure of muscular dystrophy in adult rabbits with the same substance. Moreover, in cases of muscular and nervous atrophy in man there are usually no signs of dietary deficiency, and Denker and Scheinman⁹ could obtain no evidence of this in their cases of amyotrophic lateral sclerosis. Bicknell,¹⁰ on the other hand, maintains that many people consume a diet deficient in foods which are rich in vitamin E. He gave half an ounce of fresh dried whole-wheat germ twice daily to eighteen patients with muscular dystrophy, four with amyotrophic lateral sclerosis, two with tabes, one with peroneal muscular atrophy, and one with amyotonia congenita. Nine of his cases of muscular dystrophy improved after treatment for two to eighteen months, one relapsing when the treatment was stopped. In the other nine there was little or no improvement after treatment for six to sixteen weeks. Only one of his cases of amyotrophic lateral sclerosis clearly showed improvement (after seven months' treatment); in one the improvement was doubtful; and two of the patients died. In the other diseases no effect was observed after eight weeks' treatment, though the patient with amyotonia congenita seemed rather stronger. Wechsler, after a preliminary report¹¹ on five cases of amyotrophic lateral sclerosis, in two of which improvement had followed treatment with α -tocopherol, reported¹² twenty more cases of this disease. He gave 50 to 100 mg. of α -tocopherol, partly by mouth and partly intramuscularly, and a diet rich in vitamin E; six cases were unaffected, three were arrested, and eleven were improved. In some cases the improvement was considerable, as in one practically bedridden woman aged 36, with a year's history of illness, who became able to walk and even do some housework after ten months' treatment. Stone¹³ reported improvement in five patients with muscular dystrophy treated with 2 c.cm. wheat-germ oil daily: he also gave vitamin B₁ and thought that this helped. He stated that in one case of old anterior poliomyelitis there was lessening of muscular atrophy with the same treatment.

To many readers of these papers the results seemed too good to be true, and time has unfortunately confirmed their scepticism. Later reports have been uniformly negative as to suggest that these earlier successes can be explained by the remittent nature of neuromuscular disorders and by the psychological stimulus of new therapy. Sheldon, Butt, and Woltman¹⁴ treated eight cases of muscular dystrophy, six of amyotrophic

¹ Symposium on Vitamin E, by the Society of Chemical Industry, London, 1939.

² *J. Biol. Chem.*, 1928, 76, 273.

³ *Rev. Neurol.*, 1936, 65, 221.

⁴ *Biochem. J.*, 1935, 29, 788.

⁵ *Proc. Soc. exp. Biol.*, N.Y., 1937, 36, 780.

⁶ *Effect of Chronic Vitamin E Deficiency*. Oxford University Press, 1938.

⁷ Unpublished work cited by Antopol, W., and Schotland, C. E., *J. Amer. med. Ass.*, 1940, 114, 1058.

⁸ *Science*, 1939, 89, 424.

⁹ *J. Amer. med. Ass.*, 1941, 118, 1893.

¹⁰ *Lancet*, 1940, 1, 10.

¹¹ *J. Amer. med. Ass.*, 1940, 114, 948.

¹² *Amer. J. med. Sci.*, 1940, 222, 765.

¹³ *J. Amer. med. Ass.*, 1940, 114, 2187.

¹⁴ *Proc. Mayo Clin.*, 1940, 15, 577.

lateral sclerosis, and four of progressive muscular atrophy with 180 c.cm. wheat-germ oil by mouth daily, and with 100 mg. of *a*-tocopherol intramuscularly twice weekly, for periods of three to five months, but none of their cases showed any improvement. Denker and Scheinman¹ treated eleven cases of amyotrophic lateral sclerosis with 55 to 175 mg. *a*-tocopherol daily, partly orally and partly by intramuscular injection. In no case was any improvement noticed. One of their cases was very mild and of only six months' standing, but was not helped any more than the others. They add a note on four other more recent cases treated with 250 mg. *a*-tocopherol and 100 mg. vitamin B₁ daily, but the results were equally disappointing. Ferreebe, Klingman, and Frantz¹² treated thirteen patients with progressive muscular dystrophy, seven with progressive muscular atrophy, and six with amyotrophic lateral sclerosis: they gave two tablespoonfuls of wheat-germ cereal, 70 to 100 mg. *a*-tocopherol, and 10 to 30 mg. pyridoxine hydrochloride (vitamin B₆) daily by mouth, and 100 to 200 mg. *a*-tocopherol intramuscularly once or twice a week. The period of treatment extended over two to fifteen months. In none of these cases was there significant improvement; in ten of the cases of muscular dystrophy and six of progressive muscular atrophy there was no deterioration. Two important investigations in this country, both of which gave negative results, have been published this summer. Worster-Drought and Shafar¹⁴ treated twenty-five cases of motor-neurone degeneration with vitamin E in the form of synthetic *a*-tocopheryl acetate or wheat-germ oil. The cases included bulbar paralysis, progressive muscular atrophy, and amyotrophic lateral sclerosis; only two showed definite improvement, and progressive deterioration occurred in all nine cases of bulbar paralysis. The authors point out that, though the prognosis of motor-neurone degeneration is always grave, the rate of progress varies, and periods during which no advance of the disease takes place are by no means uncommon in the absence of specific treatment. Fitzgerald and McArdle¹⁵ treated ten cases of muscular dystrophy and ten of motor-neurone disease with either vitamin E or vitamin B₁, or with a combination of the two, without obvious improvement. Their results are of particular value because they were controlled by the estimation of the daily output of creatine and creatinine. In diseases of muscle creatine is found in excess in the urine, the amount depending on the bulk of improperly functioning muscle. Rabbits with nutritional muscular dystrophy excrete an abnormal quantity of creatine, which falls dramatically within a few days of the administration of *a*-tocopherol. No such improvement occurred in the human cases treated by Fitzgerald and McArdle.

When these and other figures in the literature are summed up the clinical statistics of vitamin-E therapy in neuromuscular disease are indeed disappointing and reveal no significant difference from the course of the untreated disease. No biochemical evidence has been produced of any action of vitamin E, natural or synthetic, on neuromuscular disease in man. It is probable that the place of vitamin E in the index of treatment

will not finally be decided until simple means are available for analysing the amount of the vitamin in the body fluids and tissues. We do not doubt that vitamin E is an important food factor, but we find nothing yet to persuade us that any human disease, or any disturbance of childbearing or locomotion in man, is due to deficiency of vitamin E or is alleviated by treatment with it. Similar provisional judgment must be passed on vitamin B₁, now known as pyridoxine, which has been advised in Parkinson's syndrome and in a number of other neurological disturbances in addition to those already discussed; here, too, the early promise has not been confirmed."

ECONOMY IN DRESSINGS

It is a pity that the Select Committee on National Expenditure cannot be persuaded to look into the use of surgical dressings in wartime. Its comments might be pungent and informative. The amounts of cotton and other imported materials used for surgical dressings must bulk as large as the imports of drugs, but so far they have not been subject to the same carefully planned economy. It is perhaps inevitable that the treatment of wounds should be on a cost plus percentage basis, but certainly more might be done to communicate to the surgeon a sense of the cost of dressings in money to the patient, hospital, or insurance fund, and in imports and irreplaceable stocks to the country. It is inexcusable that materials should still be wasted in techniques which are discredited or superseded. M.R.C. War Memorandum No. 3 says laconically that boric acid in boric lint is wasted. Nevertheless we have it on reliable authority that 44% of all prescriptions for lint are for boric lint and that prescriptions for boric lint constitute over 6.5% of all the prescriptions for dressings under the National Health Insurance Act. It is perhaps misleading to say that the boric acid is wasted, for when the doctor orders two ounces of boric lint the patient actually gets only just over an ounce of lint and the rest boric acid. But to weight lint with boric acid, which must be imported, seems both extravagant and foolish in wartime, for there can be few who now seriously believe in the antiseptic or healing virtues of boric acid. Nor has any pharmacologist the slightest doubt that the belladonna in belladonna plaster is wasted, and that the same green colour and psychological effect could be produced by an extract of lawn mowings, yet an important proportion of our supplies of this precious drug is still being diverted to this purpose. The surgeon is entitled to reply that no up-to-date casualty department ever uses boric lint or belladonna plaster, but his own foibles are equally susceptible to criticism. The hospital treatment of burns has been debated with almost religious fervour, but we have no figures for the relative cost in time, money, and materials of treating a burnt hand with plaster-of-Paris, Bunyan bag, sulphonamide and saline packs, or the antiseptic pellicles of which sulphadiazine in triethanolamine is the latest example. Few hospitals go to the trouble of sorting soiled dressings from dirty dressings so that the merely soiled may be used again.

¹¹ *J. Amer. med. Ass.*, 1941, 116, 1895.

¹² *Lancet*, 1941, 2, 29.

¹³ *Brit. med. J.*, 1941, 64, 19.

¹⁴ *J. Amer. med. Ass.*, 1941, 116, 2148.

¹⁵ *Proc. Soc. exp. Biol.*, N.Y., 1950, 43, 97.

Oily dressings are now used on a wide scale in the treatment of burns, septic wounds, and compound fractures, either alone or in conjunction with substances such as flavine, a sulphonamide, bismuth, zinc oxide, and iodoform. There is good reason to believe that the action of the oil is mechanical, forming a surface on which lymph does not adhere and clot. The current prices per gallon of oils, without tax, are approximately: vegetable oils, 6s. 6d. to 7s.; liquid paraffin, 8s.; crude cod-liver oil, 9s. 6d.; pure cod-liver oil, 19s. 6d. Cod-liver oil is in short supply and is urgently needed for human and animal nutrition. The revival of the treatment of burns by carron oil suggests that the cheaper vegetable oils are not unsuitable, nor is there any convincing evidence that fish-liver oils improve healing to a degree commensurate with their rarity and cost. Why, then, are they still being used for external applications? One of the most popular oily dressings at the present time is tulle gras, and this likewise appears to be equally effective whether or not it contains halibut-liver oil and balsam of Peru. Tulle gras consists of nothing more than curtain muslin steeped in soft paraffin, and the prices charged for proprietary brands of this material are fantastically high.

Newer materials such as artificial silk and the transparent wood-pulp wrapping known by the proprietary name of cellophane have not been exploited in this country, though it is known that artificial silk bandages are used by the Germans. Clothes are rationed, and menstrual diapers, in short supply, may soon be made from sphagnum moss, but clean abdominal incisions may still be seen covered with wads of cotton-wool and many-tailed bandages. It seems certain that sooner or later a drastic cut must be made in materials for surgical dressings, and it would be well for plans to be laid to deal with such an emergency. At present the facts are not available. To begin with we need a survey of a suitably chosen sample, in the statistical sense, to show what kinds of dressings are being used in the home, the workshop, the practice, and the hospital, and for what purposes. The next step would be the costing of different methods of dressing lesions from inception to healing. Discussions should then be held with the Ministry of Supply to discover which potential materials are plentiful, such as plaster-of-Paris, hypochlorites, and sodium sulphate, and which are wanted for other purposes, such as cotton-wool, phenol, and fish-liver oil. Experiments would be necessary in many instances, so as to avoid fiascos like the use of preparations of glycerin of tannic acid on burns of the hands and face. A short memorandum would then be prepared laying down standard methods of treatment; demonstrations of methods would be instituted, and quotas would be established on this basis. So far the attention of surgeons in this country has been directed too exclusively to the formation of centres at which patients are treated by specialists, to the advantage of both patient and specialist. Such methods may win the peace but it is doubtful whether they contribute much to winning the war. A raising of the general level of prophylaxis against wound and ward infection, and of economy in treatment, would be much more immediately useful, even though less academically interesting.

NIGHT-BLINDNESS

Few affections have a literature of such great antiquity as night-blindness. Various Egyptian papyri, including the Ebers papyrus, refer to it, and ox-liver was recommended for treatment. Descriptions of the condition and of liver therapy are also found in Hippocratic writings and in the records of ancient Chinese medicine. Liver therapy for night-blindness appears to have been prescribed throughout the Middle Ages, but fell into disrepute by the beginning of the last century; it is not mentioned in Mackenzie's classical *Treatise on the Diseases of the Eye* (1830). The significance that night-blindness has assumed with the advent of black-out conditions helps one to appreciate how important the affection must have been to earlier generations who had no brilliantly lit cities and were in any case largely rural. Moreover, it was not until 1853, when the ophthalmoscope established retinitis pigmentosa as a distinct entity, that a clear separation could be made into a form of night-blindness that had no complications and a more serious type which developed into the ultimately total or subtotal blindness of retinitis pigmentosa. The fear that a first experience of night-blindness engendered is well reflected by Mackenzie: "The first attack of the disease generally excites great alarm. The patient . . . finds his sight fail, and as evening advances becomes almost completely blind. The medical attendant . . . is often as much amazed and little less alarmed than the patient. . . . To the joy of all concerned the patient wakes in the morning with his sight perfectly restored. But again on the approach of evening, symptoms are perceived of returning blindness. Night after night the blindness returns, and becomes more and more complete . . . vision is more and more impaired; and if neglected or mistreated, the disease ends in incurable amaurosis. . . . Mr. Bampfield infers that, under proper treatment, the prognosis may always be favourable."

The ophthalmoscope, which solved so many problems and rendered many more meaningless, clearly postulated the problem of "essential" night-blindness at a time when social conditions made it an affection of decreasing urgency. When the night-blindness of retinitis pigmentosa—in which it is the first symptom of a progressive and grave affection—was distinguished as a separate entity there remained two clear-cut types. In 1838 Florent Cunier had published a pedigree of seven generations of the Nougaret family, showing eighty-six night-blind persons in a group of 629. Apart from this hereditary type there was known also an epidemic night-blindness affecting fatigued armies and civilian populations (such as sections of the Russian peasantry) suffering from "fatigue and want of sleep." Individual cases were also recognized as occurring in sailors, in whom "sleeping on deck is blamed as a cause." Night-blindness was also regarded as a symptom or precursor of scurvy. The association of xerosis of the conjunctiva with night-blindness was noted by Bitot in an outbreak of the condition in children at a Poor Law institution at Bordeaux during 1859-61. Two years after Bitot's publication (1863) Gama Lobo asserted that xerosis occurring in Brazilian slaves resulted from lack of

able and sufficient food. In spite of these early observations investigations into the aetiology of xerosis and of essential night-blindness tended to be independent studies, as xerosis is not always present or obvious. Subsequent workers have, however, reported so many instances of epidemic night-blindness in ill-nourished populations that, even without the validity of the therapeutic test of vitamin-A administration, the role of nutritional deficiency as the underlying factor in epidemic night-blindness came to be recognized. The conception of night-blindness as a deficiency disease unified the scattered and disconnected observations collected over centuries. That conception, elaborated before 1914, was verified by the outbreaks of night-blindness during the famine conditions on the Continent in the course of the last war and its aftermath. A particularly detailed study of the epidemic in Vienna during 1919-24 was made by Birnbacher, who, among others, found liver, cod-liver oil, butter, and other articles rich in vitamin A prompt and effective remedies.

The two clear-cut types of essential night-blindness—the hereditary and the nutritional—have been more fully elaborated of late years. Inheritance of night-blindness may be dominant, as in the Nougaret family and in many other recorded instances; recessive, when it is often associated with myopia; and sex-linked, when the disability is transmitted through unaffected daughters of affected males to some of their sons: this type, too, appears to be associated with myopia. The nutritional type, vaguely recognized in antiquity, was proved experimentally by Holm (1925) as due to vitamin-A deficiency by testing the ability of rats to jump off a table in a dim light. Rats on diets deficient in vitamin A developed well-defined night-blindness (after previous exposure to bright sunlight); this disappeared with the administration of vitamin A. The night-blindness was shown to be associated with retarded regeneration of visual purple (Fridericia and Holm, 1925), and extensive studies have since appeared on the role of vitamin A in the cycle of bleaching and regeneration of visual purple (Wald, 1935). The possibility that night-blindness is an early sign of vitamin-A deficiency led to studies of the range of dark adaptation in the general population as evidence of vitamin-A deficiency (Jeans and Zentmire, 1934; Frandsen, 1935). These studies revealed widespread subclinical vitamin-A deficiency in the general population, easily overcome by the administration of additional vitamin A. Refinements of the technique for testing dark adaptation and a more detailed understanding of the process have come from Lecht and his associates.

It is now clear that improvement in the symptoms of night-blindness does not always follow quickly on the administration of vitamin A; occasionally there is a latent period of as long as two months.¹ A survey of newer aspects of technique and problems of dark adaptation is given by Mandelbaum.² That night-blindness and xerosis are associated effects of vitamin-A deficiency is obvious from both experimental and clinical studies. In contrast to the accepted views, which regard night-blindness as the earlier symptom, Kruse³

suggests that slit-lamp studies of the conjunctiva and cornea in vitamin-A deficiency reveal characteristic lesions long before the formation of Bitot spots, which in fact must be regarded as the end-stage of a continuous range of appearances beginning with conjunctival injection. These studies are of significance because they may supply a simple and objective means for the diagnosis of night-blindness arising from vitamin-A deficiency, instead of having to rely on the therapeutic test.

One aspect of night-blindness that recurs frequently in the literature is the psychological factor. It is of interest that the family tree Cunier established in 1838 centred around the case of a recruit who complained of night-blindness and was regarded as a malingerer. Malingering was also suspected in the Boer War and still more in the last war, though some writers believed night-blindness to be a genuine psychopathic condition. The paper by Wittkower, Rodger, Scott, and Semeonoff in the present and in last week's issues of the *Journal* stresses the psychopathological aspect. It is possible that the novelty of black-out conditions might produce a psychological night-blindness in psychopathic individuals, but there is no evidence that such people form any considerable proportion of the night-blind population. In any case it is well to remember that night-blindness is a symptom of a wide range of conditions centring round organic disease of the retina and choroid, and around anomalies in the metabolism of visual purple arising from either local, general, or genetic factors.

CHEMOTHERAPY OF PLAGUE

The sulphonamide drugs have now been tried in the vast majority of bacterial infections, with rather varying success. The striking results obtained with coccal infections have, however, tended to obscure to some extent the fact that other diseases, such as those due to Pasteurellas, yield to treatment with sulphonamides. Preliminary observations by Buttle and his colleagues⁴ had shown that sulphanilamide had a slight but temporary effect on infections due to *Pasteurella pseudotuberculosis* and *Past. septica* in mice, while Levaditi and Reinie⁵ obtained similar results in mice and hens against *Past. avicida* when sulphanilamide and certain other derivatives were employed. More remarkable results were obtained in 1938 by Carman⁶ in the treatment of bubonic plague in East Africa. After nine patients had all died, prontosil soluble in the form of intramuscular injections of 2.5 or 5.0 c.cm. twice daily for four or five days cured three out of six patients. Vine,⁷ in a small epidemic in the Nilgiris in Southern India, also reported that three patients treated with prontosil recovered. In 1939 Schutze,⁸ Durand,⁹ and Girard and Girard¹⁰ all demonstrated that the sulphonamides exhibit considerable activity against *Past. pestis* in rodents. Schutze found that, when sulphapyridine, soluseptasine, and a diaminodiphenylsulphone glucose compound were given to mice and rats by subcutaneous injection or by administration in the food and drink, sulphapyridine proved the most efficient drug in both mice and rats, soluseptasine protected rats but not mice.

¹ *Lancet*, 1937, 1, 631.

² *C. r. Soc. Biol. Paris*, 1933, 127, 1179.

³ *E. Afr. med. J.*, 1938, 14, 362.

⁴ *J. R.A.M.C.*, 1938, 71, 332.

⁵ *Lancet*, 1939, 1, 266.

⁶ *Arch. Inst. Pasteur Tunis*, 1939, 23, 96.

⁷ *Bull. Soc. Path.*, 1939, 32, 450.

¹ *Amer. J. Physiol.*, 1940, 130, 651.

² *Arch. Ophthalmol.*, Chicago, 1941, 28, 203.

³ *Publ. Hlth. Rep., Wash.*, 1941, 55, 1301.

while for reasons which are obscure the sulphone compound was efficient in mice but not in rats.

Durand gave sulphapyridine, 2 mg. per gramme of body weight, to mice in their food for five or six days before and for from six to seventeen days after infection. Mice resisted at least 10,000 plague bacilli and on recovery were immune; if from 20,000 to 300,000 organisms were injected the mice died, but their tissues were sterile at death. Girard and Girard showed that mice receiving 100 mg. of sulphapyridine in their food in the space of six hours were as resistant as those given 0.3 c.cm. of immune serum. Guinea-pigs receiving from 120 to 300 mg. of sulphapyridine a day for from five to seventeen days resisted *Past. pestis* rubbed on the scarified skin: some guinea-pigs were cured even when treatment was delayed for two days after infection. Sulphathiazole, according to Sokhey and Dikshit,⁹ is even more active than sulphapyridine in curing mice. Doses of 40 mg. twice a day for ten days protected mice even when treatment was begun up to seventy-two hours after the infecting doses. Sulphathiazole they regarded as being as efficient as a potent antiplague serum.

Further successes in the treatment of plague in man have now been recorded. Moreau⁸ cured two cases of bubonic plague with a mixture of sulphanilamide and serum. Chopra and his colleagues¹⁰ obtained success in the case of a small girl of 6 who, in addition to having a bubo, developed bronchopneumonia: a total of 31.5 grammes of sulphapyridine was given. The most remarkable series of cases, however, is that reported by Wagle and others,¹¹ as the result of an epidemic in Bihar. Eighty-two patients who served as controls were treated with iodine intravenously; forty-five (or 52.4%) died. Of seventy patients given antiplague serum twenty (or 28.5%) died; of fifty-three given sulphapyridine thirteen (or 24.5%), and of thirty-two treated with sulphathiazole only five (or 15.6%). If patients with septicaemia at the beginning of treatment are considered, 95.0% of the controls died, as did 60.6% of those given antiplague serum, while of those given sulphapyridine and sulphathiazole 43.3% and 41.8% died. Although six patients with pneumonic plague all died, one was kept alive for eleven days. Larger doses might possibly have yielded a cure. These results open up a new chapter in the chemotherapy of plague.

RESULTS OF PLASTIC SURGERY FILMED

A film in technicolour illustrating the results of plastic surgery in war injuries has been produced under the auspices of the Ministry of Information on behalf of the Ministry of Health. It is intended to accompany and supplement a lecture which a delegate from the British Government will deliver at a number of medical conferences in the United States. The film, which is a speaking one, makes no attempt to give instruction in the technique of plastic surgery; it is merely an illustration of successful cases, a kind of "clinical meeting" recorded by the cinematograph camera. The commentary begins by describing the Emergency Medical Service with its institution of specialist centres in various parts of the country, their medical and surgical teams, and the patients drawn from members of the fighting Forces, the Merchant Navy, and the civil defence services, as well as persons injured in air raids. It is emphasized that ordinary surgical treatment is not thought to be sufficient, and that rehabilitation is the end in view. How successfully this is accomplished is proved by a number of cases from the plastic surgery centre in the

South of England, where very satisfactory results of grafting and repair have been achieved even in cases of great disfigurement and destruction of facial and other tissue. Training in a new occupation if the previous one can no longer be followed is included. One of the cases shown is that of a woman dancer who, when a London dance hall was struck, had hundreds of minute pieces of glass blown into her back; by patient treatment the worst of the damage was repaired. Another case was that of a woman doctor so injured in an air raid as to be unrecognizable when taken into her own hospital. Sixty pieces of glass were removed from the temporal, mandibular, and upper neck areas. In some cases artificial eyes were fitted, and—on the film at least—the casual observer might be deceived and not notice that the subject of the portrait had lost an eye. The film admirably suggests not only the skill of the plastic surgeon but the co-operation that must be required of the patient. It will show American audiences what is being accomplished in this country in the way of skin-grafting and other procedures.

AUTUMN HEALTH CAMPAIGN

So that every possible precaution against illness may be taken during autumn and winter the Minister of Health has decided, in collaboration with the Central Council for Health Education, to intensify the health education activities of the Department and the Central Council. In particular, efforts are being made to secure the co-operation of the public in reducing the spread of diseases caused by droplet infection—for example, influenza and the common cold—as well as diphtheria, measles, whooping-cough, cerebrospinal fever, and tuberculosis. Influenza and the common cold alone are responsible in normal times for between 30% and 40% of the working hours lost in industry. This special campaign was opened by the Chief Medical Officer, Sir Wilson Jameson, at his Press conference on October 1. Showcards and posters will be exhibited in buses, trams, and underground trains, at main-line railway stations, and in chain stores and the vestibules of cinemas, during the period up to the middle of March next; they will also, with the consent of the Ministry of Labour, be displayed in factories. The Minister of Health has asked local authorities to forward this campaign of health publicity by all means in their power. Copies of a sound-film made by the Central Council for Health Education to illustrate the dangers of unguarded coughing and sneezing are now available in the council's own film library, Tavistock House, Tavistock Square, W.C.1, or at the Ministry of Information's central film library, Imperial Institute, S.W.7, on free loan to approved borrowers for non-theatrical showing; and another film on the same subject may be added to the library at a later date. A three-weeks display of posters on droplet infection began on October 25 in the windows of nearly 1,500 stores and gas and electricity undertakings throughout the country.

The following cable has been received at the headquarters of the British Medical Association from Dr. W. E. McCulloch, honorary secretary of the Jamaica Branch: "Your oldest Oversea Branch in annual meeting assembles. We send the parent body warmest greetings. We send you sympathy in your grievous losses, admiration and congratulation on the magnificent work of the profession in these times, and loyalty to what you stand for, envious of your position in the front line. We wish more and more Good Crosses to you all.—McCULLOCH."

⁸ *Lancet*, 1940, 1, 1040.

⁹ *Bull. Soc. Path. exot.*, 1940, 33, 259.

¹⁰ *Ind. med. Gaz.*, 1941, 76, 89.

¹¹ *Ibid.*, 29.

"TO MATCH THE MEN"

*An Address at the Opening of the Winter Session of the
London School of Medicine for Women at Exeter*

BY

SIR ROBERT HUTCHISON, B.L., M.D.

When I first received the kind invitation of your council to address you to-day I confess I had some hesitation in accepting, and that for various reasons. In the first place it is probable that everything that can be said with profit on such an occasion as this has been said already, so "What shall I sing when all is sung and every tale is told?" as the poet plaintively asked. I hold, moreover, that there is too much talk in these days which does not lead to any result in action, and agree rather with Carlyle's doctrine of silence. Then again, it seems to be thought necessary by some at least of those who have addressed you in former years to choose a subject suited to women students and doctors as such. I have noticed, by the way, in some of these discourses a slightly apologetic note, almost as if women doctors might be compared, as Dr. Johnson compared women preachers, to a dog standing on its hind legs. "One did not wonder," he said, "that it was not done well but rather that it was done at all." Others, again, are rather over-congratulatory in tone, and insinuate, if they do not state, that the coming of women in large numbers into our profession has been of great advantage to it, and that on the whole women as doctors are better than men. But for my own part I think it is unwise to generalize about the differences between the sexes. As doctors at least I think they are much of a muchness, and I agree with that wise woman Mrs. Poyser when she said: "I don't deny the women are foolish! God Almighty made 'em to match the men." My own experience, for what it is worth, has been that a woman doctor is like the little girl who had a curl right in the middle of her forehead: when she is good she is very very good, and when she is bad she is horrid—even horrid—than a bad man doctor.

But having weighed these objections, what finally determined me to fall in with the wish of the council was the reflection that, after all, it is up to us who have nearly run the professional race and are about to begin the descent into the dark valley to give to you to whom we are handing on the torch a word or two of cheer and, if it may be, of counsel. So here I am.

Let me begin, then, by congratulating you on your choice of the London School of Medicine for Women as your place of study. I do not do so as a mere empty compliment to this school, for it needs no flattery, nor for the reason that you can get as good a medical education here as anywhere, true though that is, but because it is a women's school to which men students are not admitted. You will gather from this, and rightly, that I am no friend to co-education, especially during the years of adolescence. Nymphs and shepherds may play together, but if they work together there is apt to be a good deal of time lost in dalliance. It is for the same reason that I do not favour the admission of women to men's schools: they are a disturbing element. You will call this, I know, a Victorian attitude, and perhaps it is, but it is rash to assume that the Victorians were always wrong.

Further, I think you have more opportunity of social and athletic activities, which are such an important ingredient of the student life in a school such as this, than if you are one of a small minority of women at a mixed school.

On Choosing Medicine

Be all that as it may, you are here to qualify for the medical profession, and one cannot help asking why you want to be doctors, for on your motives will depend to a considerable extent the spirit in which you work and the success you attain. I daresay a small number of you have been actuated by the loftiest motives, humanitarian or religious, by a love of mankind, or a desire to be doing the

work of the Master, and happy are those who have this crusading spirit. It is of such stuff that the best medical missionaries are made. Another small minority, no doubt, are at the opposite pole: you wanted freedom and a job of some sort, and thought medicine as good as any other. I am afraid that spirit won't carry you very far, but of course you may fall in love with your profession as you go on. Then some of you may have had a natural leaning to medicine for family reasons: your father or other near relative perhaps is a doctor. That, of course, may be a warning as much as an inducement, but for a son or daughter to follow the father's profession is as great a testimonial to that profession as a second marriage is to matrimony. A majority, probably, wished to take up some profession and thought medicine would be both interesting in itself and give opportunities for those personal contacts and relationships which specially appeal to women, besides being—as women's work goes—comparatively well paid. On the whole these are good reasons and reasons that will wear well. Lastly, there may be some who could not give any reason for their choice: they just felt in their bones that they would like to be doctors and that was all there was to it. Whether this argues a natural bent for our art I do not know, but I like to think so, for it is what made me become a doctor myself. I sometimes was tempted to regret my choice when I was doing the pre-clinical subjects, but—and this may encourage some of you with similar doubts—as soon as I got into contact with patients all misgivings vanished.

But from whatever motive you have taken up the study of medicine you naturally want to succeed. And that raises the question: What is success? Those of you who are just beginning will think of it in terms of getting through examinations, and you are right, for that is your immediate business and it is well to take short views. I am not going to say anything on the threadbare subject of examinations. They are a necessary nuisance, but you must not allow yourselves to be hag-ridden by them, as women students are apt to be even more than men. Try to regard them as sporting events, and don't take an occasional failure too tragically. Above all, don't think that examiners are ogres who would rather fail you than not; it is really quite unjust to the poor creatures.

Those of you, on the other hand, who have put examinations behind you will be thinking in terms of professional success and naturally look farther ahead. Let me advise you not to aim too high. The big prizes in our profession are only for the few, and they do not always bring much happiness when gained. "Seekest thou great things? Seek them not," as the wise man said. If you have earned enough for your needs and been able to put a little aside for your old age, and if, at the same time, you have won the esteem of your colleagues and the affection of your patients, you have done well enough, and that measure of success should be within the reach of most of you.

On Studying Medicine

But how is success, whether in examinations or afterwards, to be attained? Your share in attaining it can only be by hard work, for work, as Osler said, is the master word in medicine. You must therefore live the dedicated life, eschewing many amusements and distractions and concentrating on your work with singleness of purpose. At the outset you may feel rather appalled by the number of subjects you have to study. I sympathize with you in that, but I am not going to discuss the medical curriculum any more than examinations. We all regard it as a sort of chronic disease for which everyone has a different remedy. For my own part I should like either to treat it medically by a process of slimming, or to submit it to an operation for which the only instrument I should require would be a large sharp pruning-knife. Pending such treatment you must make the best of the curriculum as it is, and you will not be overwhelmed by it if you work steadily, unhasting and unrelenting, and taking each subject as it comes.

But you must know how to work. Medicine is an art even more than a science, and as most of you probably

learn better through the eye than through the ear, I should advise you to read chiefly in the book of Nature—in the laboratories, dissecting-room, and wards. You must, of course, attend the lectures prescribed for you, but don't consider them a waste of time. I am one of those who still think that the spoken word is better as a vehicle of instruction than the printed page unless the lecturer is totally unfit for his or her job. To get real benefit from a lecture, however, you must take notes, which you can expand afterwards with advantage. Note-taking not only helps the memory but it compels attention and will prevent a dull lecture from being boring.

I have said that most of your reading should be in the book of Nature, but of course textbooks have their uses too. I regret that most of them are such solid slabs of dullness. This makes it impossible to read them straight through, and there is no use attempting it. The proper way to read your textbooks is in connexion with the parts you are dissecting, your practical work in the labs, or, later, with the cases you see in the ward and out-patient room. I would suggest to you also that the best way to read with concentration is not against a background of noise produced by the radio, as seems to be a common habit among students to-day. Avoid above all things becoming the slaves of textbooks so that you can almost repeat chunks of them by heart. That produces the gramophone type of mind, useful enough sometimes in examinations, but apt to let you down in practice, for it means that you only have your knowledge indexed one way. It is quite possible, remember, to be able to give an accurate systematic description of a disease and yet to be quite incapable of recognizing it when you see it.

Further, you must not only acquire knowledge, you must digest it before it is any real use to you. Lose no opportunity, then, of talking over your work with your fellow students, and of joining in discussions and debates at student societies.

At this point I think I hear some anxious parent say: "With all this, is there not a danger of my daughter being overworked?" There is no use denying that such a danger exists, and it is greater, I think, in women students than in men because women are more conscientious. The same is true in practice. Women are more apt to let their work get on top of them and never to have it out of their minds. It is this, I think, combined with sketchy, irregular meals that accounts for the appearance of strain, the absence of the look of leisure, so often seen in the faces of professional women. Worry also plays a part—for women on the whole are greater "worriers" than men—worry about examinations as students and about patients later on.

I do not say that overwork alone has often serious consequences to health, but it is apt to engender staleness. This is only to be avoided by the introduction of system into your work and your life, by attention to exercise, sleep, meals, and a sufficiency of holidays, and by the cultivation of hobbies and tastes outside medicine. Above all, don't try to combine a social life and a student one. It can't be done. You cannot dance all the night and work properly next day.

On Getting Experience

And now a word to the recently qualified. You are entering our profession at a difficult time, when the future is obscure, "planning" much in the air, and the conditions in which you will have to practise uncertain. I should advise you not to worry about these things. Whatever happens there will always be plenty of opportunity for medical work, for however Demos may treat his priests his interest in his own physical welfare will always ensure that he has enough doctors and that they are reasonably well treated. You are at the most important period of your career when your real education begins, for it is now that you have to undertake personal responsibility for patients, and nothing educates like responsibility. The first two years after qualification are therefore most precious, and you should use them in getting practical experience in resident posts or as a locumtenent. Let me urge you not to be too high and mighty in applying for posts; not too

demanding, not too mercenary. You should be glad at first to work for your keep; you are probably not worth more. Don't let your first inquiry about every post be: How long holidays do I get? How often do I get a weekend off? Can I keep a car? (At that stage in your career you have no right to have a car at all.) But rather: How much experience am I likely to get, and what chance have I of doing things on my own responsibility? Not long ago I read in a medical journal of a young man who had applied for a post as house-physician at a provincial hospital and had been appointed, but on being told that he would be expected to give anaesthetics, if called upon, in addition to his regular duties he threw up the post. This action was applauded by the writer of the article, but for my own part I think the young man was a fool. If he had had the root of the matter in him he would have been glad to give anaesthetics, to pull teeth, to conduct a delivery, or to do any other odd jobs that came his way for the sake of that inestimable reward—experience. Leave it to domestics to say "I was not engaged to do that!"

Applicants for resident posts are usually required to produce testimonials and to appear at an interview. I attach little importance to testimonials, but the interview is of great importance, and it is essential that you should make a good impression. Be neither over-confident nor too diffident in manner. As regards appearance, it is not for me, of course, a mere man, to give you hints on dress, but it is only right to tell you, as one who has sat on many selection committees, that quite small things—a little too much make-up or the tilt of a hat, for instance—may imperil your chances, while if you paint your nails you are infallibly and rightly damned. In the matter of dress I often wish that women doctors wore a uniform: I am sure it would increase the confidence of their patients. Men doctors have set a bad example in this. Almost down to the last war the top-hat and frock-coat were *de rigueur*; now men doctors dress anyhow. The motor car, they say, is to be blamed, as it is for the loss of so many other of the dignified things in life, but the woman doctor has not that excuse. So you of the rising generation might think about it.

The Wide Choice

While passing examinations and getting experience you will be making up your mind as to your permanent work, and fortunately you have a wide choice. As I said before, few can aim at the so-called higher walks of the profession; but please don't talk, as I have heard a young woman doing, of being therefore obliged to "drift into general practice," for that, after all, is the most responsible branch of medical work and no one is too good for it. But general practice is hard work and many women cannot stand the strain of it. Many also shirk the responsibility or lack the initiative which it entails. On the other hand, women have many advantages as general practitioners. They are conscientious—sometimes too much so—and they ought to have common sense, perhaps the most valuable quality a practitioner can possess; for women, being responsible for the carrying on of the race, have always had to have their feet more firmly planted on Mother Earth than men. Intuition, too, is supposed to be a feminine characteristic, and intuition is the basis of that useful quality in practice—clinical instinct. Tact is another gift which you are said to possess in greater degree than men, and certainly general practice offers ample scope for its exercise. I think it is a mistake, however, to believe that women are more gentle in their handling of patients than men; indeed, I am not sure that the reverse is not the truth. Remember always that a "patient" and a "case" are not the same thing, and if your zeal to investigate the "case" do not forget that the "patient" is a human being.

Apart from general practice, there are now many posts in the public health services which are specially suited to women, for they mean fixed hours, limited personal responsibility, a regular salary, and a pension. They are not exciting or adventurous, but they are useful and safe. Some of you, again, may decide to go abroad—to India, for example, where there is a great sphere for women's work.

Research will probably appeal to only a few. There is no reason why women should not do great work in research, as the example of Madame Curie and others shows, but it is unwise to take it up unless you feel a real call, and it is often a blind-alley occupation.

There is one important respect in which the after-careers of men and women doctors differ, and that is in the effect upon them of marriage. Marriage is a great help to a man *qua* doctor; in a woman doctor it is apt to be a hindrance. Not always, of course, but it requires unusual strength and energy for a woman to run matrimony and a profession in double harness, for matrimony is really a full-time job. It sounds very nice for a husband and wife both to be engaged in practice, perhaps as partners, but I don't think it often works. A man, after a harassing day, does not want to come home to talk shop to an equally tired wife. He wants to find someone with "a heart at leisure from itself to soothe and sympathize," and that is the woman's part. There are, of course, some part-time paid posts which a married woman doctor can fill—and perhaps all the better for her being married—but the rough-and-tumble of general practice is another matter.

What proportion of you will marry I do not know. I have seen it stated at 30%, but I should have expected it to be higher. Nor do I know how this proportion compares with that for non-professional women. I suspect, however, that preoccupation with professional work lessens a woman's power to please as well as her abstract desire for marriage. But, it may be said, if this is true there is at least a one in three chance that a woman's medical education has been wasted. But that does not follow. The study of medicine is a liberal education, and medical women make excellent wives, while their qualification is always a second string to their bow. There is therefore no real waste.

And now, having come to the end of my advice, I find it difficult to give a title to this address. Perhaps I cannot do better than use Mrs. Poyser's phrase, "to match the men," for it implies what I have wished to convey—that doctors, whether men or women, are much alike, and where unlike they are complementary to one another. Let me, therefore, as a final admonition and in no spirit of paradox, urge you, both as students and afterwards, to "quit you like men."

AIR RAIDS AND THE CHILD

BY

W. E. R. MONS, M.R.C.S., L.R.C.P.

Assistant School Medical Officer: Psychologist to Hostels for Difficult Children

While heartily condemning the habit of publishing premature conclusions based on relatively small experimental material, I feel I am justified by circumstances in making this small contribution to the evacuation problem now, instead of presenting the ultimate findings when the problem has ceased to exist.

During the past months thousands of evacuated children have returned to their homes in the danger zones, the parental attitude being usually expressed in the sentiments: "If the raids should start again the children can soon be evacuated once more." It seems appropriate, therefore, to remind parents that exposure to even a single "harmless" air raid can do great damage to a child's psyche be he ever so "normal" and "fearless" on the surface.

Miss A. T. Alcock, in an address at the Tavistock Clinic on was strain in children (*Journal*, January 25, p. 124), laid stress on the "difficult evacuated children" in whom the "principal disturbance was due to a physical agency, such as bombing." She pointed out that these "seemed to react much more in the way of unruly behaviour," and that "some who had been bombed were unable to perform ordinary school work." The Conference of the National Association of Maternity and Child Welfare Centres and the National Association of Probation Officers, reported under the heading "Prevention of Juvenile Delinquency" (July 12, p. 56), does not appear to have discussed the problem of the "bombed" child in particular. Dr. John D.

Sutherland, in his excellent "Survey of 100 Cases of War Neuroses" (September 13, p. 365), does not mention the subject either, while rightly pointing to the general principle that "war neuroses are essentially the neuroses in war."

There are reasons to believe, however, that the child who has been exposed to the experience of one or more air raids is in a class by itself.* "Air-raid shock" is not a neurosis in the true sense. It does not affect only those with a strong predisposition, as in the case of the war neuroses, though it is easy to discover such predispositions in a large percentage of the children. The fact that neither personal nor family history, nor yet the previous school report, reveals the slightest trace of abnormality, and that the children show no neurotic tendencies in the Rorschach test, should serve to separate them from those in whom "air-raid shock" is superimposed on some previous weakness.

Behaviour of the "Bombed" Child

Previously good and intelligent children become suddenly obstreperous, destructive, mischievous, lazy, truant from school, and, in short, unmanageable in the billet to which they have been evacuated. In some cases the teacher of the new school expresses doubt about the pupil's mental normality where the previous report had stated him to be of scholarship standard. These children reveal as the foremost symptom a strange inability to occupy themselves in their free time. They are at a loss to know what to do with themselves, and seem to fear the responsibility of making any decision. They do not know what they want, and, in consequence, try to amuse themselves with one thing after another in rapid succession without being able to stick at anything for more than a few minutes. The result is, quite naturally, that with the exhaustion of the stock of permissible entertainment they get into mischief. Nor do they show any greater perseverance in these enterprises, and the child is merely a nuisance to himself and all others. It is the behaviour of deep resentment against the adults who have failed to provide that security and protection which is every child's birthright: the collapse of all the values which education had carefully built up so far. Death has become a personal problem, and parental authority is no longer a safe shield against this direct threat of extinction.

All this is common coin to those who have had to deal with evacuees. But it does not seem to be commonly known that the raid-shocked child reveals itself as a clinical entity in the Rorschach test in about 65% of cases. The exact nature of this reaction will form the subject of a special paper when more material has been collected. At present our observations are based on twenty-three tests on children who have been exposed to air raids and been sent to our hostels† as "difficult," and on thirty-two controls of similar ages at the same hostel who were evacuated before the raids.

It must be clearly stated at the outset that the Rorschach reaction in question is not pathognomonic in the clinical sense; it occurs also in other conditions and occasionally in the normal subject. The Rorschach test gives essentially a personality picture, and it would be unscientific to draw conclusions upon the effect of a temporary extraneous influence from a single record in the absence of any previous one. The reaction consists of the response "fire" (or its equivalent: "explosion," "sun," etc.) to the red at the bottom of Card II. To those who are working with this test this may seem banal, but the following figures are suggestive:

Boys exposed to bombing (Plymouth and Bristol 14, London 9)					23
Positive reaction .. .. .	..	..	..	..	15
Percentage with positive reaction, 65					
Not exposed to bombing ("controls")					32
Positive reaction .. .. .	..	..	..	..	6
Percentage with positive reaction, 18.7					

The analysis of the records of the first group shows that the positive reaction is given by boys who are showing little or no neurotic trend. This is partly due to the fact that the neurotic reacts usually in a specific way to the red in Card II, the neurotic reaction swamping, so to speak, the trend of the air-raid shock. Of the eight boys of the first group who failed to give the

* Compare also Mr. Tom Harrison's "Obscure Nervous Effects of Air Raids" (April 12, p. 573).

† The ages of these boys range from 9 to 14, the reason for their admission from "unmanageable" to "probation" cases.

expected response, four answered with "blood" and gave an abnormal record showing strong pre-existing tendencies. This explains, also, why so few of the men with war neuroses among soldiers returned from France (whom I had the privilege of examining at a Military Emergency Hospital last year) gave the reaction, for they were, in the words of Sutherland, merely "neuroses in war."

Normal Child's Unconscious Reaction to Bombing

We are, therefore, dealing with an upset not so much of an abnormal as of an essentially normal personality in these children, and one that is different from that due to the exigencies of evacuation. It need hardly be mentioned that any air-raid shock supervening upon a neurotic or otherwise abnormal personality will produce more severe symptoms than in a "normal" one. The child's reaction to the raid or raids is essentially unconscious. In the majority of cases he tends to make light of his experiences, denies having been frightened, and behaves in that casual manner characteristic of an adult. Nor is the severity of experience any criterion. In one case the boy had (according to his own statement) slept through the whole raid in his bed; but the realization next day of the nearness of death served sufficiently as a shock to upset him. In another case the experience of a mine explosion in his neighbourhood acted as the cause. In none of these cases was there a "war neurosis" in the true sense; nor did the Rorschach test suggest such a diagnosis. The behaviour of the boy toward aircraft noises appeared quite rational, and only those with neurotic trends showed any flinching at sudden noises.

On the other hand these children are no longer what they used to be. It is obvious that the effects of their inner experiences appear much more clearly when the strain of an evacuation is added to them. What parents and teachers at home could not spot bursts out unmistakably when the child is among critical strangers. In the several thousand evacuated school children I had occasion to study, the difference between the "bombed" and the "un-bombed" child revealed itself blatantly on putting a few questions. It may be that the children from the Plymouth and Bristol dock area are of a tougher fibre than the London evacuees. But their inability to fit into billets, the excessive number of difficulties between hosts and children, the bad school reports, and the unruly behaviour of the majority of these children cannot be explained on those grounds alone. Most of the evacuated London children have almost to be fetched home by force; most of the Plymouth and Bristol evacuees want to return home. Among an adult world that has been shaken in its foundations the world of the parents offers still more security than that of strangers. For the child, as mentioned before, is not aware that it has been upset by the raid experience, or it would not return to the danger zone so readily.

The prognosis, in our at present limited experience, appears to be good for all cases not complicated by neurotic trends. Removed from the billet, where the problem of "what to do in my free time" creates the main trouble, they tend to become exemplary pupils in the hostel—actually a residential school. Psychotherapeutic interference is unnecessary, and the routine and the discipline of a happy life among other boys remove all strain in a short time. But as it is impossible to provide such schools for the thousands of children who may become sufferers from air-raid shock during the coming winter because their parents are too short-sighted to profit by the evacuation scheme, every effort should be made to enforce the scheme while there is yet time.

A. Lesser and L. R. Kaufman (*Surg. Gynec. Obstet.*, 1941, 73, 163) state that in 15 out of 132 patients operated on with a pre-operative diagnosis of acute appendicitis, the diagnosis was erroneous, the true condition being acute salpingo-oophoritis, acute inflammation of chest conditions, pleural or abdominal tuberculosis, pyelitis, mesenteric adenitis, and acute rheumatic fever. In the 15 cases the sedimentation rate was constantly elevated or high, whereas in more than 90 cases in which the diagnosis of acute appendicitis was confirmed the sedimentation rate was normal. These findings confirm the importance of the blood sedimentation rate in the diagnosis of acute appendicitis.

GALLANTRY IN CIVIL DEFENCE

A Supplement to the *London Gazette* dated October 17 announces the award of the M.B.E. (Civil Division) to Dr. DONALD MORTON DUNN, house officer, London Chest Hospital, and the B.E.M. (Civil Division) to Miss DAISY JEROME, probationer nurse, London Chest Hospital. The announcement reads as follows: "The London Chest Hospital was severely damaged by enemy action. There were heavy falls of masonry in one wing, and two elderly women, both seriously ill, were trapped. These and the patients of an adjacent ward, some of whom he had to carry single-handed, were taken to safety by Dr. Dunn. Nurse Jerome, who was injured while attending to a patient at the moment of the explosion, helped in the rescue work. Later she was knocked over and rendered unconscious for a short period, but on recovery she returned to the ward and continued to assist Dr. Dunn until all the patients were evacuated. Dr. Dunn and Nurse Jerome showed courage and great devotion to duty."

The names of Dr. Arthur Thomas Miles Myres, resident medical officer, London Chest Hospital, Dr. Gustav Susman Norris, civil defence mobile unit, Islington, and Dr. Lewis Aubrey Westwood, medical officer in charge, London Chest Hospital, have been brought to notice for brave conduct in civil defence.

Local News

ENGLAND AND WALES

Post-war Hospital Policy

Speaking at Oxford at a meeting of the Regionalization Council of the Nuffield Provincial Hospitals Trust, Mr. W. M. Goodenough, chairman of the Trust, said that in both municipal and voluntary hospital circles the liveliest interest had been aroused by the statement on post-war hospital policy which was made on October 9 in the House of Commons by the Minister of Health. If he read this statement correctly it would appear that the Minister envisaged the development after the war of a comprehensive hospital service which would be available for all persons in need of treatment. That service was to be based on extended responsibilities to be laid on the public health authorities and on the development of the partnership between those authorities and the voluntary hospitals, which would be placed on a more regular footing than heretofore. This policy, he had no hesitation in saying, was one which both local authorities and voluntary hospitals would welcome and support with enthusiasm. Indeed, it was largely identical with that which the Nuffield Trust had endeavored to promote to the best of its ability. It was clearly based upon the complete reconciliation and the utilization to the best advantage of those bodies, both statutory and voluntary, on which the present hospital services depended. Mr. Goodenough believed that if full regard was given to all parties concerned, if, in fact, the idea of a "partnership," of which the Minister had so wisely spoken, was made a real one, the policy would be generally acclaimed and would find willing acceptance from all quarters. It was in this way that a truly national hospital policy would be achieved.

After "Coventry"

The heavy air raid on Coventry in the middle of last November gives the theme to the annual report of the medical officer of health, Dr. A. Massey. The number of casualties is not given. Drainage and water communications suffered much, and in view of the possibility of a typhoid outbreak the city lived "on the edge of a volcano" for a few weeks. Its escape was due to the immediate application of all preventive measures and the co-operation of good citizens. In the three weeks following the November raid 17,000 persons, or about 10% of the population remaining in the city, were immunized against typhoid by inoculation. Universal boiling of drinking water and milk and the chlorination of the public water supply were obvious preventive measures from the first. Conditions of severe raiding introduced urgent sanitation problems; measures for the disposal of excrement after heavy damage to sewers and drains.

have been an important task of the sanitary inspectors and members of the city engineer's department. On the subject of shelters the medical officer of health says that so far early misgivings have proved unwarranted. After two winters of black-out conditions and shelter life the physical and mental health of the community, while not inviting complacency, has been maintained at a satisfactory level. A local scheme is in operation whereby medical and nursing attention is available at all the larger public shelters. The death rate in Coventry in 1940 was the highest since 1938, but the figure, of course, includes air-raid fatalities; without these it would presumably be round about the average for the last ten years. Coventry looks ahead and finds that the raid damage, which was to some extent in areas that would have been subject to slum clearance measures, has given the opportunity for post-war planning on healthy lines.

The Hospital for Sick Children

Some of the wards, fortunately empty, of the Hospital for Sick Children in Great Ormond Street suffered in an early air raid, the damage amounting to many thousands of pounds. The hospital, however, has continued its dual work as a casualty clearing station and a children's hospital. Urgent cases are still received and treated at the hospital, but all others have been transferred to the sector hospital at Hemel Hempstead, which, staffed by doctors and nurses from Great Ormond Street, has kept in being the tradition of the old hospital, now in its ninetieth year. The evacuation of children from London, however, has deprived many parents and doctors alike of the hospital out-patient facilities. It was felt that this deficiency could be met satisfactorily only by the establishment of out-patient clinics in the areas to which the children had been evacuated or to which they could conveniently be taken. Watford was chosen as the first centre, and, aided by the Peace Memorial Hospital there, the clinic has been a great success. In the annual report just issued the hospital chairman, Lord Southwood, states that notwithstanding many difficulties the year 1940 closed with a small surplus, and the rebuilding fund received many substantial gifts, with the result that the overdraft has been reduced by £41,000.

The Health of Brighton

Brighton as a restricted area has never endured such obscurity since it became a fashionable resort at the end of the eighteenth century, but it still houses a civilian population of 150,000, and the medical officer of health, Dr. Rutherford Cramb, in his annual report states that the general standard of health has been remarkably maintained. There is no evidence of deterioration in the standard of nutrition, nor has the morale of the people been undermined by enemy action. It is interesting to compare the vital statistics of Brighton for 1940, the first complete year of the war, with those for the comparable year of 1915. The birth rate in 1915 was 16.87; in 1940 it was 12.48, a considerable drop even on the figure for 1939. The death rate in 1915 was 16.20 and in 1940 it was 13.50, and the infant mortality rate for the two years was respectively 97 and 69 per 1,000 births. Measles became epidemic in 1940, but the type was mild, and the number of deaths out of 2,675 known cases was only 3. Considerable use was made of measles convalescent serum either to prevent or to attenuate an attack in contacts. The medical officer of health considers that so far as infectious diseases were concerned the year was weathered very well, especially having in mind the apprehension and anxiety with which the use of air-raid shelters was regarded. In speaking of the casualty services, which acquitted themselves well on the many occasions when they were demanded, the medical officer records his appreciation of the valuable work done by medical officers of the stationary and mobile first-aid posts and the personnel attached thereto during raids. All the members of the whole-time staff of the various departments, including the school medical service, continue to do tours of duty covering each twenty-four hours at the control centre for civil defence. They also act as designated medical officers, and are sent to give emergency treatment to casualties at the scene of the incident. In addition six private practitioners have volunteered their services for this important work, and also attend as incident medical officers. A note is made of scabies and verminous cases; 105 Brightonians and 118 evacuees were treated for scabies at the sanatorium. The position is not one of any

severity, but energetic measures are being taken to maintain the gradual improvement observed in the borough each year before the outbreak of war. The report embodies that of the school medical service, and some interesting figures are given as to the results of medical inspection and treatment of the several thousands of children evacuated to Brighton from London and Croydon. A clinic for these children was opened in the spring of 1940, at which 1,423 children made 4,588 attendances.

The Blinded in War

St. Dunstan's, which now has its war hospital and training centre at Church Stretton, is repeating in this war the service for the blinded which it first undertook in 1915. Up to the end of March it had received 101 blinded men and women, 86 of them from the Services or home defence organizations, and 15 civilians. Of those in the Services category 45 have recovered useful vision, enabling them to return to civil or military life, at least temporarily, and 41 remain at St. Dunstan's for appropriate treatment, training, and after-care. Of the civilians, a few have recovered some useful vision, but the majority have been transferred for hospital treatment to their local authorities or to the National Institute for the Blind. Sir Ian Fraser, chairman of the executive council, in the twenty-sixth annual report of St. Dunstan's, makes the comment that those who have been blinded in this war seem to have a more serious and thoughtful outlook than their equally afflicted predecessors a generation ago. "We thought we did pretty well when we came back from France or Flanders or Gallipoli and found our way around in a new world of darkness, but we have been surprised at the speed with which the new St. Dunstanians are learning to be blind. . . . They do not shuffle along with a tapping stick like the proverbial blind man of ancient times, but walk erect and fearlessly and try to look and behave as normally as possible." He adds that recovery of sight is impossible for many, but recovery from blindness is the rule. They learn to "see" their way about by touch, hearing, and smell, and by the sense of location and obstacle which soon develops. St. Dunstan's, in consultation with the Dominions and with the Viceroy of India, is planning for the care of Dominion and Indian blinded men, and in South Africa a nucleus of a training centre has been created for men of the Forces evacuated from the Middle East.

SCOTLAND

Post-war Hospital Policy in Scotland

Mr. James Johnston, Secretary of State for Scotland, on October 18 opened the Ayrshire Central County Hospital at Eglinton, Irvine, which, built at a cost of £400,000, is designed to treat in one section infectious diseases, tuberculosis, and venereal diseases, and in the other section maternity cases. Mr. Johnston declared that the aim of the Government in its plans for post-war hospital service was to ensure appropriate treatment for every person in need of it. The Government proposed to develop the hospital service in a kind of partnership among the various hospital authorities, and wished to see the greatest co-operation between voluntary hospitals and local government bodies. One question of special importance was the future of the new hospitals built for the E.M.S. and at present under the direct administration of the Department of Health. He thought that in Scotland these hospitals would bring to an end the shortage of hospital beds which had existed for many years. In the meantime much was being done to reduce waiting-lists. Under an arrangement agreed with the British Hospitals Association some months ago about 1,300 patients from the waiting-lists of voluntary hospitals had been treated in emergency hospital beds. Plans were being worked out, and for many parts of Scotland would be ready within the next few days, for the treatment of patients on waiting-lists who were suffering from gynaecological and ear, nose, and throat conditions. Mr. Johnston also referred to nurses' salaries, a question under consideration by the Committee of Inquiry into Scottish Nursing, of which Lord Craigmyle was chairman. Even before the committee reported the Government had promised an interim grant to pay higher salaries. It was hoped that this committee of inquiry would be the precursor of a Whitley Council for the nursing profession.

so on. It interested them to see this knowledge used to explain what was happening inside a patient, and it was not difficult to show them the value of physiological facts which had no vital meaning for them until confronted with a patient.

The suggestion is frequently made that "applied physiology" should be taught during the clinical years. Applied physiology is a bastard subject. It implies that much of the physiology taught cannot be applied, and that therefore it is necessary to pick out certain things that are of practical value in clinical medicine. But if *human* physiology is taught all of it should be capable of being applied. There is no gap. Applied physiology is a great part of medicine and the right teacher of it is the physician. For example, if the physiologist teaches the normal regulation of the heart beat the physician will use the student's knowledge of this to explain the meaning of auricular fibrillation, extrasystoles, or heart-block. If the student has been taught the normal elaboration and secretion of bile the physician will build upon this to elucidate pathological jaundice. From the moment a student begins his medical clerking his physiological knowledge should be tested and expanded by the attempt to understand the physiological dysfunctions which every patient shows. There should be no need for the intrusion of an "applied physiologist" between the physiologist and the physician.

Systematic lectures on medicine, which it is now the fashion to decry, again afford an opportunity of bridging the gap. I consider that there is a place for systematic lectures, but I agree that they should not be compulsory. If a student cannot learn anything of value from them he should stay away and read his books instead. The function of the systematic lecture is not the repetition of textbook matter. It should be concerned not with details so much as with basic principles and major problems, with explaining "how" and "why." In a clinical lecture a patient provides the text. His history is discussed, signs and symptoms are elucidated, a diagnosis is arrived at, a prognosis formed, and treatment outlined, but all with special reference to the particular patient. We study the natural history of disease in an individual. We are concerned more with the art of practice than with the science. There is little time to discuss the physiological basis of symptoms and signs. It is difficult to see the wood for the trees. Some systematic lectures are required to supplement clinical lectures and textbooks. In what textbook, for instance, can a student find a clear account of the evolution of tuberculosis in a phthisical patient? But in a lecture we can begin with the fundamental experiments of Koch and so explain the primary infection of the Ghon's tubercle with its glandular response, the allergic phenomena of the secondary stage, the possible spread to other organs, the development of immunity, the appearance of the tuberculin reaction, and so on, to the reinfection and production of the localized adult type of lesion. However thoroughly a case of phthisis is studied in a clinical lecture understanding will not be complete without a knowledge of these basic principles and of the aetiological factors seen from a broad humanistic standpoint.

The study of textbooks would be greatly improved by rearranging museums. Museums should illustrate diseases and not be collections of isolated organs. A student reading about subacute infective endocarditis should be able to take his book to a section of the museum where he would find displayed a typical heart, flea-bitten kidneys, infarcted spleen, cerebral embolism; typical temperature charts; coloured photographs of patients with a café-au-lait complexion, purpuric rash, and Osler's nodes; charts showing age and sex incidence, the frequency of rheumatic and congenital lesions, and so on. How much better than reading at home, or in a museum where hearts are segregated in one corner and kidneys in another.—I am, etc.,

Birmingham, October 16.

W. H. WYNN.

Students and the Curriculum

SIR.—Discussion has recently appeared in your columns concerning the plans of the British Medical Student Association to produce a memorandum on teaching and curriculum for the Medical Planning Commission. A few words about the progress so far made would, therefore, appear of value.

In the first place, it is obviously desirable that such a memorandum should be based on as widely representative dis-

cussion as possible. Most of our efforts, therefore, have been directed towards publicizing B.M.S.A. among the rank and file of medical students. This is of primary importance, because if the memorandum is to be of maximum value every possible opinion must be ventilated and as many contributions as possible be made to the general fund. In particular, the co-operation of the great London schools is essential to success. The methods of publicity so far adopted have taken the form of articles in the medical press and student journals. In the near future we are planning the publication of a pamphlet, of which we hope to sell at least 2,000 copies. This will include material dealing with B.M.S.A., its history and plans, together with schemes for the organization of discussion on the memorandum.

We realize that it would be a mistake to attempt to "rush" the production of this memorandum. Such a project, to be worth while, must be a closely reasoned and detailed document. We consider that probably a year will be required before the final draft is completed.

B.M.S.A. has asked each school to appoint a representative who will deal with B.M.S.A. material and arrange meetings, debates, and discussions around the various points of the memorandum. Detailed results will be forwarded to the secretaries and correlated under the following section headings: (1) General problems affecting teaching and curriculum; (2) The first year; (3) The second and third years; (4) The final years. One or two preliminary reports are already to hand, and several schools, particularly in London, are actively co-operating.

B.M.S.A. is fortunate in having for its honorary president Prof. J. A. Ryle, while our vice-presidents include Mr. H. S. Souttar, F.R.C.S., Prof. Hugh Cairns, F.R.C.S., Sir John Boyd Orr, F.R.S., Sir John Stopford, F.R.S., Prof. Wood Jones, F.R.S., and Dr. J. Trueta. This indicates that leaders in various branches of our profession view with sympathy the attempts of students to formulate their ideals and ideas with regard to medicine and are prepared to assist. One of the main points of B.M.S.A.'s policy has been to encourage a closer co-operation between teachers and students, not only in purely academic affairs but in the practical everyday matters of hospital and university life. Such schemes operate with benefit in several medical schools. Provided co-operation is organized in a businesslike manner, with definite allocation of responsibility, this cannot fail to be of permanent value both to students and to teachers. We hope that teachers will contribute, from their knowledge and experience, to the students' discussion around the memorandum, and we appeal to students to enlist such support wherever possible.

B.M.S.A. is beginning to play an important part in medical student life. Medical students are realizing their duties to society, and we believe that their aspirations and plans can be most effectively fulfilled through the development of their own organization.—I am, etc.,

University Union, Manchester,
Oct. 23.

J. L. TAYLOR,
Chairman, British Medical
Student Association.

Voluntary Hospitals

SIR.—In reply to the comments on my letter in the *Journal* of September 27 (p. 456) it is difficult to understand how anyone of Dr. Goodhart's experience (October 18, p. 558) is unable to reconcile the apparently opposed statements made by Dr. Kenneth Watson and myself. I would rather believe that Dr. Goodhart is as aware as I am that no profound analysis is necessary to show that the statements are in sympathy with one another. I have no doubt that Dr. Watson (September 20, p. 419) refers to the omnipresent administrative hand, which is avoided by the medical officer so far as possible by the correct and proper filling in of forms, by punctual attendance to perfunctory duties, and by not demanding anything which might change established routine—be it for progress or not. Despite this, the medical superintendent regards all his medical officers as his clinical assistants. On the other hand, as I have already pointed out, skilled supervision of the medical officer's work is frequently inadequate. I need not mention again the detrimental effects of this state of affairs.

Dr. G. Osborne (October 18, p. 558) deplors that I did not mention the essentials regarding this matter of "atmosphere." I admit my letter was in no way comprehensive; and if he

refers to the fundamental reason for the lack of atmosphere in the municipal hospital I agree that I did not trace it to its source, but rather dealt with its effects. I might mention that even with the help of some colleagues, the best will in the world, and at the expense of some mental indigestion I was quite unable to disentangle a meaning from Dr. Osborne's second sentence—possibly a key one in his argument.

The main object of my letter was to point out that the absence of "atmosphere" in the municipal hospital is just one of the many unsatisfactory results of wrong arrangement of responsibility among medical personnel. By wrong arrangement I refer to the intervention of the medical superintendent in the system of responsibilities. I stressed the greater benefit for the patient, the junior medical man serving his apprenticeship, and the hospital itself of having adequately qualified specialists entirely responsible for their "firms" or departments. Recently I saw it said in the lay press that disciplined freedom is a condition of the highest life: the air it must breathe if it is to live at all, and equally the only atmosphere in which a nobler state of society can possibly arise. This is not irrelevant to my theme, for it is only in this atmosphere that the various departments of a large hospital can thrive. It is, in fact, the atmosphere which Sir Frederick Menzies has asked us to define, and that which the municipal hospital lacks.

The essential cause of its absence or the factor which inhibits its development in a municipal hospital, which Dr. Osborne seems to regret that I had omitted mention of, is the position of the medical superintendent in the scheme. But here there must be pause for thought. It is manifestly unfair to heap criticism on medical superintendents, whose fault is chiefly their position in the system, a position which expects of them more knowledge than they can possibly possess and gives them more power than they can fairly wield.

The erection of magnificent buildings, justly symbolizing progress in the lay and administrative mind, increasing the efficiency of the unit but little unless the essential reorganization and development of the medical and technical staff is complementary—and proceeds apace. It must be remembered that the medical superintendents have been the key men in the truly remarkable evolution of many of these hospitals—a change which now makes possible their comparison with the voluntary hospitals. But it is now apparent, and most clearly so in those hospitals which have reached the highest stage of their development, that the medical superintendent with his *verboten* in every department has ceased to be an impetus and has become an incubus on further essential progress.

It is therefore important that criticism should be dispassionate and come from those who sincerely hope to see the large municipal hospitals progress still further to reach the same standards as the voluntary hospitals. I believe that the municipal hospitals can never throw off the last link that joins them with the Poor Law institutions of the past and enjoy the same status as the voluntary hospitals until the powers of the superintendent are modified so that he becomes a lay administrator only, occupying a similar position to that of the house governor in voluntary hospitals. Such reorganization is, of course, impossible until the various departments are in the hands of men qualified to be entirely responsible for them. Incidentally, the position of the administrative chair as the unwelcome goal of the medical officer would then be taken by professional positions at the head of the clinical departments.

Such a change in the character of municipal hospitals would promote co-operation between the two hospital systems; it is clear that this condition is vitally necessary for the organization of a comprehensive post-war service which may have to meet the needs of the great majority of the population. If a system of reorganization comes into being, the smaller hospitals are bound to be most favourably influenced.—I am, etc.,

D. LANG STEVENSON.

Oct. 20.

The Mental Defective in the Army

SIR.—My article in the *Journal* of August 9 (p. 187) has given rise to much correspondence addressed to the Press or to myself. It may be useful to summarize the criticisms and the replies.

The recommendation that a mental age of 10 years was a critical level below which soldiers should be recommended for

discharge has met with the objection that it is too high. I now reaffirm the point I made originally—that in this war increased mechanization and speed make it most difficult for the higher-grade mental defective to become an efficient soldier. He cannot understand the mechanics, use, and maintenance of the complicated instruments of modern warfare, and cannot be relied upon to act on his own initiative as a modern soldier is rightly expected to do. On the other hand he is a useful labourer when under the orders of a tolerant yet firm N.C.O. For this reason I still insist that no man with a mental age under 12 is likely to make a really successful and reliable modern soldier. Moreover, this figure has to be raised in the case of certain highly technical units which require a higher standard of performance and therefore men with a higher mental age.

Dr. J. J. Mason points out (October 4, p. 490) that in his observation mental defectives remain calm during air raids, but it is important to note that he is referring to institution cases. My observation of cases under similar conditions agree with his. Their calmness is to be compared with that of many London children whose parents were able to arouse in them some feelings of confidence in spite of the bombing. How different is the plight of a defective, harassed by the enemy and trying to attack a post under orders he barely understands, or to make his way back to Dunkirk, knowing rightly that his safety depends upon his wits and that these fall seriously short of those of his comrades and of the enemy. A man in such a state is ripe for a mental breakdown. There can be no real comparison between mental defectives under bombardment in institutions and those on active service, for the reason that active service is not a protective environment.

Since my article was written "B sections" of pioneers have been established, and I have been invited to inspect some. "B sections" consist almost entirely of mental defectives transferred from combatant units because of military inefficiency. The men are doing excellent work of simple labouring type and are happy. Those to whom I spoke were previously unhappy because their inefficiency got them into constant friction with their officers. These "B sections" are able to use men of much lower mental grade than the labour corps which are to be partially militarized. They can employ stable men whose mental age is as low as 8 years. The retention in the Forces of men as simple as this depends, to my mind, entirely on the provision the Army makes for them. As a parallel, it is not difficult to see that men incapacitated by deafness or partially crippled could be used in the Army provided suitable occupations and environment for them were found. The same principle applies in the case of mental defectives.

Letters to your *Journal* have been mainly critical, and from school medical officers or medical officers of local mental deficiency authorities rather than from officers of the R.A.M.C. or psychiatric colleagues who wrote to me personally. Most of these personal letters endorsed the view I expressed. It is fortunate that notice is now being taken of an urgent problem which is closely linked with the efficiency of the Army and the happiness of its men.

Perhaps the most profitable consideration at the present time should be not the estimation of "critical mental ages" as such but the relation between the types of work which men are called upon to do and the minimum mental age of those who can perform the duties efficiently.—I am, etc.,

F. J. S. FISHER

Sheffield, Oct. 22.

Exposure to Tetryl and T.N.T.

SIR.—As an old-timer from the ranks of those who fought in the battle against T.N.T. poisoning in the last war (and who fondly hoped they had won) I have read with deep interest the illuminating article on "Clinical Manifestations of Tetryl and Trinitrotoluene" by Dr. J. Hilton and Dr. C. N. Swannell (October 11, p. 509). Unfortunately I read it in bed and it played havoc with my night's repose. Are we really going through, all over again, the pathetic tale of T.N.T. symptoms, sicknesses, deaths, post-mortems? It would seem incredible had we not constantly before our eyes that other pathetic tale of all we had learnt and all we have forgotten. Truly we British have a genius for forgetting.

I have no desire to write at length on the subject. I merely wish to state that what we know as "T.N.T. poisoning" is a preventable disease, and to ask if there is no one who will take up the cudgels to see that it is prevented. Why should we have yellow-stained or cyanosed workers travelling in the trains and scaring their neighbours? Why should we have what Drs. Hilton and Swanston describe as "the irritating effect of the crystals on the nasal mucous membrane" or "the small amount of dust present in the atmosphere of all shops"? Why should we have "dermatitis," "cyanosis," "toxic gastritis," "toxic jaundice," "aplastic anaemia"? Why should we have deaths? These things can and should be prevented. They were eventually prevented in at least one factory, for which I can speak, in the last war. All the details and methods of prevention were compiled, at the request of the Ministry of Munitions, at the end of the war—and are now probably to be found only in the Imperial War Museum.

The one imperative necessity is whole-hearted co-operation of the management of the factory with the medical officers in charge. A good deal of expense and some inconvenience are involved, as is the ever-present threat of diminished output. But the harvest reaped in absence of illness and deaths, in happiness and easy recruitment of workers, and in surely and speedily soaring output is the rich reward of the doctors, the management, the overseers, the workers, and the welfare staff—of all who make up the courageous and inspiring "corps" which, when war is past and gone, we still affectionately call "The Factory."—I am, etc.,

Glasgow, Oct. 14.

ELIZABETH FRASER BUTLER.

SIR.—I was interested in the views of Drs. J. Hilton and C. N. Swanston (October 11, p. 509) on the subject of the toxicity of tetryl and trinitrotoluene. My experience showed that C.E. (tetryl) was a common cause of facial dermatitis lasting four or five days. Permanent removal of workers from C.E. was rarely necessary. T.N.T., on the other hand, less commonly caused skin troubles, but those cases seen were often severe and sometimes resulted in a chronic exfoliative generalized dermatitis.

I was surprised to hear of toxic jaundice and aplastic anaemia reappearing in Ordnance factories. I never saw either of these complications in two years at an arsenal.

In order to try and minimize the incidence of these cases I suggest that copies of an article by Dr. A. L. Leigh Silver, entitled "The Treatment and Prevention of Industrial Diseases in Filling Factories," be made available to all medical officers employed in factories handling explosives. The article in question appeared in the *Journal of the R.A.M.C.* dated August, 1938.—I am, etc.,

Welling, Kent, Oct. 18.

H. G. HOWITT.

Treatment of Scabies

SIR.—In view of the prevalence of this disease at the present time and the very heavy pressure on all hospital beds it is obviously essential to obtain the speediest possible cure. I was therefore surprised to read Dr. J. B. Marshall's letter (October 18, p. 561) stating that the average duration of stay in hospital for a case of scabies, uncomplicated by impetigo, should be four and a half weeks.

In this town we have a county council hospital, where 343 cases of scabies have been treated during the past eleven months. Proscabin (benzyl benzoate) has been used in every case. At least 90% of those treated have been evacuated persons. As they come from all over the county it is not possible personally to follow up every case, but it is a safe assumption that in almost every one the householder would speedily proclaim a recurrence, and the patient would then be sent back here. In fact, there have been two returns, both from the same house, where it was subsequently discovered that the householder herself had scabies and had not been treated. The average stay in hospital of the uncomplicated cases has been about five days. Those complicated by impetigo seldom remain more than ten days.—I am, etc.,

Marlborough, Oct. 19.

TIMOTHY MAURICE.

SIR.—Dr. P. B. Mumford (October 4, p. 492) comments on the various treatments for scabies which continue to appear

and on the questionable evidence upon which successes are sometimes claimed.

There seems little doubt that ordinary sulphur ointment (10% for adults, 5% for children) is still the most reliable remedy, provided it is correctly used over a limited period. Dr. A. M. H. Gray (February 8, p. 211) says: "Inefficient treatment may convert an active into a latent case, one in which the symptoms are relieved but the disease is not cured and remains infectious. It would therefore seem advisable to employ methods of proved efficacy rather than those in which it has not yet been possible to control the results experimentally." Many cases, however, are still being either under- or over-treated, with equally unsatisfactory results. Much of this haphazard and ineffective treatment could be avoided if patients clearly understood what they had to do. Verbal instruction is so often useless; it is much better to give the patient some kind of printed leaflet, such as skin out-patient departments use. On this the importance of simultaneous treatment of contacts can also be emphasized. The following is an example:

SCABIES

1. On the first night of treatment scrub the whole body thoroughly with soap, hot water, and nail brush (preferably soft soap).
2. Dry yourself and then rub the ointment well into the skin everywhere except the face and scalp.
3. Rub more ointment all over, as before, each morning and evening for the next three days, without removing the old ointment. Do not take a bath during this time, and use the same underclothes, night clothes, and sheets.
4. On the fourth morning take a hot bath and wash off the ointment. Put on clean underclothes.
5. All washable clothes used before and during the treatment should be boiled, or preferably disinfected, together with blankets and day clothing, at the nearest cleansing centre.
6. Do not expect all itching to stop immediately after the treatment. If it persists for more than one week, do not treat yourself again but return for further advice.
7. Watch all members of your family or household for any itching or spots on the skin and bring anyone so affected for examination. This is most important.

—I am, etc.,

London, W.1, Oct. 19.

E. W. PROSSER THOMAS.

Sulphonamides in Cerebrospinal Meningitis

SIR.—Referring to Dr. T. P. Edwards's modest protest (October 25, p. 595), I gladly offer my apology for failing to realize and to indicate clearly that Dr. Edwards was personally responsible for the treatment of all the Wrexham cases of cerebrospinal meningitis which reacted so well to sulphonamide therapy. These excellent results convince me more than ever that in this disease the patient owes quite as much to the skill and unremitting effort of the doctor in charge as to the chemotherapeutic potency of the drug employed.—I am, etc.,

London, W.1.

N. MITCH.

Testing Night Vision

SIR.—In the *Journal* of September 6 (p. 347) there appeared an article on testing night vision by Mr. N. Bishop Harman in which the author claimed that "the extended trial of the disk-spotting test shows that it can be of use in testing large numbers of people with comparative ease and with exactness." While appreciating the value of this latest contribution on an important subject, we feel that one or two observations are necessary.

The test described by Mr. Bishop Harman is of the "threshold" type, and therefore the subject should be fully or almost fully dark-adapted. Yet after stepping from the brilliant sunshine fifteen minutes was regarded as ample time for recovery and the tests were started. Since, however, twenty patients at a time were brought into the dark room, presumably it was only the first patient who was tested at a fifteen-minute recovery time, the remainder having successively longer recovery times as each waited his turn. The greatest errors will have occurred with the first few patients of each batch tested (particularly on the days when there was brilliant sunshine), since there is no question, of course, that the eye is never fully adapted after fifteen minutes.

Regarding the ingenious use of a standard candle, we understand, however, that this may under varying conditions of draught, temperature, and humidity give rise to considerable errors in illumination.

If we may suggest it, the test should be described as a valuable rapid test for approximately testing night vision, but any conclusions arrived at on the assumption that the test is exact should be treated with some reserve.—I am, etc.,

Research Department,

The Crookes Laboratories, N.W.10, Oct. 13.

E. W. GODDING.

** We have referred this letter to Mr. Bishop Harman, whose reply follows.—ED., B.M.J.

SIR,—The points that arise in the letter of Mr. E. W. Godding regarding testing night vision are of interest and must certainly be considered. If I may say so, I think that it is inevitable that Mr. Godding, from the closeness of his work with the production of the precious vitamins, would think of this night-vision problem almost exclusively in terms of health. He will naturally suspect those with poor night vision to be deficient in healthy vitamins. But it is clear from the character of the 700 subjects put through my test, and whose records are charted, that all of them were as well equipped with every vitamin that human beings could be. The 200 children belonged to a first-class school in a most delightful part of the country. They were as fine and lively a lot of boys and girls as could be found. Indeed, their liveliness made a long-timed testing in the dark tiring to an elder. The Canadian soldiers were as stalwart and well-fed a group of men as could be collected anywhere. The "elders" were all well-to-do residents of the district. All the subjects, therefore, were without doubt in first-class health. The tests prove that night vision may vary as much as colour vision. The variations are in the natural make-up of the subject. Indeed, I have some evidence that defective night vision may be hereditary in a few cases.

The fifteen-minutes-time adaptation to the dark is questioned since the subjects came into the dark in groups, so some got more time than others. My tests were carried on through many days. Each day I checked the reaction with my own eyes, and since I am over a long way in the "elder" group and wear glasses, that was a severe check. I could always get my full range of 5 metres in five minutes, even when I came into the dark from the sunshine. In my experience fifteen minutes is ample time. Further, subjects who responded badly to the test were put back at the end of the waiting line of candidates to try if a longer time gave them better vision. That is shown in my paper regarding the school boys, who wanted to do better than they had done, but who after half an hour in the dark showed no change in their reaction.

The standard candle test was chosen because it is the most "standard." No electric light can be so certain in the exactness of its measure. We ophthalmic surgeons know that in the use of our convenient electric ophthalmoscopes. The candle box is so arranged that the conditions of draught and temperature (when, as is inevitable, the test is done in enclosed premises) are as uniform as can be. So far as humidity is concerned, I cannot think that this would affect the candle light unless the damp amounted to a mist or a fog, and I cannot think that any eye man would attempt such a test in a fog.

This disk-spotting test was arrived at after some other methods of testing night vision had been tried. That is stated in my first paper of April 26. These preliminary tests were made with medical colleagues, whose criticisms were helpful. In my opinion these experiences justify the conclusion "that the disk-spotting test can be of use in testing large numbers of people with comparative ease and with exactness." Perhaps I should have written, "and with as much exactness as any test of human reactions can be."—I am, etc.,

N. BISHOP HARMAN.

Edenbridge, Kent, Oct. 17.

The Increase of Tuberculosis

SIR.—There are now many records of increased incidence and death rate from tuberculosis and many theories as to why this increase has come upon us. May I remind you of the turning out from our sanatoria of a great many tuberculous persons at the beginning of the war to make room for the casualties which were then expected to occur—an expectation which, fortunately,

did not arise—and of a prediction which I made in your *Journal* of September 16, 1939 (p. 621). Perhaps you will allow me to quote from my letter the words of a famous surgeon: "Every tuberculous person turned forth is like a bomb thrown among the public." I spoke of "the unwitting power of spreading the infection to those about them" by the tuberculous, "a power much more evident in crowded and unaccustomed conditions than in the familiar state of pre-war society." Is it necessary to postulate anything else?—I am, etc.,

Cheam, Surrey, Oct. 21.

S. LYLE CUMMINS.

Diagnosis of Early Venereal Disease

SIR,—In view of the importance of the subject at the present the following remarks may not be out of place.

It is a continual source of astonishment to me to find that the last twenty-four years have seen very little change in the attitude of the medical profession generally towards early syphilis. The importance of diagnosing syphilis microscopically before the Wassermann reaction is positive is not realized. At the risk of hearing the remark from the more knowledgeable, "Elementary, my dear Watson," may I say that genital sores in either sex should have a saline dressing applied, and the patients should then be referred to the nearest V.D. clinic or V.D. specialist for "dark-ground" examination of the exudate.

I think it is time someone protested against the practice of first dosing patients with sulphonamides and then referring them to V.D. clinics for diagnosis. The condition is thus disguised effectually both from a clinical and from a bacteriological point of view. Particularly in females, chronic gonorrhoea is difficult enough to diagnose without anyone throwing a spanner into the works, so to speak.—I am, etc.,

Sunderland, Oct. 20.

NOEL F. ROWSTON.

Treatment of Haemorrhagic Disease of the Newborn

SIR.—The article by Dr. A. I. S. Macpherson and the letter by Dr. John J. Robb on the treatment of haemorrhagic disease of the newborn (September 27, p. 433, and October 11, p. 526) are of interest to every practitioner, because this is an emergency which anyone may meet with, and this is something must be done at once" if only to pacify "something must be done at once" if only to pacify the parents of the infant. You were kind enough to publish two notes on this subject (*Journal*, December 22, 1923, p. 1218)—one from me—when its treatment by injections of paternal whole blood was being discussed in your columns, and since then it has been my fortune to treat seventeen cases (with one death), all in general practice.

At first I used 8 c.cm. of paternal whole blood with 2 c.cm. of warm saline injected into the infant's buttock, and repeated this in twelve or twenty-four hours. Later five cases received the two blood injections plus 2 c.cm. of haemoplastin, and the next three were given one injection of blood and two of haemoplastin. Five years ago I was called at 1 a.m. to a four-day-old infant which had passed blood by the bowel sufficient to soil its clothing and mattress, and appeared to be about to die. The father was a bus driver and could not be found. The mother had fainted, and the only help was a neighbour. With the idea of "doing something" than with much hope, I injected 2 c.cm. of colloidal calcium with oset (Glaxo), which happened to be in my bag, and 3 minims of adrenaline. Half an hour later the child was still alive, and injections were repeated. No more haemorrhage occurred, but an injection of this calcium preparation was given daily for a week, and the child is perfectly well to-day. Since then I have met with seven cases, all of which have been treated with the same preparation. All have survived; the last case happened as recently as four weeks ago.

The only case in the series which ended fatally was treated with maternal whole blood and haemoplastin, and there is to be accord that the mother's blood is less effective than father's in the treatment of this condition.

Vitamin K deficiency may be the explanation of why infants bleed and others do not. It may also be the explanation of why some women fall easier victims to infection at confinement, and why maternal blood is of less value than the father's in controlling the alarming condition of haemorrhage in newborn.—I am, etc.,

Stockport, Oct. 17.

F. J. KIRK

Tenosynovitis of the Tendo Achillis

SIR,—I was interested to read Captain A. A. Williams's report of tenosynovitis of the tendo Achillis (September 13, p. 377). The assumption that it is caused by repeated minor traumata bears out my own observations.

At one time a group of some fifty men of a unit in my charge lived in a village about three miles from the general parade ground, the road in between being one long hill of varying gradients. Among these men tenosynovitis was a veritable scourge, as many as eight men being off duty at one time, while among the rest of the unit it was rare.

I think the explanation of this incidence lies in the fact that coming in to parade in the morning the men were usually hurrying, and consequently taking a long pace. Coming down hill this caused increased plantar flexion and an accentuation of the wrinkles at the back of their boots. These wrinkles coming at every step pressed on the tendo Achillis, giving repeated minor traumata. I have also found these cases frequently occur after short speed marches in which a long pace is taken, while they are rare after a route march of thirty miles.

I agree with the treatment, particularly the wearing of civilian shoes, but I would like to bring the following point to notice. This condition is recurrent, so I have the men put 2 oz. of castor-oil in each boot when they return to duty, taking care it gets well round the heel, and they wear the same sticky oily socks for three days. This makes an Army boot as soft as cloth-topped affairs of yester-years, and the condition seldom recurs.—I am, etc.,

J. E. SYMONDS,
Captain, R.A.M.C.

Oct. 20

Türk Cells, Plasma Cells, and Premonocytes

SIR,—In 1898 Türk described his "irritation or stimulation form" as a non-granular mononuclear cell, found up to 4% in pathological blood usually containing a few myelocytes; it had a round eccentric nucleus and ample cytoplasm staining dull brown with triple stain, and the smallest was little larger than a lymphocyte. Ehrlich and others accepted it as a definite addition to the leucocytes. In 1901 Weil described as "plasma cell" an oval non-granular mononuclear leucocyte whose cytoplasm stained deeply with thionine. But Pappenheim showed that in this and other staining reactions it was indistinguishable from the Türk cell.

In 1899 Ranvier described branched cells with oval nuclei in the connective tissues. Mobile and phagocytic, in his opinion they were modified leucocytes and he named them "clasmato-cytes." Marchand confirmed their presence, particularly in the adventitia of vessels, and contending that they were of tissue origin (histioid) named them "adventitial cells." By intravital staining Goldmann showed that they readily take up pyrrhol blue, so that adventitial cells are sessile phagocytes. They take no part in forming connective-tissue fibrils, but under pathological conditions become rounded and free and resemble monocytes. Thus monocytes, unlike neutrophils, are present normally in the tissue spaces and are abundant in the sheaths of blood vessels, whence they wander to any neighbouring focus of disturbance. Again, by supravital staining with neutral red and Janus green it has been shown that continuous formation of monocytes is proceeding in the superficial lymph nodes of the rabbit with premonocytes, and monoblasts as intermediates between them and adventitial cells (Forkner, Claude E., *J. exp. Med.*, 1930, 52, 279). I reported premonocytes in films from two cases of glandular fever—suggesting that, under pathological conditions, formation of monocytes may occur as in the rabbit (*British Medical Journal*, 1931, 2, 825).

Finally Maximow introduced the term "polyblast" for cells of mononuclear type, which often abound in inflammatory conditions of the tissues. He considered that they are derived partly from blood lymphocytes and partly from adventitial cells, and that plasma cells are merely a variety of polyblast characteristic of non-suppurative inflammatory cell infiltration. Thus polyblasts are normal inhabitants of the tissue spaces and, owing to irritation, have been mobilized at certain centres where many undergo plasmoid change. Some of the latter, entering the blood stream, become rounded or oval with nuclei less eccentric and more efficient than when loafing in the tissues. Yet traces of the wheel nucleus of a tissue plasma cell still remain in

some of the smaller Türk cells, and foamy cytoplasm or perinuclear halo is common enough in the larger to suggest their origin.

In films from a healthy man I found two Türk cells in counting 2,500 leucocytes. Thus, though rare, they are present in normal blood; but in any ordinary count more than a single cell is pathological. Most acute febrile diseases show 1 to 2% in a few days, and it was doubtless in such cases that Türk discovered the cell. Measles and rubella show a remarkably high percentage, owing partly to leucopenia, on the third or fourth day of the rash—often reaching 5% in the former and 10% in the latter. Incidentally, this excludes scarlet fever, indicating measles when Türk cells are not over 5% and rubella when not under 8%. Clearly the film shows twice as many young recruits in rubella, suggesting that greater disturbance of the skin in measles is less productive than greater hyperplasia of superficial lymph nodes in rubella.

There are also plasmoid pathological cells, but these are not true plasma cells (polyblasts), and, though they may enter the blood, never are Türk cells.—I am, etc.,

London, Oct. 14

ROBERT CRAIK, M.D.

Food Advice for the Waiting Out-patient

SIR,—The part which doctors and nurses play in aiding the national food policy is at present small because nutrition is a matter on which they are seldom consulted by their patients except in cases of illness, and then it is more often the special diet than the general aspect that arises. In spite of the efforts of the Ministry of Food that are everywhere apparent and applauded, enlightenment on the best food to buy within the restricted choice available and the most beneficial methods of cooking it are limited, because the Ministry lacks the means of reaching the housewife by personal contact. A great opportunity to overcome this difficulty exists in the out-patient departments of hospitals and in the maternity and child welfare clinics throughout the country, where hundreds of thousands of women congregate daily. The initiative to exploit this opportunity should come from those responsible for the hospitals and clinics.

At the Soho Hospital for Women we are attempting to give advice on food and cooking to a minute fraction of this large group of the population. We have been enabled and encouraged to make the experiment by the good offices of Dr. B. S. Platt of the staff of the Medical Research Council and by the co-operation of the London County Council, who have been so good as to give us the services of one of their expert advisers on domestic economy and cooking. This lady comes to the out-patient department once a week, and having made a typical housewife's daily food purchases on the way demonstrates their uses and abuses. This is not done in a formal lecture, which would prolong the out-patients' wait and discourage them, but in talks to a few patients at a time before or after they have been seen by me. The demonstrations are proving popular, and the patients and their friends have expressed their gratitude for the service. The secretary of the hospital will be very pleased to show the scheme in working to anyone who is interested and will communicate with him.—I am, etc.,

London, W.1, Oct. 25.

W. C. W. NIXON.

Medical Students and Help for Russia

SIR,—It was with feelings of grave disquiet that many old students of University College Hospital must have seen in the Press that the students of the hospital had communicated with the Prime Minister with the object of influencing the decision as to the type of assistance to be given to our great ally, Russia. This is comparable to the demands, often made by the relatives of a sick person, that "something must be done"—a demand which, in the interests of the patient, has to be resisted until the appropriate time for action arrives.

It is hard to believe that the spirit of Wilfred Trotter should so soon have ceased to influence the students of his own hospital. I suggest that they, and indeed all medical students, should—as part of their education—read and re-read his papers. These have recently been published in book form.—I am, etc.,

Nottingham, Oct. 13.

S. ALAN S. MALKIN.

Obituary

PROFESSOR O. FOERSTER

Otfrid Foerster, whose death at the age of 68 has recently been announced, was one of the foremost neurologists of the age. He had all the attributes of a great clinical teacher. He was a shrewd diagnostician with a singularly retentive memory for cases; he had a vast knowledge of the neurological literature of all countries; he wrote well and lectured brilliantly; and he lived for neurology. His voluminous writings range through the whole neurological field, but through them all he is seen as the perpetual student of the structure and function of the neuromuscular apparatus of man, and it is for his contributions in this field that he will be longest remembered.

Foerster was brought up in Breslau, where his father was a professor of classics. After graduation he spent two years abroad, mostly with Dejerine, but also with Frenkel-Heiden in Switzerland, from whom he acquired a lasting interest in the physical therapy of disorders of movement. When he returned to Breslau he was put in charge of the neuro-anatomical laboratory by Wernicke, and became director of the neurological clinic at the municipal hospital. About 1907 he introduced the operation of posterior root section for tabetic pains and spastic states. He began to operate, first in collaboration with his surgical colleagues Tietze and Küttner, and then alone. His subsequent achievements in the operation of chordotomy and in removing intramedullary tumours of the spinal cord stamp him as a careful and successful operator, but he always remained a rather ungainly craftsman. To one so fragile as he increasingly became the long neurological operations must have been a severe physical ordeal. But his fiery spirit drove him onwards towards his main objective, which was a systematic study of the effects of stimulation and excision of different parts of the nervous system. He had an immense capacity for work, habituating himself to three or four hours' sleep a night.

In the 1914-18 war he was consulting neurologist to the Sixth Army Corps at Breslau, where he collected peripheral nerve and spinal cord injuries. This work formed the basis of two important monographs, the one on some 4,000 personal cases of peripheral nerve injury, the other on 395 cases of war injury of the spinal cord. After the war there was an interlude when he was persuaded to spend a year in Russia looking after Lenin in his last illness.

In 1917 he had become full professor of neurology at Breslau, and in 1921 he had a department in the Wenzel-Hancke Krankenhaus, to which later was added, with the aid of the Rockefeller Foundation, an Institute of Neurology. He continued his peripheral nerve and spinal cord work, and also introduced and developed the surgical treatment of post-traumatic epilepsy. Between 1927 and 1937, amidst the manifold activities of a leading neurologist, he produced at least six monographs of first-class importance, including those on the pathways of pain, on the motor and sensory fields of the cortex, and on voluntary muscles and their disorders. In this last work, published in 1937 in the *Handbuch der Neurologie*, which he edited with Bumke, he revealed himself as probably the greatest living authority on the action of muscles. This was knowledge which he had gathered from stimulation of muscles and nerves during many operations on peripheral nerve lesions, and from systematic clinical analysis of the disorders of movement that followed paralysis of the different muscles. He was strongly influenced by the writings of Hughlings Jackson and Sherrington, and clinical neurology was for him the means of applying to man the doctrines and research of these two men whom he deeply revered.

Amidst many academic honours the greatest, he told a German colleague, was the Hughlings Jackson Medal of the Royal Society of Medicine, presented to him at the International Congress in London in 1935. For his Schorstein lecture at the London Hospital, as a tribute to the work of Henry Head he reported his observations on the dermatomes in man. He had

a passionate veneration for learning, and his last years were saddened by the disappearance of scholarship from Germany.

He had a wide circle of friends in many countries, and especially in the United States, where on one occasion he acted as surgeon-in-chief at the Peter Bent Brigham Hospital for his friend Harvey Cushing. His pupils include Ludwig Guttmann, Altenburger, Gagel, and Penfield; there would have been more of them if he had had laboratory facilities in earlier years, for he was a great stimulator of young men. There are many who will remember with pleasure and regret their visits to his clinic at Breslau, and the convivial evenings—his one relaxation—when Foerster enriched their lives from his great store of knowledge.

H. C.

Foerster's death will be regretted by his many English friends. He spoke English fluently, and in recent years delivered the Schorstein memorial lecture at the London Hospital and the Hughlings Jackson lecture. It is of interest just now to recall that he attended Lenin in his last illness, and had the highest opinion of the Bolshevik leader's intellectual and administrative ability. Foerster performed the necropsy and removed the brain. Lenin died of cerebral arteriosclerosis, which Foerster believed was in part the result of an injury to his internal carotid artery in an assassination attempt. At the end of his life Lenin was having fifteen to twenty Jacksonian attacks daily, but continued to work at his desk.

At first, as a physician, Foerster had to be content with Nature's experiments, but surgery offered him wider scope, for an operation could often be planned so as to ask a physiological question and evoke an answer. This was the basis of his contribution to knowledge of cortical function and of the sensory pathways.

Foerster's slight and stooping figure gave, at least during his later years, an impression of frailty; but his voice and vigour of speech expressed his toughness and tenacity. His mind was inductive, searching, and analytical, and he was untiring in the pursuit of truth, which led him in the end to lonely places.

W. R. B.

DAVID ORR, M.D.

The news of the death of Dr. David Orr came as a shock to his many friends. He had just returned from a holiday, and was apparently in perfect health, when, on the evening of October 8, he dropped dead at his home in Grange Road, Edinburgh.

David Orr was born in 1872 and educated at George Watson's College, Edinburgh. He qualified in 1894 after a distinguished career, taking the degrees of M.B., C.M. at Edinburgh University, and M.D. in 1902, with special commendation for his thesis. After qualifying he studied diseases of the eye at Moorfields Hospital, London, and for a time was clinical assistant in the ophthalmic wards at the Edinburgh Royal Infirmary. Postgraduate work followed at Heidelberg and Vienna, and on returning to Scotland he worked for some time with the late Sir Thomas Clouston at Morningside, then as assistant medical officer at Melrose Asylum, and later as assistant pathologist to the laboratory of the Scottish asylums. In 1898 he was appointed A.M.O. and pathologist to the Prestwich Asylum, Manchester, being promoted deputy superintendent in 1911 and medical superintendent in January, 1924. Unfortunately his health broke down in the following year, and he retired in November, 1925. Since then he had lived in Edinburgh, but resumed research work in the laboratory of the Royal College of Physicians in that city.

Orr was an indefatigable research worker, and during his time as pathologist to Prestwich Asylum he published in *Brain*, the *Journal of Mental Science*, and the *Review of Neurology and Psychiatry* numerous papers recording the results of his work in his own laboratory and in Prof. Lorrain Smith's department of pathology at Owens College, Manchester. Many of these papers were written in collaboration with the late Dr. R. G. Rows, and among others with Drs. T. P. Conner and J. Stephenson. Much of this work dealt with the central nervous system, the influence of toxins on the central nervous system, and the paths of infection through the lymphatic system and the spinal cord. This work was of fundamental importance and remains as a valuable contribution to neuropathology.

was thoroughly conversant with the literature of his subject in German, French, and Italian, and paid several visits to the Continental clinics and laboratories. In 1909 he published with Dr. Rows a translation from the Italian of Lugaro's important work *Modern Problems in Psychiatry*.

None of those who were privileged to work with him will ever forget his vivid personality and that buoyant enthusiasm and optimism which he shed round him. He was one of those who bear about with them "the infection of a good courage," and so can "meet all life's ills and accidents with gallant and high-hearted happiness." His main interests outside his work were golf and music. He sang well and had a fund of good stories, and an evening in his hospitable home was something that lived in the memory of his host of friends. He is survived by his widow and two daughters, with whom deep sympathy is felt in their sudden bereavement.

W. S.

R. M. S. writes:

David Orr was not only an enthusiastic research worker, but was an excellent teacher who could not fail to exercise a great influence on his junior colleagues. His contributions to neuropathology were initiated in Ford Robertson's laboratory, where he introduced several improvements in methods of staining nerve tissue. In 1902 he presented for his M.D. a thesis on the pathology of acute insanity. This was largely concerned with the morphological changes in nerve cells and fibres and was published in *Brain*. But with the passage of years much less importance is now attached to chromatolytic changes in diseases of the nervous system, and Orr will chiefly be remembered for his experimental work on lymphogenous infection of the nervous system, much of which was undertaken in collaboration with the late R. G. Rows. In these studies proof was furnished of the passage to the posterior columns of the spinal cord of toxins from local lesions of peripheral nerves, and these observations on animals were followed by a study of the spinal cord in neurosyphilis and particularly in tabes dorsalis. As an outcome of this work, Orr and Rows were led to the conclusion that the early tabetic process was induced not, as Obersteiner and Redlich had claimed, by mechanical pressure of local meningeal overgrowths at the point where the posterior root nerve fibres penetrate the pia mater, but by the syphilitic toxin circulating in the lymph channels among the roots. Though to-day the teaching of Richter and Hechs largely holds the field, the possibility of the passage along perineural lymphatics of the treponema or of its toxins has never been seriously challenged. Orr's pupils will keep in grateful memory his buoyant enthusiasm, his wide erudition, and the outstanding and pioneer part he played in psychiatric research.

H. EDMUND G. BOYLE, F.R.C.S.

The passing on of H. E. G. Boyle, at the age of 66, at the end of a long and particularly distressing illness, must have come almost as a relief to his numerous friends, however much they will deplore the loss of his genial and stimulating personality.

Born and educated in Barbados, he came to St. Bartholomew's for his medical training, and although during his career he served a number of other institutions for varying periods, such work was always more or less incidental, and it was Bart's that was throughout the chief scene of his work, the centre of his affections. There he was early appointed one of the two resident anaesthetists, and when after a few years thus spent the authorities found it necessary to increase the anaesthetic personnel he, in company with his late colleague, W. Foster Cross, was promoted to the visiting staff, in which capacity he gave to the hospital loyal and continuous service until his quite recent retirement owing to ill-health. He had then been senior anaesthetist to the hospital for many years, and was at once elected on to the consulting staff.

It was during the period of his most active work that great advances began to be made in the science and practice of anaesthesia, which had for many years been in a somewhat static condition. In these changes Boyle certainly took a very

prominent part. Always more interested in the practical rather than the purely scientific side of his speciality, he was quick to see how each new advance could best be put to practical service, and the actual improvements that were made during this period in administrative technique were probably due more to him than to any other single individual. His work in this direction was largely stimulated by the visit he made to the United States and Canada to investigate and evaluate the newer methods that were coming to the front across the Atlantic. There he travelled widely and made close personal contacts with all the leading anaesthetists—men like Gwathmey, McKesson, McMechan, and Wesley Bourne, to mention only a few. He came back still further strengthened in his advocacy of the gas-oxygen and gas-oxygen-ether combinations which he had always recommended. The present writer well remembers helping him to unpack the first Gwathmey gas-and-oxygen apparatus that came to this country and his enthusiasm over every detail. He soon himself devised numerous alterations and improvements, and so resulted the Boyle's gas-oxygen (ether) apparatus, the name of which is a household word in operating theatres. Not content, however, in establishing the potentialities of gas-oxygen (ether) anaesthetics in general surgery, he set himself to elaborate suitable techniques for its use in special surgery, such as that of the ear, nose, and throat, thoracic operations, and midwifery. Another branch of anaesthesia in which he was, if not a protagonist, at any rate one of the earliest and most successful workers, was that of endotracheal anaesthesia.

In addition to holding staff appointments in various other general and special hospitals Boyle, during the last war, held a commission as Captain in the R.A.M.C.(T.), and for his services to the Army was awarded the O.B.E. in 1920. As a Fellow of the Royal Society of Medicine he was an active and by no means silent member of the Section of Anaesthetics, the presidency of which he held in 1923. He was a member of the Editorial Board of the *British Journal of Anaesthesia* from its foundation and also an original member of the Association of Anaesthetists of Great Britain and Ireland. When, largely at the instance of the latter body, the Conjoint Board established the Diploma of Anaesthesia he was one of the earliest to be granted that diploma, and was one of the first pair of examiners appointed to conduct the examinations. In 1935, under the special regulations, he was elected a Fellow of the Royal College of Surgeons without examination.

A very important part of his many years' service to St. Bartholomew's was that of lecturer and teacher of anaesthetics in the Medical College. He was a good and stimulating lecturer, but he himself attached far more importance to the practical instruction he gave to his clerks. His book, *Practical Anaesthetics*, was much appreciated by students, and the third edition, with which his colleague, C. Langton Hewer, was associated, is still current. But quite apart from anaesthetics, Boyle was intensely interested in any and all of the activities of his hospital. As a student he was president of the Abernethian Society, and he always followed closely the activities and fortunes of the various athletic clubs, especially those of the Rugby Union. As a senior member of the staff he was for a period president of the Students' Union. He married in 1910 Mildred Ethel, daughter of Mr. J. W. Widdy and widow of Mr. Leslie Greene, F.R.I.B.A., who survives him. Much more could be written about the numerous activities of "Cocky" Boyle, both at work and at play; but to the writer, who had the privilege of being particularly closely associated with him in the anaesthetic service of St. Bartholomew's Hospital for many years, the strongest memory that will remain is that of a truly genial and loyal colleague.

C. F. H.

Dr. CHARLES EDWARD THOMAS, of Conwy's Eifed, South Wales, died on September 12, at the early age of 28, after a long and painful illness. He was a student of St. Mary's Hospital, London, and, graduating M.B., B.S.Lond. in 1937, held an appointment as medical officer at the Royal Devonshire Hospital, Buxton. He left Buxton in August, 1938, and returned to St. Mary's as a patient, afterwards being moved to Harefield, where he died. Dr. Thomas joined the British Medical Association immediately after qualification.

Medical Notes in Parliament

THE NATION'S HEALTH AND MEDICAL SERVICES

In the House of Commons, on October 21, Dr. HOWITT initiated a debate on the health of the civil population. He said that the health of the people had been extraordinarily good, and the fears entertained at the beginning of the war had not materialized. Still, we must hold on firmly to all the preparations which had been made to deal with the possibility of epidemics. At the beginning of the war a great mistake was made in evacuating so many cases of tuberculosis from the sanatoria back to their homes. Steps had already been taken to get these people back to sanatoria, but there was a danger in the contacts in the homes to which they had returned. All persons who had come into contact with such infectious cases should be carefully examined.

With regard to the health of the people after the war, it was of the utmost importance to plan and think now. The Minister of Health's statement on October 9 on the hospital policy of the Government after the war would become a historical landmark in the foundation of a great medical service in this country. The secret of success in the hospital service would be to get a proper partnership between all workers, municipal and voluntary, so that they could share and pool all that was best. They wanted to have a service in which it was possible for everybody to have quick attention, the patient going to the general practitioner and the general practitioner being able to obtain special help locally. They were going to have the finest health service this country and the world had ever known, but only if workers were willing to sink their differences and work together heartily to that end. He hoped that after the war there would be a great increase in the number of nursery schools.

Mr. MESSER said that the voluntary hospitals ought to be replanned, but rather more comprehensively than was outlined in the Minister of Health's speech. Why was it, he asked, that the municipal hospitals were left out of any office in the E.M.S., and that at the head of each sector a representative of the voluntary hospitals was appointed? Voluntary hospitals in the modern world were an anachronism. The doctors and staffs of the voluntary hospitals had done a great work in the past, but it was in the past. The time had come when what was done by indiscriminate charity should be done by the community for the community. Why did the Minister say that special arrangements would be made to finance the teaching hospitals? Not a word was said about the possibility of the municipal hospitals becoming teaching hospitals.

VOLUNTARY VERSUS STATE HOSPITALS

Sir FRANCES FREMANTLE said that to sweep away the voluntary hospitals and bring them entirely into a State service was not the way in which we had developed in this country, and was not the way in which sound development would take place. Old traditions were the roots from which the State services sprang and would develop. In the hospitals a wonderful service had been developed, with extraordinary inequalities and deficiencies, but with extraordinarily good results. There were undoubtedly many voluntary hospitals which had outworn their day and managements also. That was why co-operation between the State service and the voluntary service was so useful. He believed that, while the voluntary system was valuable, they must have some kind of interference by the State in the management of the voluntary hospitals. That, he took it, was one of the matters to be considered in the survey to be made by the Minister of Health.

He hoped that after the war, instead of the big hospitals rebuilding in London, they would keep only casualty and reception stations and one or two special departments that were necessary, and an administrative office, and would shift the patients out to the country. He would like to see the hospitals, whether voluntary or municipal, become collective centres of all the services required for health. The medical officer of health should have his offices there. Small clinics ought not to be scattered about; they should be in parts of the same

building. The hospital ought to be the centre of research, of private practice, and of preventive medicine.

Dr. EDITH SUMMERSKILL said they were told that the voluntary hospitals had always been supported by charity, and that there was something ennobling and fine in this. She saw nothing ennobling in the way voluntary hospitals were financed to-day. These hospitals, because they had insufficient funds, were economizing at the expense of their patients. Was there anything fine in asking sometimes as many as 100 seriously sick people to sit in an out-patient department waiting their turn for attention? Was there anything fine in asking men and women who were seriously ill to wait for five or six weeks, or even two months, before they could be admitted to voluntary hospitals? This outworn system must be replaced by a State-aided system.

An ideal health service must be so arranged that the workers in it were given not only adequate pay but limited hours, and, in this particular field, an opportunity for postgraduate study. She hoped that the time would come when no general practitioner without a higher surgical qualification was allowed to operate in some of our small cottage and voluntary hospitals. Many people had no opportunity of availing themselves of any insurance scheme for medical service. The people among whom there was an increase in tuberculosis were chiefly those who would wait perhaps weeks or months before seeking advice, because they were unable to avail themselves of the health services. The Minister should remember, in planning, that we should never reduce diseases unless everybody was given the opportunity of going to a doctor irrespective of income. She would like to see not only the voluntary hospitals taken over by the State but the profit motive eliminated from the treatment of disease, and all persons in the country have an opportunity of availing themselves of State medical services.

SUGGESTIONS FOR THE GOVERNMENT INQUIRY

Captain ELLISTON said that the Minister's promise of a comprehensive hospital system providing every form of medical and surgical treatment for every person in need of it in every part of the country represented an outstanding advance in the development of the health services. This question of hospitals was so urgent that it could no longer be postponed. There would have to be an inquiry as to the best size of hospital units. We wanted advice regarding the transfer of bombed hospitals from noisy, crowded areas to more suitable sites. There was also the question of increased provision of private wards for paying patients. The survey committee would have to consider the relative incidence of conditions requiring treatment in various population units. The survey must be conducted by persons with open minds and wide experience, and with no axes to grind for any vested interests or established systems.

No doubt those responsible for the survey would recognize all the good that there was in the voluntary system, but if the municipal hospitals were given a fair chance they could take their place side by side with the voluntary institutions, and medical men of distinction would be proud to be associated with them. They should be entitled to a fair share of clinical material, and should not be regarded as mere homes for chronics or incurables. When the waiting lists in the voluntary hospitals had been abolished, the municipal hospitals would be in a position to contribute a greater share to the teaching of medicine, and should be great places for refresher courses where general medical practitioners could keep in touch with the latest developments in medicine in a way they had never before had an opportunity of doing.

CO-OPERATION INSTEAD OF POLITICS

Prof. A. V. HILL said he deprecated hostility between the voluntary and State hospitals or between the upholders of the two systems. He dissented from Dr. Summerskill's depreciation of the working of the voluntary system. Dr. Hill said changes were necessary and new measures required, but it was a pity not to recognize the great good that existed in the present arrangements and the great achievements of medicine and the public health services in the past. The inherent humanity of the hospital system must be preserved, and they must try to get the good they could from the existing systems and graft on to

it the good in other systems. It was essential, if good results were to be obtained, that individual parties in the compromise should not play politics, but should work together for the public good.

It was clear that there must be a universal medical service at some time, both for preventive work and for the treatment of individuals. Many of them were convinced that it should be based on the family, and the experiment which had been made at the Peckham Health Centre was one they would like to see developed. Many younger medical people were very socially minded, and he was very much inclined to let them develop in their own way. If they let things develop there was every chance of obtaining the kind of medical arrangement that many of them looked forward to. He could not believe that a State service was necessarily inefficient. He deprecated any attempt to lay down beforehand how far they should go in any direction. As an experimental scientist, he said that the important thing in medicine was to experiment. Let them take the systems, let them develop side by side, find out what was good, find out what was bad and discard it, and in that way progress by evolution. The Minister's proposal for strengthening the hospital system was a step in the direction of gradual development which they all welcomed, but they would have to go a good deal further.

Dr. HADEN GUEST drew attention to an article in the *British Medical Journal* for September 27 by Dr. Laidlaw and Dr. Macfarlane, analysing the incidence of pulmonary tuberculosis in Glasgow. Their conclusion was that the cause of the increase in the cases of tuberculosis was a combination of long hours, overtime, strain, and ill-spent leisure. That was not what one would have expected in the ordinary way to cause the increase in tuberculosis, which was a poverty disease and depended on malnutrition. He thought this was occurring all over the country where industrial conditions prevailed. We were not using our great public health organizations at present to avoid an increase in that kind of disease. Medical officers of health could be switched over in wartime to the supervision, control, and direction of all the conditions of life of the people employed in industry. The functions of medical officers in the Army were to keep the Army fighting fit. Those functions were carried out by supervising all the details of life, ranging from clothing, billets, and camping accommodation to hours of work and sleep and to morale. Supervision of the hygiene and welfare of factory workers had not yet been placed on a satisfactory footing. The total number of medical officers engaged in the supervision of men engaged on production was insufficient compared with the number in any of the Forces.

Referring to the medical organization after the war, Dr. Haden Guest said that at present the greatest epidemic of typhus fever ever known in European history was raging in Spain. There was typhus fever in Russia, and there were epidemics of malaria and other illnesses in other parts of the world. At the end of the war we should have the greatest world public health problem to face that we had ever known. It was more urgent than the precise relations between voluntary and municipal hospitals that we should have an organization capable of dealing with this problem.

Government Reply

Mr. ERNEST BROWN said that in a few weeks' time he hoped to have a shortened report which would incorporate such available statistics over the whole field as would give a fair and reasonable guide to the trend of public health, because it was vital that they should have an understanding, not merely of the things they had to do now, but of the things they would have to do in the future. The health of the nation, considering the extraordinary changes in population and the abnormal life people led in the periods of raids, had been surprisingly good. It was bad, psychologically, to be always talking of epidemics, except in so far as that discussion might lead to preventive action. They wanted to make as widespread as possible the services which made for the health of the nation and to spread more widely than ever a simple, elementary knowledge of the things to be done in the home and elsewhere which helped to keep people fighting fit. A great deal had been and was being done in that field, and he paid tribute to the admirable work done, in liaison with the Ministry of Health and other bodies,

by the Central Council for Health Education. A series of pamphlets which had been produced dealt with very difficult problems, and included one on scabies and impetigo. That had given him and every medical officer of health in every area concerned not only furiously to think but furiously to act. In reception areas they were having to provide scores of new sick bays so that that particular ailment might be dealt with properly and effectively. They would have, however, to go nearer to the root of the matter, and a little later on he hoped to make an Order, under a Regulation which had now come into force, which would give the medical officer of health more power in regard to inspection.

SOME VITAL STATISTICS

On the general position as regards health, the Minister said that the general death rate in 1940 was 14.3, including air-raid deaths of civilians. That figure was not comparable with those of recent years, because deaths of non-civilians had been excluded since the outbreak of war. The figure for 1939 was 12.1. The 1939 figures relating to diseases in England and Wales must be taken with a little caution, because in the great movements of population notification had probably been a little slower than previously. The infantile mortality rate was 56 per 1,000 births in 1940, 6 per 1,000 above the low record of 1939, but lower than the rate for any year before 1938. The maternal mortality rate per 1,000 declined to a new low record of 2.61, compared with 2.82 in 1939. No doubt a great deal of that had to do with the wartime maternity hostels set up in the reception areas. In the wartime maternity homes alone nearly 30,000 babies had been born in this period of the war.

The condition of public health generally remained satisfactory. In the early part of 1940 there was an appreciable increase in cerebrospinal fever and a recurrence to a less marked extent in the early part of this year. The incidence fell from 1,380 in February to 420 in September, and the mortality rate of this disease had been reduced in the last few years to one-third of the previous figure. Measles, which had been prevalent in the past eighteen months, had almost completely disappeared at present, the figure of new cases for September being 2,768, against 29,804 in September of last year and 62,737 cases at the peak in February of this year. Scarlet fever and diphtheria had never been high, and the incidence was less than in the corresponding months of last year, and approximately the same as in 1939.

TUBERCULOSIS : POSITION EXAMINED

With regard to tuberculosis, the experience in England and Wales had happily not been quite the same as in Glasgow. In 1913 the death rate from pulmonary tuberculosis per million was 958; in 1918, 1,165; while in 1939 it had been reduced to 476. The figures for the first quarter of this year would show that there had been a reduction of 7% over the whole field compared with the first quarter of 1940. He hoped to have these figures out within a fortnight, and those for the second quarter as soon after as might be. In 1913 the rate for young females between 15 and 25 was 1,020, and by 1918 that had gone up to 1,380. Owing to the increase of services and the attention given, it was down in 1939 to 762. Members had called attention to the 1940 figures compared with the 1930 figures, rising to 881 in that group per million. The first quarter of 1941 showed a slight decline of about 4% in that group. Those figures illustrated the progressive improvement in general social measures as well as in particular health services, and especially in housing, between the wars. He regarded housing as a vital health service and the foundation of the health services.

Directly he had seen these figures, he instituted an inquiry by his own people, with the Medical Research Council, and asked for an interim report on the causes of the rise. He hoped to get that interim report as quickly as might be. He could not agree too much with what had been said about hours of strain. All who followed the interesting series of reports on industrial fatigue in wartime, instituted in 1917, had long ago come to the conclusion that they could not, over any long period, equate production with hours. The ideal was to have such a state of strength and health and skill that they got the maximum production in the normal working day. With

regard to the tuberculosis services, it was necessary to make the preparations they did for the casualties that had not yet occurred. In doing so they had had to limit somewhat the number of beds. He had that matter under attention, and beds had been released, but they were up against the problem not only of beds but of nurses, and they were giving urgent attention to that. He was aware of the shortage of domestic staff which existed, not merely in regard to tuberculosis, but in all the hospitals. He was sure that the authorities responsible for carrying out in this vital field the duty imposed on them by Parliament would not merely continue but would intensify their efforts to deal with contacts.

With regard to his recent statement, it was true, as Mr. Messer had said, that in the E.M.S. the London Sector Officer was from a voluntary hospital. In fairness to those who devised this organization, it must be added that each officer had two deputies, one for the voluntary hospitals in the Sector and one for the municipal hospitals. In each Sector also there was a voluntary and a municipal lay sector officer, and a voluntary and a municipal matron. This duality was also in force at headquarters. At the Ministry of Health, under the Director of the E.M.S. concerned with the London Region, there was a deputy drawn from the municipal side and one from the voluntary side.

People who would like to abolish voluntary hospitals had expressed their views in the debate that day. On the other hand, there had been a gratifying indication that the House understood that they could have confidence in the democratic representatives who would come into the discussions and make these schemes after a survey. He had deliberately used the word "partnership" to describe the intended relationship between the voluntary and municipal hospitals. So far as he and his administration were concerned, they would take the guidance of Sir Francis Fremantle and other members who had spoken, and would not cease to look for opportunities in war to find an additional service which might continue when the war was won and they could carry on the great improvements that were in progress when it began.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a Congregation held on October 17 the following medical and surgical degrees were conferred:

M.B., B.Chir.—J. S. Johnstone, D. E. Marmion, D. S. Cadman, J. M. Stansfeld, Rees Jenkins, I. G. Wickes, R. C. Southern, O. L. Scarborough.

M.B.—J. R. Griffith, W. S. Nutt.

UNIVERSITY OF WALES

WELSH NATIONAL SCHOOL OF MEDICINE

The following candidates have satisfied the examiners at the examinations indicated:

M.B., B.Ch.—*Hygiene*: M. S. Berkovitz, T. W. Brokovski, J. E. Cane, J. D. P. David, Sadie M. Davies, Megan B. Evans, E. H. Horton, H. J. Houghton, M. E. Humphreys, Dorothy M. Hyde, R. T. James, A. E. Jones, E. R. Jones, J. H. Joseph, Gwyneth M. Lewis, *W. C. D. Lovett, Flora Macaulay, B. F. Martin, T. F. McCarthy, *D. McCracken, Tessie Phillips, Annie M. Rees, *R. D. Richards, Dorothy Roberts, D. Shiers, A. K. Toufexq, D. G. Tutton, H. G. Williams, S. E. Williams.

D.P.H.—*Part II*: D. T. Thomas.

* With distinction.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Lectures

The Moynihan Lecture on "The Ileo-gastric Syndrome" will be delivered by Mr. L. R. Braithwaite before the Royal College of Surgeons of England at the Royal Society of Medicine (1, Wimpole Street, W.) on Tuesday, November 4, at 2.30 p.m.

Dr. W. E. Gye, F.R.S., will deliver two Imperial Cancer Research Fund lectures before the Royal College of Surgeons of England at the Royal Society of Medicine on Thursdays,

November 6 and 13, at 3.30 p.m. The subject of his first lecture is "Cancer of the Breast" and the second "Filterable Tumours."

On Wednesday, November 26, at 2.30 p.m., Dr. A. P. Cawadias will deliver the Thomas Vicary Lecture on "Hermaphroditism" before the Royal College of Surgeons of England at the Royal Society of Medicine.

The lectures are open to medical practitioners and advanced students, as well as to Fellows and Members of the College.

Prophit Research Studentship

A candidate will shortly be nominated by the Council of the Royal College of Surgeons of England for a Prophit Studentship in Cancer Research. The studentship will not exceed the annual value of £500, with an allowance not exceeding £200 for expenses of travelling, and will be for one year in the first instance, but renewable at the discretion of the special trustees on the nomination of the Council of the College. Students may be male or female. Applications, giving a statement of the proposed research and accompanied by a recommendation from a member of the staff of the applicant's medical school or university, should be sent to the Secretary, Royal College of Surgeons of England, Lincoln's Inn Fields, W.C.2, before November 22.

The Services

ARMY AWARD

The M.C. has been awarded to Lieut. Kenneth Cameron Powys Thomson, E.A.A.M.C. (attached King's African Rifles), in recognition of gallant and distinguished services in the Middle East.

*CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

The death was announced in October in the Middle East of Major ROLAND NEVILLE-JONES. He was educated at the University of Birmingham, where he graduated M.B., Ch.B. in 1934. He took the M.R.C.S., L.R.C.P. in the same year and the D.A. of the English Colleges in 1936. After holding hospital posts at Birmingham, including those of junior medical officer at St. Chad's Hospital, senior resident anaesthetist and house-physician at Queen's Hospital, and house-surgeon at the General Hospital, he settled in practice at Purley, Surrey, in 1936. He entered the R.A.M.C. as lieutenant early last year. He leaves a widow.

Prisoners of War

Temporary Major John Malcolm Fosbrooke.
Lieut. Richard Maurice Solomon.

Missing at Sea

Captain Ernest John Frank Hinde.

ROYAL AIR FORCE

Acting Squadron Leader JAMES RUSSELL MCWHIRTER, who was killed in a motor accident on August 31 while serving in the Canal Zone, was born on December 5, 1909. He received his medical education at Queen's University, Belfast, graduating M.B., B.Ch., B.A.O. in 1934. After holding house appointments at the Royal Infirmary, Bristol, St. Luke's Hospital, Chelsea, and the Archway Hospital, Highgate, he was granted a short-service commission in the R.A.F. on May 3, 1937, was promoted to flight lieutenant in 1938, and recently to acting squadron leader. For two years he served at various flying training schools and qualified as a pilot in 1939. Early in 1940 he was posted to the Middle East Command and shortly afterwards was transferred to the Reserve on completion of initial service on the Active List and remained employed as a Reserve Officer.

DEATHS IN THE SERVICES

Lieut.-Colonel HUGH ALLAN DAVIDSON, D.S.O., R.A.M.C. (ret.), died in a nursing home at Aberdeen on October 12, aged 63. He was born at Kennethmont, Aberdeenshire, on May 28, 1878, and was educated at the University of Aberdeen, where he graduated M.B., Ch.B. in 1900. He took the D.P.H. three years later. Entering the R.A.M.C. as lieutenant in November, 1900, he became lieutenant-colonel in 1918, and retired in 1920. He served throughout the war of 1914-18, was twice mentioned in dispatches, and received the D.S.O. and clasp, and the Croix de Guerre.

INFECTIOUS DISEASES AND VITAL STATISTICS

No. 41

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended October 11.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for: (a) England and Wales (London included), (b) Ireland, (c) Scotland, (d) The Republic of Ireland, (e) The Channel Islands.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	110	4	31	—	5	116	9	35	1	5
Deaths	—	—	—	—	—	—	—	—	—	—
Diphtheria	1,034	41	300	34	36	1,336	37	429	31	19
Deaths	34	—	5	1	—	34	—	12	2	1
Dysentery	207	11	100	—	—	69	3	71	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	2	—	—	—	—	3	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Enteric (typhoid and paratyphoid) fever*	—	—	—	—	—	57	—	14	5	2
Deaths	—	—	—	—	—	1	—	—	—	—
Erysipelas	—	—	63	2	5	—	17	61	4	5
Deaths	—	—	—	—	—	—	—	1	—	—
Infective enteritis or diarrhoea under 2 years	—	—	—	—	—	—	—	—	—	—
Deaths	42	3	17	34	15	49	5	12	8	4
Measles	787	41	18	54	2	9,995	195	381	—	6
Deaths	3	—	—	—	—	13	—	2	—	—
Ophthalmia neonatorum	89	6	13	—	—	77	1	19	2	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid	64	4	12	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† (from influenza)	705	25	3	2	7	660	49	5	—	—
Deaths	11	18	4	—	7	15	1	—	—	1
Pneumonia, primary	—	—	184	9	—	—	166	9	—	—
Deaths	—	—	—	2	7	—	81	—	—	6
Polio-encephalitis, acute	4	—	—	—	—	1	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	35	3	9	6	—	30	—	11	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	1	1	5	3	1	—	1	8	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	144	14	16	—	—	145	8	16	—	2
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,336	35	258	48	29	2,019	79	251	56	54
Deaths	—	—	—	—	—	2	—	—	1	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid	23	2	1	12	14	—	—	—	—	—
Deaths	1	—	1	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	1,970	227	65	23	8	1,373	11	131	—	12
Deaths	9	3	1	—	—	11	—	—	1	2
Deaths (0-1 year)	289	25	53	42	25	315	47	56	24	13
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths)	3,690	476	509	166	110	5,522	1,453	533	146	127
Annual death rate (per 1,000 persons living)	—	—	11.1	11.0	5	—	11.2	9.7	11.1	—
Live births	5,153	460	892	334	210	6,033	763	872	307	202
Annual rate per 1,000 persons living	—	—	18.1	20.2	4	—	17.6	20.5	17.7	—
Stillbirths	207	11	36	—	—	221	23	31	—	—
Rate per 1,000 total births (including stillborn)	—	—	39	—	—	—	—	—	—	—

* Except for Northern Ireland, typhoid and paratyphoid are now notified separately.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes enteric and paratyphoid for Northern Ireland.

§ Owing to evacuation schemes and other movements of population birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In England and Wales a decline in the number of notifications of whooping-cough and paratyphoid fever was recorded for the sixth consecutive week. The number of cases of scarlet fever, measles, and diphtheria increased—119, 72, and 37 in excess of the totals of the preceding week. The rise in the notifications of scarlet fever has not been shared by the South-Western counties, where the trend has been fairly constant, whilst for the other main divisions and for the whole country the incidence has been doubled during the past three months. The increase in the notifications of diphtheria has become fairly general throughout the country, with the exception of the South Midland and Eastern counties, where the incidence has fluctuated around a constant level. A large rise in the number of cases of diphtheria occurred in Scotland, 73 more than in the preceding week: the increased incidence was distributed throughout the western area. The notifications of scarlet fever, whooping-cough, and measles showed small increases in Scotland.

Poliomyelitis

With an increase of 7 cases in England and Wales, the number of cases of poliomyelitis reverts to the level of a fortnight ago. The notifications were distributed over a wide area, and no county returned more than 3 cases. Multiple cases occurred in Lancashire (Manchester C.B. 3), Leicestershire (Shepherd U.D. 2), Middlesex (Ealing M.B. 2), Norfolk (Norwich C.B. 2), Surrey (Caterham and Warmingham U.D. 2). No cases were reported in Berkshire, Buckinghamshire, or Oxfordshire, where the recent outbreaks have been the most important numerically. Nine cases were reported from Scotland, compared with 6 in the previous week, the multiple cases being in Glasgow (5) and West Lothian county (2).

Dysentery

In England and Wales 207 cases were notified, compared with 108 in the preceding week. This is the biggest weekly total since the spring of 1938. The largest of the local outbreaks was in Kent, where 63 of the 64 cases were reported from Tonbridge U.D. Increases were recorded in Gloucestershire, Somersetshire, and Lancashire, where 19, 18, and 22 cases were notified, compared with 17, 2, and 10 in the preceding week. The increases in the first two counties were due to Bristol C.B. (24) and Weston-super-Mare M.B. (15). In Lancashire the cases were distributed through eight administrative areas, the largest number of cases in these districts being that of Manchester C.B. (9). In Scotland notifications fell from 175 to 100 as a result of the subsiding of the outbreak in Lanark county, where 27 cases were notified, compared with 103 in the preceding week. Glasgow (21 cases), Dundee (14 cases), and Edinburgh (10 cases) were the centres of the other local outbreaks.

Quarterly Returns for England and Wales

The return for the first quarter of 1941 has just been published by the Registrar-General. The birth rate of 14.4 per 1,000 and the infant mortality of 75 per 1,000 live births were both below the average for the first quarters of recent years. The death rate was 17.5 per 1,000, as compared with 19.9 in the first quarter, of 1940, but was above the average of 14.6 per 1,000 for the five years before 1940.

Week Ending October 18

The number of cases of infectious diseases notified during the week in England and Wales included scarlet fever, 1,195; whooping-cough, 1,979; diphtheria, 1,002; measles, 783; cerebrospinal fever, 107; poliomyelitis, 50; dysentery, 143; paratyphoid, 62; and typhoid, 16.

The national scale of salaries for chartered masseuses and masseurs holding appointments in hospitals, institutions, clinics, etc., has recently been revised by the Council of the Chartered Society of Massage and Medical Gymnastics. The new scale has been approved by the Ministry of Health for members working in E.M.S. hospitals. Copies may be had from the wartime address of the Society: Mount Lodge, Amersham, Bucks.

Medical News

A conference on historical aspects of the medical services will be held by the Socialist Medical Association at 12, Great Newport Street, W.C.2, on Sunday, November 2, beginning at 11 a.m. Papers will be read by Mr. H. L. Beales, Dr. T. O. Garland, and Mr. Arnold Sorsby.

Lieut.-Colonel Macbeth Wilson will deliver a lecture on "Physical Symptoms due to Emotional Causes" at the Weston Hotel, Bath, on Thursday, November 6, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcomed.

A meeting of the Tuberculosis Association will be held at 26, Portland Place, W., on Saturday, November 8, with the following programme: 9.45 a.m., council meeting; 10.25 a.m., general meeting; 10.30 a.m., short papers by Dr. Alexander Capes, Dr. R. Cruickshank, Dr. R. H. Dobbs, Dr. J. Smart, Dr. E. T. W. Starkie, and Mr. O. S. Tubbs; 1.15 p.m., lunch at Welbeck Palace Hotel; 2.30 p.m., informal meeting to discuss problem cases and to show interesting x-ray pictures.

The recently published August issue of the *Irish Journal of Medical Science* is devoted to the reports of the Dublin Maternity Hospitals.

Dr. J. W. Trevan, director of the Wellcome Physiological Research Laboratories, has been elected a director of the Wellcome Foundation, Ltd.

Dr. Francis G. Blake Sterling, professor of medicine, has been appointed dean of the Yale University School of Medicine.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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QUERIES AND ANSWERS

Congested Hands and Brittle Nails

Dr. CYRIL G. EASTWOOD, medical officer of health for Weston-super-Mare, writes: Dr. Frank Matthews and "Stasis" (October 18, p. 568) have both propounded problems in your "Queries and Answers" column for which an identical remedy should prove useful. The congestive condition of the hands and brittleness of the finger-nails (due to constriction of the nail-bed capillaries) are both features found in chronic arthritis. The injection of histamine will give immediate relief to both patients, and the method of use will be found in a paper of mine in the *Journal of State Medicine*, 1935, p. 720.

Dr. G. B. EDLESTON (tuberculosis officer, Kent County Council) writes: In reply to Dr. Frank Matthews's request (October 18, p. 568) for advice in the case of his patient suffering from thin, brittle nails of fingers and toes and from chilblains, conditions of long duration, I suggest that the patient may be afflicted with Boeck's sarcoidosis, with which disease the names of Besnier and Schaumann are also associated. Dr. Matthews does not say if his patient suffers from chilblains all the year round; but if she does that fact may be a strong point in the diagnosis of pseudo-tuberculosis. Lupus pernio is not restricted to the cold seasons, ulcerations never develop, and the nails frequently show dystrophic and atrophic changes. It would, therefore, be well worth while for Dr. Matthews to have his patient's chest, hands, and feet x-rayed to exclude manifestations of Boeck's sarcoids in the lungs and all three types of sarcoidotic lesions in the metacarpal and metatarsal bones.

Income Tax

Board and Lodging of a Locumtenent

C. B. D.: (1) A practitioner has shut his own house and boarded out the locumtenent, paying the landlady a weekly sum arranged by himself. Is this amount assessable on the locumtenent? (2) The practitioner makes an allowance of £50 per annum to the locumtenent, who uses his own car. Can that be held to cover petrol and oil, as well as tax, insurance, wear and tear, and running repairs?

*(1) No. The fact that the board and lodging are not provided directly by the employer is immaterial so long as he, and not the locumtenent, is liable to the landlady for the weekly payments. (2) There is no legal bar. If the locumtenent expends (including the wear-and-tear allowance as if it were expenditure) more than £50 per annum wholly, exclusively, and necessarily in the performance of his professional duties, he can claim an allowance for the excess.

LETTERS, NOTES, ETC.

Liq. Ferri Perchlor. Fortis for Impetigo and Sycosis Barbae

Lieut.-Colonel J. H. SMITH, I.M.S. (ret.), writes: I have read a number of letters recently in the *Journal* on the treatment of impetigo, and wish to suggest what I have found to be a very simple and effective treatment, which cures the condition in a matter of days. Paint liquor ferri perchlor. fortis (it must be fortis) on the affected parts and on an area of healthy skin surrounding them. There is no need to remove the crusts; it is quite sufficient to apply the solution liberally over them; they will fall off in two or three days, leaving healthy skin underneath. After three daily applications I usually give the patient an ounce or so of the ferri perchlor. and tell him to look carefully in the glass every morning for a week or two for any new or oozing spots, and to dab them as soon as they appear. This treatment is equally efficacious for sycosis barbae. I believe that one thorough application cures this condition. The patient should, in the same way as above, watch for a few days for new spots appearing. If those who are dissatisfied with the present treatments will try the above I feel sure they will find it a great advance on the methods recently recommended. I have used it since seeing it recommended in the *British Medical Journal* some years ago for diverse skin troubles, many of which had resisted other methods of treatment, and have got excellent results from its application in almost any form of staphylococcal infection. I am at present treating a number of troops suffering from these conditions, and some of the patients who had been under treatment for weeks (especially with ointments, which appear to spread the condition rather than cure it), were discharged in three or four days after a daily application, and given liq. ferri perchlor. fortis 5j to take away and apply as stated above.

Humphrey Clinker and White Bread

Mr. THOMAS GUTHRIE, F.R.C.S. (Pembury, Kent), writes: In view of present-day efforts to encourage the use of wholemeal as opposed to white bread, the following passage from *The Expedition of Humphrey Clinker* is of interest. Matt. Bramble, on a visit to London, has many reasons for preferring life in the country; one of them is shown by the following quotation: "The bread to eat in London is a deleterious paste, mixed up with chalk, alum, and bone-ashes; insipid to the taste, and destructive to the constitution. The good people are not ignorant of this adulteration: but they prefer it to wholesome bread, because it is whiter than the meat of corn: thus they sacrifice their taste and their health, and the lives of their tender infants, to a most absurd gratification of a mis-judging eye: and the miller, or the baker, is obliged to poison them and their families, in order to live by his profession." *Humphrey Clinker* was published early in 1771, a few months before Smollett's death.

Medical Aid for China

Dr. MARY L. GILCHRIST, honorary secretary of the China Medical Aid Committee, writes: In the month of July you very kindly published on our behalf a letter signed by Lord Horder. I think your readers will be interested to hear that nearly £400 was raised by the press appeal.

Request for Microscopes

The Education Department of the Royal College of Nursing (Henrietta Place, Cavendish Square, W.1) is needing additional microscopes for laboratory work in connexion with the sister tutor course. Owing to the present difficulty in securing these, the Director in the Education Department would be grateful to hear from anyone who might be able to lend or allow the College to hire one or more of these for the session. It has been suggested that there might be some of these instruments unused at the present time owing to their owners' absence from London.

PREPARATION AND USE OF CONCENTRATED RED CELL SUSPENSIONS IN TREATMENT OF ANAEMIA

BY

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AND

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The establishment of blood banks has greatly increased the use of blood transfusions, not only in the most urgent cases of hæmorrhage and shock and for the more severe and resistant cases of chronic anaemia but also as a means of shortening the convalescence of patients suffering from anaemias of less severity, many of whom would probably recover ultimately without resort to such treatment. From the point of view of the individual patient as well as from that of national economy it may often be justifiable to utilize the blood of one healthy person to enable another to return to work at an earlier date than would otherwise be possible; but the growing tendency to substitute intravenous transfusion of blood for the oral administration of iron results in a constant drain on the supply of blood now urgently required for preparation of plasma. The transfusion habit now being established may also cause serious embarrassment to the blood transfusion services in peacetime, for such a useful therapeutic weapon will not willingly be surrendered at the conclusion of hostilities.

Large-scale preparation of plasma from stored blood, however, has made available considerable quantities of red cells in concentrated form. These red cells, amounting to about 50% of the original volume of whole blood, are usually discarded, which in view of their potential value in the treatment of anaemia is particularly regrettable.

Suspensions of red cells separated from the plasma have been used in the past for the treatment of anaemia, but with few exceptions these suspensions were diluted with saline to such an extent as to make them more dilute than normal blood (Robertson, 1918). The use of the red cells in concentrated suspensions has recently been described by MacQuaide and Mollison (1940). At the time their article was published a few cases of anaemia had been treated by the Liverpool Regional Blood Transfusion Service with similar concentrated suspensions, and since then these have been used in increasing amounts.

Preparation of the Suspensions

At the regional laboratory of our transfusion service plasma is withdrawn from all bottles of blood, irrespective of group, on the seventh day of storage, up to which time they have been available for transfusion as "whole blood" wherever required. The stocks of blood stored in each individual hospital, which under present conditions are considerably in excess of the normal transfusion requirements

of civilian medical practice, are similarly processed. The technique of plasma separation is the "closed" method described by Edwards and Davie (1940). In this process the plasma is aspirated through a long needle inserted through the perforated metal cap and rubber diaphragm which closes the bottle. After separation of the plasma (a process which can be performed aseptically) the aspirating needle is plunged to the bottom of the red cell layer and aspiration of the concentrated red cells is continued into a fresh sterile bottle. The layer of gelatinous material which normally lies on the surface of the red cells and consists of leucocytes, platelets, and fibrin is carefully left behind in the blood bottle. The last remaining drops of cells in the needle and tubing are transferred to a tube of citrate-saline solution for grouping and cross-matching. The red cells of another bottle of blood of the same group, and, if necessary, of a third bottle, are added to those of the first, a specimen of these cells being similarly retained for grouping, etc. A bottle of concentrated red cells will therefore consist of contributions from two or three donors. The citrated sample tubes of cells are attached by a rubber band to the neck of the bottle of concentrated cells. Cross-matching of each sample with the serum of the patient is occasionally undertaken by the clinician, but is generally performed in the laboratory before the bottle is issued for use. These concentrated suspensions are usually prepared only at the request of clinicians, but it is sometimes convenient to anticipate the demand by preparing a small stock of bottles of assorted groups. These are stored in the refrigerator for forty-eight hours, after which time those not used are discarded.

Nature and Composition of Concentrated Red Cells

Specimens of concentrated red cell suspensions prepared by the present method show considerable variations in their hæmoglobin and cell content. This is mainly due to individual differences in the rate and extent of cell sedimentation in citrated blood under conditions of storage.

The following figures are quoted as being fairly typical of the results obtained from examination of a sample of concentrated red cells:

Hæmoglobin (Haldane)	..	150%
Red cells	..	8,500,000 per c.mm.
White cells	..	3,000 per c.mm.
Corpuscular volume (Wintrobe)	..	85% (normal for whole blood, 45%)

The most important difference between stored blood and fresh blood is the increased corpuscular fragility of the former. This is mainly due to the fact that the anti-coagulant solution of 2.5% sodium citrate is hypertonic and produces in the blood corpuscles a state of increased intracellular osmotic tension. When such red cells are placed in contact with isotonic saline solutions they exhibit greatly increased fragility, since by comparison with their contents their new surroundings are now hypotonic (Maizels and Whittaker, 1939). Another possibility is that venous blood, by reason of its high CO_2 content, is somewhat more fragile than either capillary or arterial blood (Whitby and Hynes, 1935).

It was suggested by MacQuaide and Mollison that a small amount of hypertonic (1.1%) sodium chloride solution should be added to the suspensions in order to reduce their viscosity and thus facilitate their administration. Before adopting this procedure ourselves a few preliminary experiments were performed to determine the resistance of blood cells to 1.1% saline solution after they had been stored for seven days. Red cell counts of specimens of stored blood were made, using as a diluting fluid normal human serum of the same blood group. Duplicate counts were also performed on the same specimens, using 1.1% saline solution as the diluent. Any reduction of the red cell count in the saline compared with that in serum would indicate the degree of haemolysis that had occurred in the former solution. The counting pipettes, containing the red cells diluted 1 in 200 with the respective diluents, were left at room temperature for fifteen minutes before being finally shaken and counted. In one such experiment the discrepancy between the results of the two counts amounted to as much as 1.7 millions per c.mm., or approximately 20% of the total. This represented a degree of *in vitro* haemolysis that would be incompatible with safety in a bottle of blood intended for transfusion. It was therefore decided that the addition of 1.1% saline to suspensions of concentrated red cells as prepared by us would be inadvisable. In any case, this dilution has not been found necessary, as no insuperable transfusion difficulties have been experienced on account of increased viscosity of the concentrated suspensions.

The apparent increase in the fragility of stored red cells does not appear to have the clinical significance that one might be led to expect. There seems to be no direct relation between the fragility of the red cells, as measured by the usual test of resistance to hypotonic solutions of sodium chloride of varying concentrations, and the rate of their destruction in the body of the recipient. This contention is supported by recent investigations into the survival time of stored blood cells after transfusion experiments which have shown only slightly longer survival of fresh cells as compared with those stored for a week, in spite of the greatly increased fragility of the latter (Mollison and Young, 1940).

Administration

Although the increased viscosity of suspensions of concentrated red cells slows the flow through the delivery apparatus, no modification of the standard blood transfusion outfit as supplied by E.M.S. transfusion centres is necessary beyond lengthening the transfusion rubber tubing to provide a greater head of pressure. When giving concentrated red cell suspensions in any quantity it is important that the flow be regulated to approximately 100 c.cm. an hour to avoid the risk of cardiac embarrassment by rapid addition of a viscous fluid to the circulating blood, particularly as the myocardium of an anaemic person may have undergone pathological changes which impair its efficiency.

The indications for the administration of concentrated red cell suspensions are such that it should seldom be necessary or even advisable for them to be given as an urgent or emergency measure, since supplies of plasma and Group IV (O) whole blood are available to every hospital for emergency transfusions. Concentrated suspensions should therefore be used only for cases of chronic anaemia which require rapid replacement of haemoglobin and red cells with minimal increase of circulating blood volume.

Results of Treatment

Material for over 150 transfusions of concentrated red cells has been issued in the past eight months. Of these transfusions over sixty have been administered to two patients suffering from aplastic anaemia, but owing to certain special features these cases have been omitted from the present series. Information regarding responses to transfusions, in terms of elevation of haemoglobin percentages and of changes in the red cell counts, has been procurable in only 38 transfusions, administered to 35 patients. These results for convenience of comparison have been tabulated, together with other data relevant to the cases, in Table I. Fair comparison of these results is

TABLE I.—Summary of Results of Transfusions

Case No.	Amount given (c.cm.)	Hb% Before	Rise in Hb %	R.B.C.s before Transfusion (millions per c.mm.)	Rise in R.B.C.s (millions per c.mm.)	Rise in Hb % per 500 c.cm. conc. R.B.C.s	Condition
2	900	50	30	—	—	17	Hodgkin's disease
"	500	80	(-5)	—	—	5	Severe exacerbation of the disease at time of transfusion
3	900	45	20	2.56	0.89	11.1	Septic abortion
4	800	44	18	2.67	1.2	11.25	Haemorrhage
5	500	18	14	—	—	14	
6	800	56	6	3.32	0.39	3.75	Recurrent peptic ulcer
8	900	48	18	2.8	0.61	10	Septic abortion
11	900	26	24	2.17	—	13.3	Anaemia and pyrexia
12	1,000	40	20	2.5	1.6	10	
14	1,000	40	7	1.75	0.45	3.5	
15	500	35	35	—	—	35	1 cervical performed (cervical)
17	1,000	30	6	2.53	1.3	3	Aplastic anaemia (acute)
18	1,000	35	0	—	—	0	Septicaemia; secondary haemorrhage
19	1,000	28	17	2.43	0.75	8.5	
21	1,000	35	23	2.75	1.25	11.5	Hysterectomy
22	700	35	10	2.02	0.38	7.1	Amputation (septic)
24	800	26	14	2.12	1.08	8.8	Severe anaemia
25	1,000	58	26	5.29	(-14)	13	Gastric ulcer; partial gastrectomy
26	1,000	56	24	3.24	—	12	Puerperal anaemia
27	950	44	30	2.87	1.92	15.8	Uterine fibroid
29	2,000	24	65	2.46	1.02	14.25	Pernicious anaemia
30	800	37	23	2.22	0.74	9	Leukaemia; haemorrhage
33	350	28	0	2.22	(-31)	0	Anaemia (post-natal)
"	1,000	48	18	2.92	0.56	9	Anaemia
36	1,000	20	18	0.87	0.56	12	Severe anaemia
37	500	52	12	2.9	0.53	11	Haemorrhage—source not specified
39	1,000	55	22	3.55	0.62	8	Sepsis
42	500	50	8	3.15	0.53	8	Gastric ulcer
45	1,000	40	30	3.14	2.42	15	Carcinoma ventriculi
47	900	28	14	1.01	2.34	7.8	Pernicious anaemia
"	900	49	16	2.35	0.7	8.9	
48	850	45	33	2.65	2.21	19.4	Haemorrhage (haematemesis)
52	900	30	25	3.28	—	13.9	Ulcerative colitis
56	500	30	35	—	—	35	Haemorrhage (metrorrhagia haemorrhagica)
57	1,000	40	15	2.0	1.1	7.5	Anaemia
58	500	60	10	—	—	10	Septicaemia
59	600	60	10	—	—	8.3	
61	1,000	23	23	—	—	11.5	Pernicious anaemia

unfortunately rendered difficult by the fact that blood counts and haemoglobin estimations, although in most cases performed by experienced pathologists, include readings taken by several different standards and under varying circumstances. These individual findings are therefore more than usually liable to error, and are of somewhat limited value as data upon which scientifically accurate conclusions may be based. They are presented here simply as evidence from which our own clinical impressions were formed.

Owing to the wide variety of conditions which have been treated with concentrated red cells these results have been classified into four main groups, as follows:

- Group I: Post-haemorrhagic anaemias (7 cases).
- Group II: Anaemias associated with severe infection (6 cases).
- Group III: Anaemias of pregnancy and the puerperium (4 cases).
- Group IV: Dyshaemopoietic anaemias (pernicious, aplastic, and idiopathic hypochromic anaemias) (7 cases, 8 transfusions).

To compare the individual responses, the percentage rise in haemoglobin for each case was calculated for a "standard transfusion" of 500 c.cm. (approximately one bottle) of concentrated red cell suspension. The mean response to a standard transfusion was obtained for each group of cases, and graphs were prepared by plotting these individual results in terms of percentage rise of haemoglobin per 500 c.cm. of suspension. These, with the mean in each group, are illustrated in Figs. 1 to 4.

Graphs showing Calculated Percentage Rise of Haemoglobin per 500 c.cm. of Concentrated Red Cell Suspension. (The mean of each series is represented by a horizontal broken line at the appropriate level. Figures along base line refer to case numbers.)

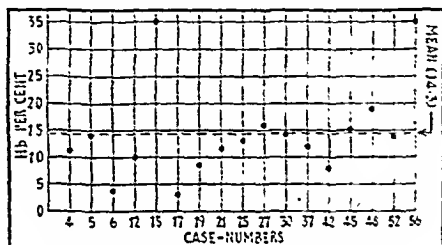


FIG. 1.—Group I: Post-haemorrhagic anaemias.

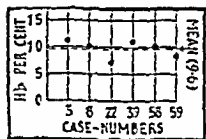


FIG. 2.—Group II: Anaemias associated with severe infection.

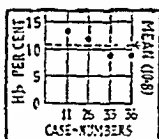


FIG. 3.—Group III: Anaemias of pregnancy and puerperium.

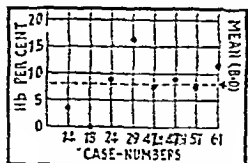


FIG. 4.—Group IV: Dyshaemopoietic anaemias.

In the first, or post-haemorrhagic, group the results show wide range of scatter about the mean. Allowance for 5% error in haemoglobin estimation, however, places all except one of the readings within reasonable limits of variation. The four readings which fall outside these limits include two cases with very low responses (Nos. 6 and 17), both of which were suffering from chronic gastric complaints, the one being a carcinoma and the other a recurrent peptic ulcer that proved fatal two weeks after transfusion. The other two cases (Nos. 15 and 56) showed abnormally high responses to transfusion. These were both cases of chronic uric haemorrhage of non-malignant origin which were transfused immediately before operation, and the second haemoglobin readings of which were performed soon after operation. Omission of these four cases from the series

would reduce the mean of this group from 14.3% to 12.8% haemoglobin per 500 c.cm. of concentrated blood.

The second group of post-infective anaemias, although too small to provide conclusive evidence, shows a surprisingly high average response to transfusion. From the subsequent histories of these few patients it appears that cases of septicaemia associated with anaemia are very much improved by transfusion therapy. We now therefore recommend, for severe cases of this kind, repeated transfusions of concentrated red cell suspensions until the haemoglobin is over 60%. When this level has been attained fresh whole blood, which is richer in antibodies and contains active leucocytes, is of greater benefit, and transfusion with this should be continued until the haemoglobin is at least 90%. This treatment should, however, be additional to rational anti-infective measures.

The results of four cases of anaemia associated with pregnancy and the puerperium are shown in Fig. 3. Little may be deduced from our findings in these cases, but clinicians have been impressed with the value of concentrated red cell transfusions in rapidly rehabilitating patients who might otherwise remain in a state of chronic debility and vague ill-health as a result of nutritional or post-haemorrhagic anaemia.

The graph illustrating the dyshaemopoietic group (Fig. 4) shows a considerable variation in the responses of the individual cases. Two cases showing very poor results (Nos. 14 and 18) were respectively severe pernicious anaemia with subacute combined degeneration of the cord (which ultimately made a good recovery) and a case of aplastic anaemia. The latter patient failed to respond to transfusion treatment, and died a few weeks later. There is reason to believe that in both these cases the haemoglobin estimations were faulty. Their omission from the series would have raised the mean increase of haemoglobin per 500 c.cm. transfusion from 8% to 10% for this group.

From these results we are able to conclude that, irrespective of the nature of the condition causing the anaemia, transfusion with one bottle of 500 c.cm. of concentrated red cell suspension raises the haemoglobin between 10% and 12%. Exceptions to this occur, and are usually low responses due to a rapid exacerbation in the factors causing the anaemia. Unexpectedly high results have in some cases been attributable to operations which have not only removed the cause of the anaemia but may also have produced some degree of haemoconcentration.

Reactions

Reports of the incidence of reactions following the use of concentrated red cell suspensions were obtained regarding 77 transfusions which were given to 61 patients. In all, fifteen reactions of all grades were noted, the gross reaction rate thus being 19.5%. Reference to Table II shows that this series consisted of five Grade I reactions (slight elevation of temperature), two Grade II reactions (pyrexia with slight shivers but no definite rigor), and seven Grade III reactions (definite rigors associated with rise of temperature).

This apparently high rate of rigor production (amounting to 9.1% of all transfusions) may be attributable to the peculiar circumstances in which the Liverpool Regional Transfusion Service was placed during three months of the period under review. Enemy action had destroyed the apparatus necessary for the production of distilled water, and the supply of 2.5% sodium citrate solution had therefore to be obtained from other sources, under circumstances that made it impossible to guarantee the exclusion of pyrogens. To this was attributed the fact that during this period the reaction rate (all three grades) among patients receiving stored whole blood had risen to an exceptionally

high figure—more than double the incidence before this period. Of the 77 transfusions of concentrated red cells 21 were given during this three-month period, and accounted for four out of the seven Grade III reactions and three others of less severity. The exclusion of all transfusions administered during this period gives a Grade III reaction (rigor) incidence of 3 in 56 transfusions, or 5.35%.

TABLE II.—Details of Cases showing Reactions to Transfusion

Case No.	Sex	Age	Group	No. of Transfusions	Hb % Before	Amount of C.B. given (c.cm.)	Hb % After	Details of Reaction	Diagnosis and Results
Grade I Reactions (T. 100° or over, Without Symptoms)									
16	F	—	2	1	58	1,000	—	Temp. 101° following day	Post-natal anaemia
29	M	63	2	2	24	2,000	89	Temp. 100-2° after first transfusion	Pernicious anaemia
48	M	65	2	2	45	850	78	Temp. 100° after second transfusion	Haematemesis
50	M	28	4	1	—	500	56	Temp. 101°	Haematemesis. Ordinary blood given, with no reaction
52	F	32	4	1	30	900	55	Temp. 100°	Ulcerative colitis
Grade II Reactions (T. over 100°, with Slight Shivering)									
63	M	39	4	2	50	400	—	Slight rigor after first transfusion	Haematemesis
47	F	46	4	2	28	900	42	Slight rigor after first transfusion	Aplastic anaemia
Grade III Reactions (Definite Rigors, with Pyrexia)									
1	M	—	4	2	50	500	—	Rigor; temp. 101° after first 100 c.cm.	Papilloma vesicae. Remainder of transfusion given next day
15	F	43	4	1	35	500	70	Rigor; temp. 101° following day	Cervical polyp
22	M	—	4	1	35	700	45	Rigor (reaction)	Sepsis and amputation
33	F	30	3	2	28	350	28	Rigor with second transfusion	Post-natal anaemia. No reaction with second transfusion
43	F	37	3	2	35	500	—	Rigor with first transfusion	Severe septicaemia. Rigor ? not due to transfusion. Given old suspension on second occasion and became jaundiced
55	F	54	4	1	50	1,000	—	Rigor; temp. 102°	Carcinoma ventriculi; pyrexial before transfusion
60	M	37	2	1	—	400	—	Rigor; temp. 103°	Haematemesis. Improved
Grade IV Reactions (Anaphylactic Phenomena, etc.)									
31	F	26	—	1	34	500	—	Urticarial oedema	Complete abortion. Oedema subsided with adrenaline

Our gross reaction rate thus appears to have been considerably higher than it might have been in the absence of any disturbance of our laboratory routine. Corrected for this, the impression is confirmed that, as stated by MacQuaide and Mollison, the incidence of reactions to transfusions of concentrated red cell suspensions is no higher, and probably is lower, than that produced by the use of stored whole blood.

In addition to the febrile reactions discussed above there remains a group of reactions which appear to be due to some hypersensitivity on the part of the recipient to some component of the transfused fluid. They are not peculiar to concentrated red cells, for they occur also after plasma transfusions. These reactions would seem to be of an allergic nature, as is illustrated by the case reported in Table II under the heading "Grade IV Reactions." In this case no harm was done, as the oedema that resulted subsided after the administration of adrenaline. One fatal reaction, which appeared to have been due to a similar mechanism, occurred following one transfusion of con-

centrated blood, and owing to its importance the case is here reported in full.

A woman aged 46 (Case 35) was admitted to hospital with a history of menorrhagia, and complaining of dyspnoea and palpitations; there were also signs of anaemia. Blood examination shortly after admission showed hypochromic anaemia, the haemoglobin being 35% and the red cell count 2.3 millions per c.mm. The menorrhagia was found to be due to a cervical polyp, and as a preliminary to operation the patient was given a transfusion of concentrated red cells, starting at 6.45 p.m. on April 2, 1941. Three hours later she was rather restless, but felt drowsy. Six hours after the transfusion was begun she was pale and cyanosed, with deep stertorous respirations. The heart rate was 160 per minute and the radial pulse not palpable. The transfusion, almost completed, was then stopped, and the patient given morphine, grain 1/6, oxygen; and coramine. She died in coma at 1.45 a.m., seven hours after the start of the transfusion. Post-mortem examination revealed a large, pale, flabby, and grossly dilated heart, with numerous ecchymoses, averaging about 5 mm. in diameter, scattered upon the surface of the interventricular septum. Some of these petechiae appeared to involve the left branch of the bundle of His. There was no lesion of the heart valves or of the coronary arteries, and no evidence of thrombosis of the saphenous vein. The spleen was enlarged to about double its normal size. Incompatibility of blood was excluded by direct cross-agglutination tests performed before transfusion and repeated afterwards, while the slow rate at which the transfusion was given excludes the possibility of primary myocardial failure such as may have resulted from sudden loading of the right heart with transfused blood. The presence of petechial haemorrhages in the myocardium renders it probable that death was due to sudden disturbance of the conducting mechanism of the ventricles. While these changes may have been due to severe anaemia alone, in view of the circumstances under which death occurred it is possible that they were due to an anaphylactoid reaction following the transfusion.

This case emphasizes the importance of avoiding the use of blood likely to produce reactions of an allergic nature, but unfortunately we are not yet in a position to detect the sensitive patient in advance. The only precautions at present available against such accidents consist in scrupulously excluding from the panel of donors all those with a history of allergic manifestations and, where practicable, performing intradermal skin tests upon prospective recipients with a similar history, using a few minims of the transfusion fluid as an antigen.

Summary

The preparation and properties of concentrated red cell suspensions are described, and the advantages of their use in preference to whole blood in certain cases are discussed.

Results of 77 transfusions are reported, special reference being made to the percentage rise of haemoglobin per 500 c.cm. of suspension, and to the effect, if any, of the patient's clinical condition upon this result.

The frequency of reactions to this form of transfusion is calculated, and found to be considerably lower than that occurring when stored whole blood is used. One fatal reaction is described, and its aetiology briefly discussed.

We are indebted to numerous physicians and surgeons on the staffs of Merseyside hospitals, and to the medical superintendents of municipal hospitals in Liverpool, Birkenhead, and Wirral, for their permission to consult their case records, and to those resident medical officers and house-surgeons who have themselves contributed much valuable information about their patients. We are also grateful to Drs. Joy Cronin-Lowe, Sheila Kenny, and J. C. Millar for having provided us with their own personal observations of several cases. Finally, we are glad to record our appreciation of the work of Mr. J. Stainton and other members of the laboratory and secretarial staff of the Regional Blood Transfusion Centre, without whose assistance the present work could not have been completed.

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MYCOSIS FUNGOIDES TREATED BY MALARIA, TERMINATING IN HODGKIN'S DISEASE

BY

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On May 29, 1931, a dairyman aged 45 presented himself at the skin department of the Middlesex Hospital with a seven-months-old eruption which had begun on the face and eyebrows and later extended to the pubic area, hands, wrists, and legs. The eruption was dry and scaly, except for some areas where moisture and weeping had occurred, thus conforming in its distribution and type to a seborrhoeic dermatitis, the diagnosis recorded at the first visit. As his progress covers a series of admissions to and discharges from the skin and medical wards the sequence of events can best be recorded under four different headings.

First Admission: May 30, 1931, to February 25, 1932

The initial phase of this remarkable history was represented by an eczematous eruption, in places dry, in other regions moist and weeping. The rash was considerable in extent, involving the face, arms, hands, trunk, and legs, and because of the dry scaly appearance in some places and the pronounced flexural distribution was labelled "seborrhoeic eczema." There were during this period fluctuations in the degree and extent of the eruption, with at times marked improvement, followed by an unexpected and disappointing relapse. The degree of itching was considerable and disproportionate, which might have hinted at things to come; and in places, for example over the arm flexures, the margins of the eruption presented an unusual raised or scalloped appearance, contrasting with the more characteristic eczema elsewhere. Although they have no special significance, it may be recorded that in September, 1931, abscesses developed in the calves of both legs, requiring surgical treatment. The Wassermann reaction was negative, and a blood count made on October 6 showed slight anaemia—9,800 leucocytes per c.mm., with the following differential count: polymorphs 61.5%, lymphocytes 23.5%, large mononuclears 0.5%, eosinophil cells 13.5%, and mast cells 1%. As in February, 1932, only some insignificant traces of the eczematous eruption remained, the patient was discharged from the ward to attend the out-patient department. In June, 1932, it was noted that on the trunk there were patches suggestive of the pre-mycotic phase of mycosis fungoides, but this diagnosis was not confirmed and definitely established until March, 1933.

Second Admission: February 23, 1934, to December 5, 1934

Mycosis fungoides was now present in an extensive form, including large sheets of pre-mycotic infiltration of the skin, with tumour formation in many areas. X-ray treatment had been in use from March, 1933, and had hitherto controlled the disease. But now, and for the first time, the eruptive process became so active and involved areas so considerable that x-ray treatment could no longer be employed with safety because the amount required to control the disease must have proved injurious or even fatal to the patient. A point had been reached when seemingly nothing further could be done. In 1933 I had published the beneficial effect of an attack of erysipelas on two cases of mycosis fungoides (MacCormac, 1933). Here seemed a therapeutic hint: the problem, then, was to produce a genuine infection which was accompanied by high fever, of a kind which could be brought under control at will. Malaria therapy seemed to satisfy all these conditions, and I therefore decided to ask the patient to consent to this treatment, explaining to him that it had never been in use for this purpose before, but that I had reason to believe it might succeed. As he had by now come to realize the formidable nature of his complaint and the limitations of our resources, he agreed to the experiment. Nevertheless, it was not without some hesitation that I arranged for an inoculation with malarial blood on April 4, 1934. This inoculation was successful, the reaction reaching a peak of 105° F. on April 15 and 16, and

finally being checked after some eight days by quinine treatment. The effect on the eruption was remarkable. As the fever reached its maximum both the tumours and the pre-mycotic areas melted away, leaving a skin almost normal in appearance. Seemingly the experiment had been a success. It soon, however, became evident that the improvement was not to be completely maintained, for in a lesser but nevertheless definite degree the tumours and pre-mycotic areas gradually returned. Here, nevertheless, was at least enough to warrant a second inoculation, which took effect on July 12, the artificially produced malaria being permitted to follow a course of some twelve days, accompanied by high fever and rigors. A repetition of the previous course of events was noted—i.e., a clearing up of the eruption and then some recrudescence. Nevertheless, by these two treatments the degree and extent of the disease had been so much reduced that it was now possible to resume x-ray therapy, and by it to arrest and check the now relatively small amount of eruption. It is interesting to record that in November, 1934, an intravenous injection of pyrifur was made, producing a temperature of 101.4° F. The result was disastrous: considerable new erythematous patches developed, and the original mycotic lesions were all aggravated, some days elapsing before the skin readjusted itself to its previous state. This experiment suggests, if no more, that it was not the fever as such but the underlying disease process, of which the fever was a symptom or reaction, that brought about the improvement; which may remind us of the distinction between artificial protein shock and the very complex reactions of a natural morbid process such as erysipelas or malaria.

Third Admission: April 8, 1936, to August 5, 1936

The period following the second discharge from the skin wards in December, 1934, up to November, 1935, can be described as one of comparatively good health. Then a deterioration set in. Severe backache was experienced, with vomiting and progressive anaemia. The spleen was considerably enlarged and there were palpable glands in the right axilla. All these symptoms could seemingly be accounted for by earlier conditions—the splenic enlargement being attributed to what was supposed to be the recurrent malaria, the enlarged glands to a neighbouring patch of affected skin, and the anaemia to the prolonged radiotherapy. On admission to a medical ward on April 8, 1936, the patient was pale and looked very ill. He complained of epigastric discomfort, occasional vomiting—not related to food—backache, and loss of weight. Of the previous extensive eruption there now remained only a dry patch over the right scapula and two small patches on the legs. The liver, spleen, and a group of glands in the right axilla were all enlarged. For some fifteen weeks there was present an irregular pyrexia up to 100° F., with occasional rigors. Blood counts made on several occasions showed an anaemia which persisted in spite of haematinics such as iron and liver. There was no evidence of haemolysis and no reticulocytosis. No malarial parasites were observed. The white cell count disclosed a leucopenia with a normal differential count. The absence of an eosinophilia calls for comment. On discharge from hospital on August 5, 1936, the patient is reported to have said that he felt quite fit, and his weight, which had fallen to 8 st. 7 lb., had then reached 10 st. 4 lb.

Fourth Admission

The fourth and last phase includes a period between re-admission on September 22 and the death of the patient on November 19, 1936. The recurrence of the abdominal pain with rigors and pyrexia, the enlarged glands, liver, and spleen, together with other signs and symptoms, if not unquestionable, were at least favourable to the diagnosis of Hodgkin's disease, and this was supported by the microscopical examination of a lymphatic gland removed on October 7, 1936, which showed loss of structure, diffuse fibrosis, endothelial proliferation, and occasional giant cells of the Hodgkin type. Although there were no eosinophils Dr. Scarff reported that the appearances were strongly suggestive of Hodgkin's disease. Throughout the fourth admission the general condition steadily worsened. Ascites developed, there was pronounced anaemia with a leucopenia, the white blood cells dropped to 2,800 per c.mm., and a fall of blood pressure and progressive weakness terminated in death on November 19, 1936.

Necropsy (Bland-Sutton Institute, 231/36)

The following is abstracted from the post-mortem report:

"The right pleural cavity contained one pint of clear straw-coloured fluid: there were dense pleural adhesions over the surface of the left lung. The heart weighed 8 oz., and was wasted, although the muscle was firm. There was an ulcer measuring 1 inch by 1/2 inch in the oesophagus at the level of the bifurcation of the trachea. Deposits of a firm white growth were present in the upper lobe of the left lung, in the spleen, and in the liver. Those in the lung and spleen measured up to 1 1/2 inches in diameter, whereas those in the liver were larger, some having a diameter of 2 inches, umbilication occurring in the superficial tumours which projected above the surface of the liver: the spleen and liver were both enlarged, the former weighing 27 oz., the latter 116 oz. There were three pints of clear fluid in the peritoneal cavity. A section of the femur showed the upper three-quarters of the shaft filled with red marrow. Histological examination of the white masses showed proliferation of cells with large clear nuclei resembling reticulo-endothelial cells. There were also numerous giant cells exhibiting two or three darkly stained nuclei. Although only a few eosinophils were present, the appearances were those of acute Hodgkin's disease rather than a reticulum-celled lymphosarcoma."

Commentary

The illness and death of this patient, as recorded above, have served to throw some light, if in no more than a relative and small way, on the pathology and therapeutics of an obscure skin disease. Expressed in their simplest terms the facts are these. The patient developed first the characteristic lesions of mycosis fungoides: he was brought before the Dermatological Section of the Royal Society of Medicine on May 17, 1934, and again on December 19, 1935, the diagnosis being accepted by all those present on both occasions (MacCormac, 1934, 1936). As the result of malaria therapy the extensive eruption was finally reduced to three small patches, as noted on the third admission (April 8, 1936), being subsequently and up to the patient's death in November, 1936, negligible or absent. This introduced a new therapeutic principle. Further, the terminal transformation in this case of what was at first mycosis fungoides into what became Hodgkin's disease seems to establish the unity of these two clinical entities, a relation that has often been suggested. If the evidence in this case is considered good enough to establish this relation, then it follows that there is an aetiology and pathology common to both these forms of reticulo-endotheliosis. Nevertheless, as Sir Humphry Rolleston (1924) has pointed out, in the usual run of cases of Hodgkin's disease the changes are confined to the lymphoid structures—namely, the lymphatic glands, spleen, walls of portal vessels—and in the interstitial tissue of the lungs, kidneys, bone marrow, subcutaneous tissue, and serous membranes. Lymphadenomatous nodules in the skin are of extremely rare occurrence. Sir H. Rolleston had been able to collect only twelve cases in 1924: such nodules, I would venture to suggest, are in the nature of metastases. Since mycosis fungoides similarly keeps to its own territory, only rarely invading the deeper tissues or viscera, it would seem that the hypothetical virus has a sort of selective affinity for different parts of the reticulo-endothelial systems. Nevertheless the cure of the skin disease in this case did not prevent the subsequent development of a progressive and fatal form of reticulo-endotheliosis elsewhere. In another field—namely, that of micro-anatomy—there is to be obtained further support for the identity of mycosis fungoides and Hodgkin's disease, and in this connexion Civatte's (1936) authoritative observations in the *Nouvelle Pratique Dermatologique* may be quoted as follows:

"In lymphogranulomatosis and mycosis the infiltrates show a greater variety (as compared with the infiltrates of leukaemia).

Polynuclear neutrophils and eosinophils—and the latter sometimes in great abundance—lymphocytes, plasmocytes, and all the other polyblasts, are met with there in proportions which vary according to the case. But there are always a considerable number of large histiocytes with a voluminous nucleus and poor in chromatin, with a homogeneous and faintly basophil cytoplasm: sometimes these cells undertake the office of macrophages; they are thus genuine histiocytes. Here and there one of these cells is provided with a budding nucleus, and recalls a Sternberg cell; it is a transitional form. Sometimes even a true Sternberg cell is met with, identical with those which are seen in abundance in the glands in Hodgkin's disease. The diagnosis of cutaneous lymphogranulomatosis will be made if the clinical type is not clearly that of mycosis. But it must be realized that the most characteristic mycosis will also sometimes show genuine Sternberg cells. The microscope cannot, thus, distinguish between the two affections. Moreover, it is not certain that these are two different diseases: mycosis is perhaps only a special clinical type of lymphogranulomatosis, a pure cutaneous lymphogranulomatosis. It is known, moreover, that in certain cases an 'adenitis' appears in the terminal stages of the evolution of mycosis: the primarily cutaneous lymphogranulomatosis has invaded the glands."

Many authorities are prepared to go much further, creating a single and comprehensive group, the lymphoblastomas, embracing conditions both simple and malignant, such as lymphoid leukaemia, Hodgkin's disease, lymphosarcoma, and mycosis fungoides—the type-cell common to all being, according to M. H. Gordon, A. E. Gow, and Sir H. Rolleston (1937), the lymphoblast. The creation of this group relies upon intermediate and transitional forms which are deemed sufficient to link the whole together. The case recorded above serves only to relate two members of the larger group—namely, Hodgkin's disease and mycosis fungoides. From another source I am able to produce some evidence showing that mycosis fungoides is not malignant or cancerous or sarcomatous. In 1919 the late Dr. Henry Beckett, working in the Cancer Research Laboratories in the Middlesex Hospital, demonstrated that when tissue is fixed in weak formal Müller solution, stained with aniline acid fuchsin, and differentiated with picric acid alcohol, the Altmann granules which then appear are profuse in the cells of inflammatory exudates and of simple tumours, whereas they are absent or negligible in the cells of malignant growths. This differentiation is usually so well marked as to be apparent even when the slide upon which the section is mounted is held up against the light and examined with the naked eye, the redness or absence of redness due to the presence or absence of the acid-fast granules being then discernible in many cases. In 1913 the late Dr. J. J. Pringle brought a patient with mycosis fungoides before the Dermatological Section of the Royal Society of Medicine. In this case I had found giant cells (Sternberg cells) and had provided Dr. Beckett with tissue, which he prepared as described above and in which the Altmann granules were demonstrable in the cellular infiltrate in abundance. This, so far as it goes, favours the non-malignant nature of mycosis fungoides and, by inference, of Hodgkin's disease also.

In putting together the above record I have drawn upon the reports and clinical notes of my colleagues in the medical department and the Bland-Sutton Institute of Pathology, who have generously permitted me to make use of them. I am under an especial debt to Dr. Arthur Willcox, who when medical registrar had collected much of the material upon which this paper is based, and with whom, had circumstances permitted, I had hoped to collaborate.

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THE T.N.T. HEALTH HAZARD

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When toluol, or toluene, is completely nitrated with a mixed acid containing sulphuric and nitric acids, trinitrotoluene (T.N.T.) is produced. This is a pale yellow solid with a melting-point at about 80° C. Nitration is completed at about 100° C., the T.N.T. then separating out from the acid as a dark yellow oily liquid. The molten T.N.T. is washed with hot water until free of acid and is further washed with a solution of sulphite of soda to remove impurities. The purified T.N.T. is dried at 100° to 110° C. by running it through a steam-jacketed pan. The finished product can be obtained:

1. As flake, by cooling a film of molten T.N.T. on a revolving drum. A knife of brass which presses against the front of the drum removes the film as small flakes.

2. As crystalline powder, by cooling the molten T.N.T. in a pan, with slow continuous stirring. Lumps are removed by sieving.

3. As slab or biscuit, by allowing the molten T.N.T. to solidify in shallow pans.

4. As crushed flake, by passing flake between rollers and sieving to remove the larger particles.

Flake and crushed flake can be pressed into slabs. Crystalline powder and crushed flake are used in explosive mixtures—e.g., baratol, amatol, ammonal, and military ammonal with charcoal. Thus T.N.T. workers may be exposed to: (1) inhalation of fume from the molten variety; (2) inhalation of T.N.T. dust into the nose, mouth, and throat, with subsequent ingestion; and (3) skin absorption from contact with any of the above forms. Two of the above may coexist, for the vapour from molten T.N.T. will deposit as a crystalline dust on any surface colder than 70° C. Thus a worker thought to have fume contact only may, in addition, be exposed to ingestion. The effect of entry of T.N.T. into the system, the signs denoting entry, and the symptoms which may exist without signs, together with all measures necessary to prevent absorption, should be known to those responsible for the health of workers. The carrying out of such measures, including selection of those employed, should, under management, be controlled by a medical man or woman. Neither the State-registered nurse nor the experienced supervisor is sufficient to maintain adequate check on the hazard, although each is of great help if co-operating. Medical practitioners who lack industrial experience or who are unfamiliar with T.N.T. medical literature can be completely surprised, as is shown by the fact that recently several cases of T.N.T. toxic jaundice have not been recognized as such until within a day or two of death. Informative references recommended are:

1. "The Origin, Symptoms, Pathology, Treatment and Prophylaxis of Toxic Jaundice observed in Munition Workers": a discussion by certain Sections of the Royal Society of Medicine (January, 1917).

2. "Researches into the Toxic Properties of Trinitrotoluene," by Benjamin Moore, D.Sc., F.R.S. (On behalf of the Medical Research Committee; 1916).

3. "Trinitrotoluene Poisoning." Officially communicated by the Ministry of Munitions. (*Lancet*, 1916, 2, 1026.)

Prof. Moore's report is an account of an investigation into the properties and chemical reactions of T.N.T. during which conclusive experiments to determine the modes of entrance of the compound into the body were made. He describes the characteristic facies met with in many T.N.T. workers, and concludes with a description of Webster's test for the presence of T.N.T. in the urine. This report,

although published in 1917, can be accepted as being up to date.

The *Lancet* article embodies the Moore report, and is presented under the following headings: (1) digestive troubles, (2) blood changes, (3) channels of absorption, (4) differential diagnosis, (5) post-mortem appearances, (6) predisposition, (7) preventive measures and treatment. In an addendum Webster's test is described, with advice as to how the result should be interpreted. This article, in referring to cases of T.N.T. toxic jaundice in munition workers, states that 67% were caused by amatol and only 6% by ammonal, notwithstanding that ammonal contained the larger proportion of T.N.T. It suggests that the greater amount of ammonium nitrate in amatol was responsible, on account of its hygroscopic nature, for facilitating the passage of T.N.T. through the skin. Whatever justification existed in 1916 for regarding the compounds mentioned as standard in respect of their T.N.T. content, it would not apply to-day; for both amatol and ammonal vary considerably in the proportion of T.N.T. present. That wetness of hands caused by ammonium nitrate aids the entry of T.N.T. through the skin is debatable. T.N.T. is quite insoluble in ammonium nitrate, and absorption from solution would not arise. Some skins of fine texture may suffer breakdown of the epithelium from ammonium nitrate, which acts not unlike brine, and so the way be paved for absorption; but it should be kept in mind that the percentage of T.N.T. present is the factor which is the hazard and that the greater the contact with T.N.T. the greater is the health risk.

Schedule for Control of the Hazard

1. Selection of workers.
2. Record of physical condition on entry.
3. Record of sick absences.
4. Periodic examination for signs of T.N.T. absorption.
5. Record of T.N.T. stains in grades—for example, slight, gross, extensive—and also sites, such as hands, feet, under-clothing (shirts and stockings), overalls.
6. Co-operation with the works chemist in carrying out Webster's test; this to be done always by the same person if possible.
7. An arrangement that foremen, chargemen, supervisors, or other responsible persons draw attention to workers looking off colour and to any complaining of fatigue or breathlessness.
8. Insistence on provision of protective clothing and control of dust by adequate ventilation; also insistence on washing the hands before all meals, and both hands and face before going home.
9. A reserve of alternative work for those that have to be "stood off."

Selection of Workers

Selection is justified, for a definite health hazard exists, and under present conditions there should be no difficulty in placing rejected candidates elsewhere. Further, those susceptible to T.N.T. may not be protected by even the most satisfactory working conditions and meticulous supervision, and it is well to know the type from which they may spring. Cardinal points for guidance are age, average good medical history, fair but not necessarily high standard of physical fitness, and evidence of attention or inattention to personal hygiene. These factors possess a varying standard, according to whether the process is the manufacture of T.N.T. or the subsequent handling of the product as in shell and grenade filling. Not infrequently fewer health casualties are met with during the manufacture in bulk of a toxic substance than occur in workers using it as a component of other manufacture or in assembly. On manufacturing plant only men are employed in this country; their numbers are out of all proportion to the thousands of young women newly engaged in shell, bomb,

or grenade filling, and it is concerning these that recommendations as to selection apply.

Age is important, and 19 years should be the minimum for T.N.T. contact. Below this the incidence of susceptibility is high. In the war of 1914-18 persons aged 14, 15, and 16 years died from T.N.T. toxic jaundice after five or six weeks' work. Age in the upward direction is not significant, for middle-aged and elderly workers have been employed for many years in T.N.T. processes without suffering in health. In making selection avoid persons who show sweaty palms, for the orifices of the sweat glands will be open during work, thereby promoting skin absorption. Persons who sleep in underclothing worn at work add by this habit to the health risk. Anyone with a history of jaundice should be rejected. A yellow tinge in the sclerotic, often seen in those suffering from constipation, should call for rejection, because the colour alone will cause confusion at the periodic medical examination, while should constipation exist it will probably be habitual, which is a further objection. Long tapering finger-nails should be discouraged by supervisors, particularly when the finger-tip is not suited for this fashion, as explosive may lodge under the nail and be subsequently ingested. Nail-biting is for the same reason very objectionable, and evidence of this habit should be looked for, as it is resorted to whenever the hands are idle.

For women of 19 years body weight in indoor clothes of 120 lb. and upwards should be aimed at, and no female under 105 lb. should be exposed to T.N.T. contact. Such light-weight young women may be quite fit for effort, but, whatever the reason, experience has shown that it is in this class that T.N.T. sickness is apt to occur.

Recording Physical Condition.—Among other items age, height, weight, and history of anaemia or jaundice should not be missed. The weight will be of value later when dealing with cases under observation. Recent experience of many thousands of examinations is that in some areas a high percentage of women in the 20-30 year age group are 14 lb. underweight. A further point is that doctors are not furnished with physical details concerning persons allocated to them under the National Health Insurance Act, and when consulted by a new patient would not know if loss of weight had taken place.

Sick Absences.—For five months following entry into employment these should be recorded as a T.N.T. group and kept in a suspense file. At the termination of this probationary period all workers still fit can be regarded as normal in respect of exposure to T.N.T., but during the period absences certified as anaemia, gastritis, general debility, etc., should be the subject of investigation by the works medical officer, for often such certificates refer to a condition of malaise not definitely diagnosed. A Webster test at this stage is very useful, whether the result is negative or otherwise.

Periodic Inspection for Signs of T.N.T. Absorption

In the case of workers with less than four months' service inspection should be done weekly. After this period the frequency can be reduced, provided co-operation has been established between the medical officer and responsible persons on the job and with the welfare supervisor and factory nurse. A further essential to less frequent examination is that the medical officer should regularly scrutinize the entries recording attendance of workers at the ambulance room on account of indisposition or for such minor injuries as might facilitate the passage of T.N.T. through the skin. At the inspection the worker's hands should be examined and the T.N.T. facies looked for. On the hands brown tarry-looking stains may be found on

the palms and the palmar aspect of the fingers. These emit an odour which can be detected if sought for, and impart a bitter taste to the tongue. Staining may be found on the soles of the feet if T.N.T. dust is spilt on the floors. Undue staining should be recorded, for the stain is a reservoir from which T.N.T. may continue to enter the system after the worker has been "taken off." Gross staining may point to carelessness, to failure to use protective clothing, and, if on the scalp, to absence of head-covering. There is evidence that T.N.T. may be slightly soluble in fats and oils, for a greaser on a T.N.T. plant will incur large intense stains more readily than other workers. The significance of staining depends on its extent. Most workers will show it in some degree, and in the absence of symptoms or of a marked facies (referred to later) no particular notice need be taken.

The T.N.T. Facies

This is characteristic, and consists of pallor comparable to that of shock, with coloration at the lips, lobes of the ears, and curl of the helix. This appearance has been referred to as cyanosis, and the lips have been described as "ashen grey." These terms, more or less correct, fail to convey an exact picture, for the hue is brighter than cyanosis—it is lilac in shade. On the lower lip it is so unreal as to convey the impression that a mistake has been made in the lipstick used. The sites mentioned are selective: the coloration is never seen on fingers or toes. After some experience the T.N.T. facies is easily recognized. Two important points should be mentioned: it is greatly modified by excitement or recent exercise on the part of the worker—for example, hurrying to be in time for the inspection—and surprisingly so by artificial light. Under illumination through mellow-tinted globes it disappears, but becomes obvious when the worker steps into the daylight.

The T.N.T. facies has been ascribed to oxygen starvation resulting from conversion to methaemoglobin (or nitric-oxide-haemoglobin) of the oxyhaemoglobin of the red cell by T.N.T., and to a vasomotor phenomenon unrelated to any blood changes. Regarding the former, it is known that the facies may be present while the person concerned remains symptomless as regards lack of oxygen. He or she may carry on normally, unaware of alteration in well-being and showing no sign of fatigue or breathlessness. Further, the facies will exist when the red cell count and haemoglobin percentage are normal for the particular person. Oxygen has been liberally administered by me, without appreciable change, to persons showing the T.N.T. facies. It is a fact that when a worker with this facies is removed to another job he loses the colouring—a change credited to reoxygenation, but which may not be the correct explanation.

Vasomotor Theory

In connexion with the tinting of the ear lobes it is interesting to recall that it was in the rabbit's ear that Claude Bernard first demonstrated the action of the vasoconstrictor fibres, and it is now known that capillaries as well as arteries are influenced by vasoconstrictor stimulation. Stimulation of the vasoconstrictor centre in the brain would, by bringing about stasis in localized areas, induce there an increased venosity of the blood. This explains why the facies can be obvious while the person concerned remains symptomless.

As illustrative of the application of the vasomotor theory to the T.N.T. facies, I refer to an appeal in the *British Medical Journal* of November 15, 1930 (p. 848) from the medical officer of a public school for diagnosis in the case of a boy who, after receiving dental treatment which left a fibre stopping in a incisor tooth, drew, while in the school laboratory, a few drops of aniline dye into his mouth from a pipette. He very soon

collapsed and developed on the face, neck, and hands a "deep blue-black colour." The replies diagnosed the occurrence as a case of aniline poisoning with formation of methaemoglobinemia. Commenting on the case, I drew attention (*Journal*, 1930, 2, 980) to the fact that there was not enough benzene chemical (nitro or amido) in a few drops of dye to cause methaemoglobinemia, and suggested that the dye soaked into the fibre stopping and dissolved in the lipoids in the incisive nerve and thus reached the brain. The blueness and the distribution could not have been a blood change, but could arise from action of the sympathetic or central nervous system, or of both.

The works medical officer would do well to keep both theories in mind. In the symptomless cases the vasomotor view explains the shock-like pallor of the cheeks, the tinted ear lobes, and coloured lips, but some types of T.N.T. poisoning may develop blond changes, and a symptomless case may through continued exposure become one of a different and serious type.

T.N.T. Absorptinn v. T.N.T. Poisoning

Not every case showing the T.N.T. facies, even when associated with a positive Webster test, should be regarded as T.N.T. poisoning or be notified as such, otherwise many unnecessary notifications will be made and the position as regards the T.N.T. health hazard confused. The dividing line between absorption and poisoning will, of course, be drawn according to the experience of the medical officer and the opportunities he has for clinical investigation—for example, Webster test, etc. The correct practice in cases in which the facies is pronounced and Webster's test is positive is to suspend such workers from T.N.T. contact (nnt from work) for a week or ten days. If the same worker requires suspension several times he is tested for susceptibility (see Webster's test), and the intensity of a positive result in relation to the amount of exposure he has been subjected to after a previous negative result determines whether or nnt he is classified "susceptible" and removed permanently from contact with T.N.T.

Symptoms which may accompany the characteristic facies and still retain the case in the category of absorption are: onset of breathlessness, constriction felt beneath the mid-sternum, and malaise. Symptoms which point to systemic poisoning are: gastric ache felt in the early morning; anorexia which has been preceded by increased appetite; physical and mental lassitude; jaundice, exceedingly slight at onset, often first observed as a tinge in the sclerotic; nausea and headache combined; and substernal constriction plus T.N.T. facies.

In some factories I have come across instances in which this substernal constriction was diagnosed as cardiac in origin and the worker certified to be suffering from heart strain. It is easy to make this mistake if the worker's doctor is unaware that the physical effort involved is most unlikely to cause heart strain, and also if the examination has taken place under bad or artificial lighting conditions. The symptom is more often met with in young women of the slightly anaemic type than in others, and the pain or ache complained of may be oesophageal in origin. When it is accompanied by a definitely positive Webster test the case is akin to that of gastric ache placed in the systemic poisoning category.

Doctors in munitions areas must not conclude from the scheme of medical supervision laid down as being essential that contact with T.N.T. necessarily creates sickness, for such is far from being the case. In a large munitions works in the North the manufacture of T.N.T. has gone on unceasingly for the past sixteen years without a single case of serious illness from T.N.T. contact, and many of the workers have been on the job all this time.

Webster's Test.—A description of Webster's test and its interpretation cannot (for reasons of space) be given here, but briefly it is a transient colour reaction indicating, when positive, that absorbed T.N.T. has been acted on during metabolism and has been excreted in altered form. The test in no way denotes systemic poisoning. Positive results can be graded from "trace" to "intense," and this standard helps greatly in the check-up on potential sickness and on susceptibles, since the intensity of a positive result can be considered in relation to the known exposure to T.N.T.

It cannot be too strongly urged on practitioners in munitions areas that they should make quick contact with the works medical officer when they are consulted by women who are exposed to T.N.T. and whose symptoms suggest an industrial origin. This attitude is particularly desirable when the altered health occurs within four months of employment.

THE PROBLEM OF OPERATION FOR RETROVERTED UTERUS

BY

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Whether or not to advise operation in cases of backward displacement of the uterus has always been one of the most controversial subjects in gynaecology. The fact that there are so many different methods of correcting the retroverted uterus—some textbooks devote as many as eighty pages to describing different techniques—shows that there is no universally satisfactory method of operative treatment. However, although many writers either recommend or decry the operation, recent statistics of cases well followed up are not numerous. The out-patient departments of most gynaecological hospitals can produce several unfortunate women who have had some operation or other performed for backward displacement and are no better, and, perhaps what is even more important, the general practitioner who has persuaded some patient to have such an operation done, and finds her symptoms still continue, is puzzled as to what to advise for similar sufferers. In fact, he may get a general impression that all such operations are useless. The question remains, Is he justified in this opinion? It is a well-known fact that the grumbler always reappears: the cured and grateful patient often is not seen again.

The successful results of various operations for backward displacement can be divided into two classes: first, those which are an anatomical success, the uterus being in the anteverted position on examination; and, secondly, those which are also cured of their symptoms—subjective success. It has been found that these two do not always go together.

The Literature

As usual, American writers report the largest number of cases. Graves and Smith (1931), examining 3,358 patients, found that after two years the anatomical cures were 75%, symptomatic cures 63.4%, and relieved 28.2%. They used the Olshausen operation, in which the uterine ends of the round ligaments are stitched to the anterior abdominal wall. Hurd (1927) (1,000 cases in five and a half years, done by many different methods) found 88% successes in the whole series, both anatomical and symptomatic, with 12% failures. The purely anatomical successes were 96% for the whole series. He found that the Gilliam operation was the best for curing abdominal pain and backache but was not of very much value for sterility. Abdominal pain was the most frequent symptom remaining after operation. Gardner (1935) (145 cases), using a combined technique

of shortening the utero-sacral ligaments followed by the Baldy-Webster operation, reports 85% complete relief both anatomically and symptomatically. Two patients, however, died of pulmonary embolism, and only 11 became pregnant afterwards. Wollner (1932) (100 cases), using a modified Gilliam operation, reports an "excellent result" in 65%, but he does not say whether they were an anatomical success. He points out that pain in the back is usually not relieved by operation; and, in fact, it should always be explained to the patient that her symptoms may be no better afterwards. He particularly stresses the bad psychological effect of wearing a pessary, but points out that this should always be tried first to see if the symptoms are any better when the uterus is anteverted. Falk (1937) in America and Fletcher Shaw (1931) and Luker (1931) in this country all agree that a pessary should be tried first, at least for a year. Sharman (1932), reporting from Glasgow, says that he uses several methods, including the extraperitoneal Gilliam operation, the Baldy-Webster, and the anterior shortening of round ligaments. He finds that the Gilliam gives an anatomical cure in 93%, with 87% showing a symptomatic cure also. The anterior shortening gave subjective success in 66.7%. He found that after pregnancy the uterus reverted to its old position in 14% of his cases, and 25% of patients operated upon for sterility subsequently became pregnant. Salmond (1935), at the Royal Free Hospital, using the Mayo modification of the Gilliam operation, reports 24 "good results" out of 32 cases seen.

Since this article was completed Charles (1940), in London, reports only 2 failures in the anatomical sense out of a series of 98 cases examined, but quite a number of symptomatic failures. He found that dyspareunia could be cured as a rule, but menorrhagia, backache, and dysmenorrhoea often remained.

Present Series

In this series followed up in Bristol there were altogether 120 patients operated upon for backward displacement of the uterus between the years 1930 and 1937 inclusive. All these were written to and asked to attend for examination if possible; 92 did so, and 6 wrote letters. Practically all the patients were between the ages of 18 and 40 years at the time of operation. Of the 92 who were re-examined 4 were single and 88 married. Nearly all were sent up by their own doctors from both town and country practices because of their symptoms, which were the usual ones associated with the condition—namely, backache, abdominal pain, either left- or right-sided, menstrual disorders usually in the form of menorrhagia, dyspareunia, or vaginal discharge. Every patient had one or several of these symptoms. It was found that lower abdominal pain is an even more common symptom than the time-honoured backache. None of these patients had tried wearing any pessary before operation, nor had any had a baby less than twelve months previously. Neither had any patient been investigated by the orthopaedic department: it was presumed, rightly or wrongly, that the symptoms were caused by the retroversion.

Other patients were sent up by their doctors for sterility, with or without other symptoms; of these, 19 reported. There was a further small group of patients upon whom operation was performed because of repeated abortion, which was thought to be due to the retroverted uterus.

Operation.—The operative technique used in every case was a simple one. A preliminary dilatation and curettage was performed, and the abdomen was then opened by a curved transverse incision just above the symphysis pubis, which would later be covered by the pubic hair. The uterus was identified and the round ligaments were short-

ened by means of medium linen thread—a running stitch going from side to side the length of each ligament. The two ends of the thread were tied firmly so that the round ligament was plicated. Another stitch was then put through each fold of the plication and tied over the top to ensure firm anchorage. If the ovaries were found to be prolapsed they were suspended by shortening the ovarian ligaments, and any small retention cysts were pricked. All the patients made a good immediate recovery: there were no post-operative deaths and no complications.

Results

In studying the end-results it must be noted that every patient seen had been operated on at least three years previously, some as long as seven years. It was found that the cases could be divided into definite groups. First of all there were those which had a perfect anatomical result, the uterus being well anteverted, ovaries not prolapsed, and all symptoms cured; these formed exactly 50% of all the cases seen.

The second group comprised those patients in whom the anatomical result appeared perfect but in whom certain symptoms still remained or new symptoms had arisen since operation. This group contained 27 patients, or 29.3% of all those seen. The main symptoms were backache, pain in the lower abdomen, and menstrual disorders. Complaint was often made that before operation the pain was on the right side, whilst now it was on the left, or vice versa. Eight patients complained of vaginal discharge, mostly leucorrhoea, 5 of dyspareunia though the ovaries were not obviously palpable, 2 had "bearing-down" pains, and 3 had urinary symptoms. It is obvious that many of these complaints have a psychological aspect, and it is well known that once some women's attention has been drawn to their urogenital organs they always tend to have trouble there; in fact, they are not grateful even if cured. However, taking both these groups as a whole, there was a perfect anatomical result in 79.3% of cases.

There was a third, rather strange, group of patients who came up very happily and reported that they had been perfectly well since the operation and that all their symptoms had gone. One or two even brought bunches of roses as a token of gratitude! However, on examination it was found with regret that the uterus had gone back to its old position and was still retroverted. There were 8 cases in this group, or 8.7% of the whole. Naturally these women were not told what had happened, and they went away very pleased. Here, again, either there must be some psychological factor helping to produce a cure or else the mere fact of the uterus being retroverted does not necessarily cause all the symptoms that are attributed to it. There must be some additional factor for their discomfort, but it is not always clear what this factor is. It is well known that a retroverted uterus may be discovered in an unmarried girl that gives rise to no trouble at all; therefore, why should the mere fact of retroversion necessarily cause all these symptoms in the married woman?

The fourth group consisted of 11 cases which were counted as failures. In 7 of these the uterus had reverted to its old position and the symptoms were still present or were multiplied. In 4 some other condition had arisen (fibroids in 2 and severe bleeding in 2) that necessitated a hysterectomy.

It was interesting to note that altogether 21 patients had normal pregnancies after the operation, and in 17 (90.4%) the uterus was still in a good position after delivery, and there were only two known failures.

Lastly, there were the 19 patients who were operated upon mainly because of their sterility, 11 (57.9%) of whom subsequently became pregnant. As compared with other

results this is a very high proportion, as 50% seems to be the highest figure recorded. Of the three patients treated for repeated abortion two did not have any more abortions.

As stated, six patients wrote and reported their condition. However, as the position of the uterus was not known they are not included.

The Question of Operation

Now, having seen these results, the question arises, What is the general practitioner to do with the patients who come to him with symptoms that are associated with a retroverted uterus? Should he advise operation or not? If possible a pessary should always be tried first, and if it relieves the symptoms the operation will probably be a success. However, some patients refuse to wear one; and sometimes the use of pessaries has a bad mental effect and may upset marriage relations. If the main trouble is backache, particularly if associated with retroversion following on a recent labour, the patient should, if not relieved by a pessary, be examined by an orthopaedic surgeon, as in many cases the trouble is not due to the retroversion at all but to temporary functional muscular insufficiency, or a true traumatic backache caused by injury to the pelvic ligaments or lower lumbar vertebrae at delivery. These factors are often overlooked. However, if the patient wishes it, the operation for replacing the uterus may be advised, but it should always be explained that it may not be successful, particularly if she gets no benefit from a pessary.

Why the operation is a failure in so many cases is an interesting speculation. Probably the anatomical failure is due to the fact that the round ligaments are not really strong enough to hold the uterus in position without some additional support, particularly if it is somewhat bulky. The symptomatic failures are no doubt due to the fact that these women believe the retroversion to be the cause of all their troubles, when actually these are due to some other factor, either organic or functional. Clare (1933) suggests that if at operation the uterus is seen to be congested it is very likely the source of the trouble, but if it is of normal colour the malposition is probably of no importance, and the symptomatic results will be poor. He therefore makes all his patients walk about before operation, and has them anaesthetized in a semi-sitting position in order to produce natural living conditions.

However, in cases of sterility or repeated abortion for which no other cause can be found in either the husband or the wife the practitioner is quite justified in pressing operation, as there is a reasonable chance that a successful pregnancy may result.

Summary

In 120 patients operated upon for backward displacement of the uterus between 1930 and 1937 it has been found that only 50% gave a result that was perfect both anatomically and symptomatically.

Practitioners are therefore advised to look for some other cause for the symptoms, either functional or orthopaedic.

A pessary should always be tried before operation is suggested.

In cases of sterility for which no other cause can be found, operation gives a reasonable chance of success.

I am grateful to Prof. Drew-Smythe for allowing me to publish these figures.

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A SIMPLE OPERATION FOR REDUCTION OF FRACTURES OF THE OS CALCIS

BY

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Fracture through the waist of the os calcis is still the "unsolved fracture," and brave is the man who claims any great measure of success in its treatment. Surgical literature abounds with papers dealing with results and methods of treatment, but, as McFarland pointed out, the disability resulting from this fracture, as revealed by statistics from various insurance companies, shows that skill and experience seem in no way to guarantee a better result than can be attained by unspecialized treatment.

The numerous methods employed in its treatment serve to confirm the statement that this fracture is still "unsolved." During my relatively short career as a practitioner of the surgical art I have turned from one mode of treatment to the other in dealing with these fractures. At one time fixation in plaster-of-Paris was used, without any attempt at reduction; then came the dreadful procedure of "pulverizing" the fractured bone and moulding it somehow into shape; then active skeletal traction was employed to pull down the elevated posterior fragment; then Böhler showed that lateral compression would reduce another factor in the displacement. All our results seemed poor, and American surgeons advocated immediate fusion of the subastragaloid joint, essentially on the grounds that conservative treatment is merely a waste of time, as almost all cases develop subastragaloid arthritis and will require fusion anyhow. But even after obliterating the various adjacent joints we became all too familiar with the patient with the shuffling gait and the painful foot who haunted our massage and out-patient departments and made the hours we spent there a misery, and for whom nothing could be done.

In spite of these setbacks we cannot admit defeat. These fractures are becoming more and more common as the speed and height at which we live increase, and we must accept the challenge to find some certain cure for them, just as we have done for so many others which were formerly associated with such poor results. We have mastered the treatment of the Colles and many other articular fractures, and there is no reason why good results should not be obtained in fractures of the os calcis.

The results which have been attained in Colles's and other para-articular fractures have shown that the secret of success lies in anatomical reduction. But this reduction must be carried out early. We have learnt to regard the Colles fracture as a surgical emergency, as urgent as, or more urgent than, an acute appendix; for we have found that joint stiffness and its complications, pain and atrophic bone changes, can be avoided by early anatomical reduction. Our attitude to fractures of the os calcis is entirely different. If admitted to hospital late in the day they are lucky if they are even radiographed, and if reduced within a short period of the accident the patients must consider themselves extremely fortunate. I do not discount the zeal or efficiency of those treating them. We have been brought up to look on these fractures as pretty hopeless, and have, too, been habituated to "delayed" methods of reduction (skeletal traction, for instance, taking days to reduce the deformity), and so do not realize that "such fractures are dangerous."

At the present time many fractures of the os calcis must be treated without proper equipment, and for this reason, too, a simple operation will be described which successfully reduced a fracture we had failed to reduce by skeletal traction. The equipment needed is minimal, and the ease and the simplicity make it suitable for use by persons with no special surgical skill.

Case Report

An aircraftman in the Fleet Air Arm, aged 22, fell twenty-five feet on November 21, 1940, and landed heavily on his left foot. On admission to a hospital ship he was found to be suffering from compression fracture of the left os calcis, with severe comminution and gross upward displacement of the posterior fragment.

First Operation.—On November 22, under pentothal and spinal anaesthesia (Dr. R. F. Woolmer), a Steinmann pin was inserted through the soft tissues above the posterior fragment, behind the ankle. By means of this, screw traction was carried out with a Watson-Jones lower-leg-fracture traction apparatus. While full traction was maintained, lateral compression of the fracture was effected by means of the handles of a pair of Stille's plaster shears, used like a nut-cracker. When reduction was thought to have been effected the limb was plastered and the Steinmann pin removed.

Radiographs, however, showed that reduction had not been attained. The fracture was so grossly displaced that it could not be left as it was. We had two alternatives: continuous skeletal traction by means of a Kirschner wire through the posterior fragment, or immediate fusion of the subastragaloid joint. A Kirschner wire seemed unlikely to succeed any more than a Steinmann pin, and arthrodesis was dangerous on account of the fear of sepsis with the unhealed wounds present from the Steinmann pin. The simple procedure described below was therefore carried out.

Second Operation.—On November 28, under pentothal and spinal anaesthesia (Dr. R. F. Woolmer), a small incision was made over the posterior surface of the os calcis, and into this a strong Steinmann pin was inserted forwards through the body of the posterior fragment until the point was judged to be at the fracture through the waist of the bone. The handle of the pin was then rotated in a plantar direction, the effect being to

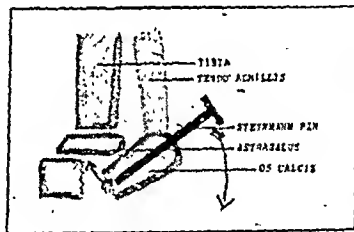


FIG. 1.

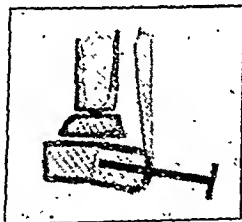


FIG. 2.

FIGS. 1 AND 2.—Diagrams showing reduction of fractured os calcis by means of a Steinmann pin. These are exaggerated to show the torque effect produced by depressing the handle of the Steinmann pin.

lever down the posterior part of the fractured bone and at the same time to elevate the anterior part. The patient was then taken to the x-ray department, with the pin still in situ, and the movement carried out under the screen, when it could be clearly seen that depression of the handle produced a "torque" effect on the fracture, the posterior part being depressed and the anterior part being elevated into its proper relation with the astragalus. Very little force was needed to bring this about, and full correction was easily obtained. A plaster cast was then applied around the fracture, which included the pin, the foot being in plantar flexion. We intended to leave the pin in position, fearing redisplacement, but when the cast had hardened it was found that there was no strain on the pin, which was accordingly removed.

Radiographs taken two days later showed no displacement of the fragments, and the patient was allowed to return to his ship.

Discussion

It is obviously impossible to discuss the method on one successful case, especially as I was unable to follow up the patient; but the simplicity of the procedure and the few instruments needed for its performance—especially at this time when many fractures must be treated in hastily equipped hospitals—justify publication.

The reduction clearly showed that descent of the anterior part of the posterior fragment is a factor in the displacement that has not been sufficiently recognized. It is difficult to see how simple traction on the posterior part of the fracture can be as successful in reducing this displacement as the torque force applied by a pin passing through the fragment.

By this method immediate and full reduction can be obtained safely, and no special skill or knowledge is required to carry out the operation. A carpenter's chest supplies accessible instruments which could easily be substituted for the Steinmann pin and the Stille shears. It is true that a simple closed fracture is rendered compound by the method, but our experience in all varieties of fractures shows that little is to be feared from this unless some foreign body, such as a plate, is left at the site of fracture.

Summary

A simple operation for reduction of fractures of the os calcis has been described which requires the minimum of equipment and of surgical skill.

Attention has been drawn to the downward displacement of the anterior part of the posterior fragment and to the ease with which it can be elevated into position.

The operation seems so obvious that I fear it may have been previously described. I can find no record of it, but if there has been I would offer my apologies.

Medical Memoranda

Traumatic Rupture of the Pectoralis Major

Although traumatic rupture of a muscle or tendon is by no means uncommon, the following case is thought to be worthy of record as I have been unable to find any previous description of the pectoralis major being so affected.

CASE REPORT

The patient, a miner aged 47, of excellent physique, sustained a severe blow on his right shoulder whilst working in the pit on February 6, 1941. He was knocking out some pit props when a large piece of stone, weighing approximately 25 cwt., struck his right upper arm a glancing blow; at the moment of impact the arm was in the position of abduction and external rotation. He immediately experienced severe pain in the right shoulder and right upper arm, and was subsequently unable to move the arm. After a few hours considerable swelling of the shoulder was noticed; this was followed by bruising, which soon became severe, over the anterior aspect of the shoulder-joint, the anterior axillary fold, and the upper half of the right arm. The patient attended the casualty department the same day, but a radiograph of the shoulder-joint and upper arm revealed no bony injury. He was not seen again until March 4, when he attended the surgical out-patient department complaining of a painful and weak right shoulder. He stated that he had been unable to move his right arm for six days after the accident and that he was gradually getting back the use of the arm, but that it still felt weak. He had recently noticed that his shoulder muscles "had gone to nothing."

On examination the left shoulder and arm were normal, the muscles being well developed. The right shoulder region presented a most striking picture. There was pronounced "hollowing" over the anterior aspect of the chest wall on the right side, the anterior axillary fold was absent, and the upper ribs were

unduly prominent. On attempted active contraction of the affected pectoralis major it was at once obvious that the whole of the sterno-costal part of the muscle had been ruptured at its musculo-tendinous junction, some 2 inches from its insertion into the lateral lip of the intertubercular sulcus of the humerus. The divided ends were easily palpable; they were widely separated, the main mass of the muscle being bound down to the inner aspect of the chest wall in the region of the sternum. The tendinous insertion could be felt to be comparatively freely movable, but the muscle itself had become firmly adherent in a contracted position and could not be moved apart from its surrounding structures. There was a gap of approximately 5 inches between the two ends, as measured with the arm to the side. There was at this time no external evidence of trauma, no swelling, and no bruising, and the patient stated that the pain steadily decreased as he regained the use of the limb. The movements of the shoulder-joint were almost full and were accompanied by relatively little pain. There was some weakness of adduction and internal rotation of the arm as compared with the normal side, but this was not unduly marked.

DISCUSSION

The following points are of interest:

1. The rarity of complete traumatic rupture of the sterno-costal head of the pectoralis major. The muscles and tendons usually ruptured by trauma are the quadriceps extensor cruris, the adductor longus, the tendo Achillis, and the plantaris in the lower extremity, and the supraspinatus and biceps in the upper extremity. The rectus abdominis may also be ruptured, but this is usually in association with the convulsions of tetanus.
2. Despite the fact that the blow was undoubtedly a very severe one the humerus suffered neither a dislocation of its head nor a fracture of its shaft, the pectoralis major alone being torn. The site of the rupture was at the junction of the muscular and tendinous portions, this being the usual place for such a rupture to occur.
3. The mechanism of this particular injury would seem to have been a sudden involuntary contraction of the muscle against a severe wrench which forced the arm to take up a position of extreme external rotation and abduction.
4. That a negative radiograph of the shoulder-joint may lead the unwary into a sense of false security, and the pronounced swelling be put down to simple though severe bruising. Looking back on the case the symptoms were quite characteristic. At the time of the initial injury the patient experienced a sudden sharp pain at the site of rupture of the pectoralis major, though he was not aware of "something having snapped," as is often the case. This was followed by loss of function of the affected part, which in turn was followed by severe swelling, accompanied by ecchymosis. As the swelling subsided the patient noticed a gap between the two retracted ends of the muscle and somewhat naturally assumed that his shoulder muscles were "wasting away."
5. That active movements of the arm were very good and after four weeks were almost painless. The power of the arm was relatively little impaired, adduction and internal rotation being carried out mainly by the teres major, subscapularis, and the latissimus dorsi.

As regards the subsequent treatment it was obvious that at the time the condition was diagnosed no surgical measures could be undertaken with any hope of success. The muscle ends had retracted widely and the sterno-costal portion had become firmly adherent to the inner half of the chest wall, leaving a gap which could not be successfully bridged.

It is usually agreed that primary suture of a torn muscle should be undertaken within the first five or six days of the injury, and that secondary suture, even if the ends can be approximated, usually yields a disappointing result, owing to the undue amount of fibrosis present and to the adhesion of the divided muscle ends to the adjacent structures. It is more than likely that an unsuccessful attempt to suture the muscle in the above case might well have led to considerably more disability than at present exists, and in this connexion it is worth recalling that rarely do patients following on a radical amputation of the breast complain of weakness in the affected arm, though it must be admitted that these patients are not engaged in heavy manual work.

I wish to thank Mr. H. Blacow Yates, honorary surgeon to the Royal Hospital, Sheffield, for allowing me to publish this case.

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Surgical Registrar, the Royal Hospital, Sheffield.

Reviews

THE LYMPHATIC SYSTEM

Lymphatics, Lymph, and Lymphoid Tissue: Their Physiological and Clinical Significance. By Cecil Kent Drinker, M.D., D.Sc., and Joseph Mendel Yoffey, M.Sc., M.D., F.R.C.S. (Pp. 406.) Massachusetts: Harvard University Press. 1941.

Whether war advances or retards the progress of science is a problem which many have debated during these last two years without coming to agreement, but there can be little doubt that it accelerates the practical application of new knowledge. The problems raised by war injuries, whether from toxic gases, burns, trauma, or shock, have forced clinical workers to modernize their intellectual and technical equipment and to realize that names like Rous, Menkin, Adrian, and Florey should mean as much to surgeons as Robert Jones, the Mayos, Harvey Cushing, or O'Shaughnessy. At first sight this technical monograph on the lymphatics by Drinker and Yoffey might be regarded as suitable only for the physiologist, the experimental pathologist, or the haematologist. In reality it contains more of value for the thoughtful physician and surgeon than the numerous primers on war medicine and surgery which are considered appropriate for them. It is by no means easy reading, and it would have been better for the general reader if a dogmatic summary had been appended to each chapter.

The book begins with a description of the anatomical and physiological organization of the lymphatic apparatus. In the lower vertebrates the lymphatic vessels and the lymphoid tissue are completely separate, and it is only in the higher mammals that we find an intimate association of lymph nodes and vessels, such that lymph never reaches the blood without passing through at least one lymph node. On the other hand, in all vertebrates there is a close association between lymphoid tissue and the alimentary tract. The function of the lymphatic vessels is obvious. They return to the blood stream the fluid—including protein, particulate matter, and cells—which has filtered through the blood capillaries and is unable to re-enter them. The agencies in this flow, which is greatly increased in inflammation, are the tissue tension and the active and passive movements of the part. The function of the lymphoid tissue is much more obscure. It is true that the nodes act as filters, but they are mechanically less effective against viruses than against larger particles and bacteria. Any barrier action of the lymph nodes is more than offset by the dangerously rapid extension of disease that lymphatic vessels render possible, and the organisms are excluded from the action of antibodies which are of high molecular weight and unable to pass from the blood capillaries into the lymphatic system. "It appears from Menkin's work that in a focus of bacterial inflammation the exclusion of bacteria from the lymphatic vessels is much more to be desired than that they should enter and be transported rapidly to the regional nodes." Hence the superiority of chemotherapy by diffusible drugs such as the sulphonamides. The function and fate of the lymphocyte remain a complete mystery. Although lymphocytes survive for several days *in vitro*, enough cells are passed into the blood stream every day to replace the circulating lymphocytes two or three times over. What happens to them all? Yoffey thinks they go to the bone marrow to be the precursors of the red cells and granular leucocytes, but his arguments are not altogether convincing.

The book ends with a chapter entitled "Practical Considerations," but throughout the volume the clinical reader

is continually coming on information which is directly useful in his work and which frequently upsets old or preconceived ideas.

HEART FAILURE

Heart Failure. By Arthur M. Fishberg, M.D. Second edition, thoroughly revised. (Pp. 829; illustrated. 40s. net.) London: Henry Kimpton. 1940.

A second edition of Fishberg's *Heart Failure* has appeared only three years after the original publication. Some additions have been made in most chapters, resulting in a slight increase in size of the already long book, but on the whole the text is not very much altered. More than is the case with most books for the clinician the subject is treated as a study in abnormal physiology, and recent work on the circulatory variables such as cardiac output, blood volume, and venous pressure is reviewed. The traditional method of describing diseases on an aetiological classification in which a discussion of the symptoms of each type forms a part is largely reversed, each symptom being taken separately and then its possible causes given. This method is natural when the subject is treated from the functional rather than from the anatomical point of view. It is not enough now to speak of heart failure simply, and the precise form, of which there are several, should be recognized. These various forms of heart failure are considered in detail. A good account of peripheral circulatory failure and shock is given. This sometimes results from heart disease, though more often from other causes, of which the common traumatic form is of paramount importance to-day. A section on treatment completes one of the best works yet published on circulatory disease.

DYNAMIC HYGIENE

Effective Living. By C. E. Turner, A.M., Sc.D., Dr.P.H., and Elizabeth McHose, B.S., M.A. (Pp. 432. 10s. net.) London: Henry Kimpton. 1941.

Health is presumably the "end" of hygiene, but, as Aristotle said, there are many kinds of ends—such, for example, as the end in itself, and on the other hand ends subordinate to some higher and greater end. A few decades ago people in Britain were content to regard health as an end in itself. More recently, breathing the social spirit, we looked to efficiency as the aim to which all hygiene moved. To-day, with a world war upon us, our views on the question have become more dynamic. We realize that the ultimate end of hygiene is not efficiency alone but efficiency well used, which gives power to nations. Thus by reason of the man and woman power of our country we are able to encounter face to face—to quote Aristotle again—"the greatest and noblest danger."

The recent work on hygiene by Professor C. E. Turner and Instructress Elizabeth McHose exhibits to American youth this dynamic aspect of health and all that it implies. *Effective Living*, as the book is called, is expounded in relation first to the individual, then to the family, and finally to the community. "Health," it is urged, "means courage and enthusiasm for life. It is well worth working for, and yet it is not the final aim. Honour, integrity, and the defence of home and country may demand the sacrifice of health and life itself." All the subsequent advice offered, whether physiological, mental, or ethical, appears to us to be thoroughly sound. The numerous illustrations are excellent and often charming, the mosquito alone, which figures twice, receiving less than justice on both occasions. We have found no medical errors in the book. Having regard to the purpose in view the whole field is amply covered. The main issue is never lost sight of, and the authors are to be congratulated upon their competent and high-minded presentation of dynamic hygiene.

Notes on Books

Under the excellent title of *A Doctor Remembers* Dr. E. A. BARTON publishes, after half a century of practice in the centre of Kensington, some very readable reminiscences of his career and his practice, with reflections upon them and on several medical topics of the times. Designed more for the lay public than for his professional brethren, his chapters give a lifelike picture of a really "sympathetic" general practitioner dealing mainly with the more affluent professional classes—academicians, judges, King's Counsel, and so forth. There are many good stories, and much that is entertaining, as well as incidents which may make laymen more understanding than they sometimes are of the difficulties a doctor has to face. It might be wished that his chapter on "medical etiquette" had made it clear that this much-misused term covers a code of professional conduct devised in the interests of patients, not of their medical attendants; but with this slight grumble one can part with Dr. Barton wishing oneself capable of something half as interesting—nor should there be omitted a word of praise for the restraint without which a doctor's memoirs might be more sensational but would not be so creditable to his discretion. The book is published at 12s. 6d. by Seeley, Service and Co.

The popularity of Miss K. C. CLARK's book *Positioning in Radiography* is shown by the publication of a second edition two years after the first. Although some new text has been added and some new illustrations substituted for old, the book is substantially the same in form as before. The second edition is thirty pages longer but contains the same number of illustrations. Two new sections have been added, on x-ray screen photography and serioscopy, and many other sections have been brought up to date. The title of this work does not nearly do justice to its nature. It is much more than a book on positioning in radiography: it is a remarkably complete account of every aspect of that art, and the second edition fully maintains the high standard set by the first. In this respect the purely radiographic parts are more complete and authoritative than those procedures that are more in the province of the radiologist, but the author wisely disarms criticism by advising her colleagues to seek the instructions of the radiologist-in-charge on such matters as, for example, the technique of cholecystography. The second edition is to be recommended with the same confidence as its predecessor. It is published at 63s. by Heinemann for Ilford Ltd.

Preparations and Appliances

NEW VITAMIN PREPARATIONS

The Glaxo Laboratories, Ltd., have introduced two new preparations. Nicorbin tablets contain 1 mg. aneurin hydrochloride, 10 mg. nicotinic acid, and 25 mg. ascorbic acid—that is to say, vitamins B₁ and C, together with the antipellagra factor of the B complex. The manufacturers say that these water-soluble factors are combined for the treatment of subclinical multiple deficiency states, and not merely as a dietetic supplement. The amounts of B₁ and C are certainly satisfactory for normal individuals who take three tablets a day as recommended, but expert opinion is now in favour of larger amounts for those who have any suggestion of deficiency. This is particularly so for nicotinic acid, for Sydenstricker (*Annals of Internal Medicine*, 1941, 14, 1499) states that he administers as much as 600 mg. daily in treatment.

The second preparation is of high-potency ostelin capsules. Each capsule contains 100,000 international units of vitamin D (calciferol) in vegetable oil, which gives the greatest likelihood of maximal absorption. The manufacturers point out that success with large doses of vitamin D has been recorded in arthritis, parathyroid tetany, rickets, hay fever, and asthma. It is interesting to note that the fear of toxic manifestations with so large doses no longer worries those who have had experience in giving them. Signs of nausea indicate that the treatment should be stopped, after which all is well.

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ADVANCES IN ELECTRO-ENCEPHALOGRAPHY

The scope of electro-encephalography has broadened steadily through the years, and no one can now deny its value, both as a diagnostic aid and as an instrument for neurophysiological research. Progress has been along three main lines: the standardization of technique and the introduction of systematic criteria of interpretation; the investigation of naturally occurring phenomena in both healthy and abnormal subjects; and the study of the effect upon the brain potentials of drugs and other changes in the external and internal environment. Three papers from America are signposts along these main routes of advance. Pauline Davis¹ of Boston has described her methods of classifying records, both normal and abnormal, on the basis of the amplitude and frequency of the rhythmic waves, and the presence or absence of non-rhythmic fluctuations. She also pays attention to the degree of symmetry of the two hemispheres, and to the degree of response of the normal rhythms to mental and visual stimulation. She points out that most of the attempts to devise some measure of electro-encephalographic tracings which will give in one number the total information contained in the record have been abortive and misleading, because the various features concerned do not fall into the same class of phenomena and are therefore incommensurable. It would clearly be of the greatest value if records taken by any investigator could be described in accepted terms and compared with tracings from any other source, but to make this possible in the present state of the subject would mean much regimentation, which would be highly obnoxious to those who approach the subject from a physiological standpoint.

To reach a compromise between dictated order and individual disorder is one of the most urgent tasks which confront electro-encephalographers, both in this country and elsewhere. It is clear that to make every examination comparable with every other a very large number of records must be taken of each patient, whether their condition is "interesting" or "uninteresting"; at least a dozen separate records would have to be made in standard conditions, each would have to be accurately measured, and some would have to be analysed for harmonic content. There is no centre in this country with sufficient staff or time to work along these lines, and like all other theoretical perfections this will undoubtedly be adulterated according to the mood and taste of the investigator. When communications become

easier an international congress of those interested in electro-encephalography would be most desirable, and would undoubtedly bring forth valuable and interesting decisions.

In the very early days of electro-encephalography Adrian commented that the normal records were "disappointingly constant," meaning that the administration of drugs and changes of the surroundings and condition of the subject within the physiological range produced very little detectable change in the records from the head. Fowler² of Iowa has studied the effect upon the electro-encephalograms in normal and mental subjects of adrenaline, mecholyl, cocaine, and sodium amytal, measuring also the rheobase, chronaxie, and other electrical properties of the muscles. Very little effect was obtained with adrenaline, mecholyl, or cocaine. What changes there were could be correlated slightly with the subjective impressions of the patient, but no satisfactory relationship was established. Sodium amytal, which caused noticeable psychological changes in all cases, gave rise to the well-known slowing of the cortical rhythms produced by most anaesthetics. Also the normal alpha rhythm—the presence of which indicates physiological rest in the brain—tends to be augmented by sodium amytal. A great many other experiments have been reported on these lines, and in general only the known anaesthetics and changes in hydrogen-ion concentration seem to affect the cortical rhythms at all dramatically. Anoxia within the physiological range is relatively without effect, but when it goes so far as to induce changes of consciousness or behaviour it is associated with the usual non-specific slow rhythms which Walter called delta waves when describing their appearance near cerebral tumours. The appearance of such slow electrical rhythms is still the chief diagnostic abnormality, and, from the frequency with which it occurs in quite different conditions, we must assume that it is a non-specific indicator of cerebral distress, dystrophy, or degeneration.

A communication by Usher and Jasper³ of Montreal shows how useful electro-encephalographic studies may be in investigating symptoms even in diseases that are not strictly neurological. The involuntary movements in Sydenham's chorea have been generally looked upon merely as part of the syndrome of rheumatic fever, but no one has explained exactly how the rheumatic process is concerned in the aetiology of the condition. Pathological studies of patients with this complaint are rare, for they usually recover; but such evidence as is available shows changes which have also been described in other acute infectious diseases, such as degeneration in the basal ganglia. There is no evidence of a specific local lesion characteristic of patients with chorea. Usher and Jasper's work on twenty-three children with Sydenham's chorea reveals that in all cases with severe symptoms prominent generalized abnormalities occur in the electro-encephalogram. These abnormalities are either a decrease or an absence of the normal alpha rhythms, or the presence of the usual delta waves. Mild cases showed no significant departure from the normal range, and in general the degree of abnormality

¹ *J. exp. Psychol.*, 1941, 23, 37.² *Canad. med. Ass. J.*, 1941, 44, 365.³ *J. Neurophysiol.*, 1941, 4, 92.

of the electro-encephalogram correlated well with the severity of the symptoms. Moreover, clinical improvement was associated with corresponding improvement in the electro-encephalogram, and a persistence of electro-encephalographic abnormalities during a remission suggested a bad prognosis, as in all these cases the movements returned later. Investigation of the siblings of patients with chorea showed a high proportion of similar abnormalities even when there was no history of chorea except in the original patient, and Usher and Jasper accordingly suggest that chorea may be considered a symptom of cerebral disorder as definite as epilepsy and, like epilepsy, of varied aetiology. One may go even further and speculate whether the symptoms of chorea occur only in those possessing a genetic tendency to such disorders as are accompanied by involuntary movements associated with abnormal electrical properties of the cerebral neurons. A large proportion of "behaviour problem children" also show electro-encephalographic abnormalities, and it is possible that this abnormality is a sign of an inherited or congenital defect rendering the patient liable to either clinical epilepsy or chorea or disturbances of behaviour, according to the influences which happen to be present during their early life. Such a conjecture should provide food for thought for neurologists, psychiatrists, and those interested in heredity and eugenics.

A NATIONAL WAR FORMULARY

Insistence on economy penetrates everywhere in wartime, even to the prescribing of medicines. Not the pill, as a rule, but the sugar coating has to be sacrificed, and even the pill itself may have to be supplied in smaller numbers and of slightly different composition. Sugar is wanted for other purposes, and therefore confections and lozenges must disappear and syrups be restricted to linettes and to mixtures for children. Animal and vegetable oils and fats, which are needed for food and other vital purposes, are employed in the preparation of liniments, ointments, and lotions, and these, therefore, must be used sparingly. Preparations containing glycerin must so far as possible be eliminated. The strictest economy must be practised with liquid paraffin. Potassium compounds should be prescribed only where the corresponding sodium ones are not satisfactory. These limitations are imposed because important substances ordinarily used in medicinal preparations are now more urgently needed for other purposes. Even if the drugs themselves are still readily available, their packing and distribution make demands on materials, labour, and transport, fully justified if the drugs are essential to medicine, but not if they can be withheld without serious therapeutic disadvantage. Economy as a principle commands universal agreement. To adjust domestic and professional habits to an economy basis is another matter. Long usage makes it difficult for the doctor to reconcile himself to any modification in prescribing, and, prescriptions being given singly and the ingredients ordered in grains and minims, he is apt to ask himself as he writes each one

how a minute economy can possibly be of value, while his overriding consideration—and most rightly—is the good of his patient.

Some time ago the Medical Research Council issued War Memorandum No. 3, prepared by the Therapeutic Requirements Committee, on "Economy in the Use of Drugs in Wartime," and this has now been usefully followed by the *National War Formulary*, the work of a committee appointed by the Minister of Health at the beginning of the present year. The chairman of this committee is Dr. Philip Hamill, who represents the Royal College of Physicians, and its members include representatives of the Ministry of Health, the London County Council, the British Pharmacopoeia Commission, the Therapeutic Requirements Committee, certain pharmaceutical organizations, the voluntary hospitals, and the British Medical Association, the last-named represented by Dr. E. A. Gregg and Mr. Lewis Lilley. Dr. Gregg is chairman and Mr. Lewis Lilley a member of the Insurance Acts Committee of the Association, which, some time before the war and with no thought of war prescribing in mind, produced a formulary for national health insurance purposes, and this has been taken as the working basis by the Ministry of Health Committee. The committee consulted also the pharmacopoeias of the London County Council and of the larger hospitals. The result is a workmanlike compilation which will no doubt be adopted for use in panel practice, and might well be adopted also by hospitals and public bodies in place of their peacetime formularies. To private practitioners, again, it is commended as a *vade mecum* of advice, suggestion, and instruction in wartime practice.

The *National War Formulary*, which is summarized on another page, may be said to represent a return to simplicity. Though it includes new drugs and preparations such as the sulphonamides, vitamins, and antiseptic dyes, it maintains the prominence of some of the older drugs which there may have been a disposition to neglect, not through lack of merit, but because of changes of fashion and of the multitude of new preparations that have appeared on the market. The use in wartime of many familiar compounds is discouraged, yet the range is believed to be sufficient to meet ordinary therapeutic requirements. The most valuable and frequently prescribed preparations have been retained, perhaps with some modification, non-essentials have been eliminated, and alternatives have been furnished where this is practicable and where economy would be effected. The list of mixtures alone runs to close on sixty; of tablets to over forty; of ointments to over twenty; of lotions to fifteen; of emulsions to nine. Of cardrops, nasal douches, mouth washes, eye lotions, gargles, enemas, liniments, sprays and vapours, pastes, paints, and powders there is enough variety to satisfy the most fastidious. A Children's Section is included in which, among other preparations, further mixtures are given, in some instances the same as in the General Section but in smaller doses.

The *Formulary* is suggestive and advisory. The doctor may still order what he likes, in so far as it is available, and there is no authority for dispensing substitutes for drugs specified by the prescriber, though a

certain discretion may be allowed as to the form in which they are made up. For example, a pharmacist out of stock of certain pills may dispense equivalent tablets, but he must state on the prescription if tablets have been supplied. The good sense of the medical profession can be trusted to accept the *Formulary* as a wartime expedient which may have in certain respects permanent results on prescribing. It brings about no revolution, but it does offer medical men and women an opportunity, with the minimum of inconvenience to themselves or disadvantage to their patients, to fall in with certain reasonable requirements and limitations arising out of the national necessity.

HEALTH IN PARLIAMENT

The debate in the House of Commons on October 21, fully reported in the last issue of the *Journal*, was a welcome sign that our legislators are showing an interest in what should be the most important matter in the life of the nation—namely, the health and well-being of its citizens. The debate centred on two main issues—the hospital services of the country, and special instances of sickness in the population. Dr. Howitt, who opened the debate, expressed his pleasure with the Minister of Health's statement on Government hospital policy, and his sentiment was echoed by other speakers. Captain Elliston, for example, welcomed the Minister's decision to put upon the local authorities the responsibility for securing adequate hospitals. He mentioned that up to the end of June the damage done to hospitals exceeded in value £20,000,000, which lends force to his argument that the survey of hospitals now to be undertaken must be entrusted to persons with "open minds and wide experience, with no axe to grind for any vested interests or established systems." As Sir Frederick Menzies points out in a letter at page 666, the Minister's policy has had a very good press, but many people would seem to have missed a fundamental point in this policy to which we drew attention in a leading article on October 18 and which is discussed more vigorously by Sir Frederick this week. Any discussion, therefore, of the merits or demerits of the voluntary or the municipal hospitals must in future be carried on in the full awareness of the financial control that will be exercised by the major local authorities over voluntary hospitals. It is one thing to rejoice sentimentally over the happy partnership between the two systems which is so confidently foretold by those who, like Pangloss, are sure that the best of all possible worlds is on the doorstep. It is more salutary, perhaps, to recognize that there are sharp cleavages of opinion and conflicting vested interests, and that in the long run he who holds the purse will see that the tune is played to his liking. Mr. Messer, Labour Member for Tottenham South, in a speech which showed his very real interest in the wider aspects of health problems, said that there was in this country neither a voluntary hospital "system" nor a municipal hospital "system." He was severely critical of the voluntary hospitals, saying that each one was a law unto itself and acted quite independently of others, and that the time

had come when both types of hospital should be re-planned more comprehensively than was outlined in the Minister's speech. He was in favour of dealing with the matter somewhat on the lines of education, in which under the Board of Education there were standardized salaries for teachers throughout the whole of the country. "The truth is," he remarked, "that the voluntary hospitals cannot continue." His condemnation of the voluntary hospitals received support from a medical Member of Parliament, Dr. Edith Summerskill, who began by saying that she intended to devote most of her speech to "condemning the present system root and branch."

The other side of the question was put most cogently by Sir Francis Fremantle and Prof. A. V. Hill, both of whom took into account not only the virtues of the voluntary hospitals but also the fact that in this country we prefer evolution to revolution. Sir Francis put the matter in a nutshell by posing this question: "What are the needs of the nation, and how can we make best use of the facilities and equipment available at the present time?" He pointed out that it was a comparatively new departure for the State to take over the social services and the social care of the people, and applauded this as a proper development. The emphasis is on development. The old tradition, he said, was useless without the modern spirit, but the modern spirit was also useless without the old tradition. He admitted that many voluntary hospitals had outworn their day, and believed that some kind of interference by the State in the management of the voluntary hospitals was necessary. He did well, too, to stress the deficiencies of the municipal system, and asked what was the value of local elections when very often only 30% went to the poll. "What," he asked, "is the real advantage if the management is elected on any qualification except that of their capacity for the work?"

Professor Hill, who spoke as one who was no "upholder of the privileges of the medical profession," raised the level of the debate by concentrating upon certain general principles, and deplored any attempt to rush in and try to build up a system without careful thought and experiment. The important thing in medicine, he remarked, was to experiment, and he advocated that the two "systems" should be allowed to develop side by side so that the good should be found out and the bad discovered and discarded. In this way we would progress as animals have progressed and as our social system has progressed—by evolution. Evolution is essentially compromise—a continuing compromise between the animal and his environment; and the gift for compromise is one of the most salutary qualities this country possesses.

One of the special aspects of disease that was brought to light in the House of Commons was tuberculosis. Dr. Howitt believed that at the beginning of the war a great mistake had been made in evacuating so many cases of tuberculosis from sanatoria to their homes, and stressed the danger to those in contact with the returned cases. Mr. Messer forcibly underlined these observations by pointing out that in the first two years of this war the deaths from tuberculosis had gone up by 2,000. A recent survey in two areas, he said, had shown there

were 21 new cases in the age group 11-20 in the first quarter of 1939, and the figures for the corresponding quarters of 1940 and 1941 were 28 and 35 respectively. In the age group 21-30 the numbers of new cases in the first quarters of 1939, 1940, and 1941 were respectively 34, 42, and 65. If there were not sufficient accommodation, then he suggested that the big mansions and houses of the country should be conscripted to provide the necessary beds. Major Haden Guest drew attention to the article by Drs. Laidlaw and Macfarlane in the *British Medical Journal* of September 27, in which the increase in the number of cases of tuberculosis was attributed to a combination of long hours, overtime, strain, and ill-spent leisure, and suggested that "we are not using our great public health organization at the present time to avoid increase in that kind of disease." The Minister of Health said that the figures given by Mr. Messer were not borne out over the whole field, and that when the figures for the first quarter of this year were available a reduction of 7% would be found as compared with the first quarter of 1940. He said, too, that he proposed to do his best to meet the need for beds, and pointed out that they were up against a problem not only of beds but also of nurses. Among figures given by the Minister perhaps the most important was the new low record of the maternal death rate of 2.61 per thousand for 1940, and this he attributed generally to the wartime maternity hospitals set up in the reception areas, in which nearly 30,000 babies have been born during the war. On the general subject of the health of the nation, the Minister paid a very warm tribute to the work that is being done in liaison with the Ministry and other bodies by the Central Council for Health Education, and drew the attention of the House to a number of pamphlets and leaflets on health matters prepared by the Central Council for distribution to the ordinary man and woman in the street.

On the same day on which the above debate took place Mr. Butler, President of the Board of Education, announced an important step in the development of meals for school children, stating that the Exchequer had approved an increase of 10% in the rate of grant on authorities' expenditure on meals. The Minister said he was placing at the disposal of local education authorities facilities for setting up cooking depots in all large centres of population. Mr. Butler also said that he aimed at increasing the proportion of children receiving milk in the "milk-in-schools" scheme from about 60%, where it now stood, to as near 100% as may be possible. As he pointed out, the efficacy of these measures depends upon the support given to them by local education authorities and teachers. There can be little doubt that if the feeding of the children of the country were put upon a proper nutritional basis much of the hospital accommodation that is at present the subject of debate will in the future become redundant. The introduction of compulsory midday meals for children in State schools, provided the parents contribute to the cost, can neither undermine their feelings of parental responsibility nor make them believe that the State is a kind of foster parent from whom all good things now and in the future must be expected to flow.

EXPERIMENTAL DIABETES

There are two ways of producing diabetes mellitus in animals: by pancreatectomy, which removes the secreting organ; and by injection of extracts of the anterior pituitary gland. It is nearly ten years ago since Evans and his co-workers observed that dogs treated for eight or nine months with injections of pituitary growth hormones developed persistent glycosuria. The experiments of Young, however, placed the matter on a firm experimental basis, and have led to much further work on the subject. The observation that a crude saline extract of beef anterior pituitary injected into dogs can cause permanent diabetes with all the associated clinical features is one to be placed on a par with the classical observations of Minkowski and von Mering. The aetiological implications of this research for human diabetes will be obvious to all, but in the meantime much work is required to identify the mechanism of the phenomenon and in particular the point of attack of the pituitary diabetogenic principle. That some substance from the pituitary actually antagonizes the action of insulin is suggested by the fact that hypophysectomized animals show much heightened sensitivity to insulin. But that the pituitary can secrete a substance that can interfere permanently with the control of sugar metabolism is a highly significant fact, for the implication is that the body carries within it an auto-lethal weapon and must, therefore, in its own defence constantly exert some controlling or neutralizing influence to combat it. In a sense all the internal secretions are at least dangerous weapons, and were it not for some equilibrating interactions between secretory activity and functional requirement the organism would always be in a state bordering on chaos. Hitherto, so far as we know, extracts have been made mainly from beef glands and injected into dogs, rats, and cats. In rats and cats the action is not so readily demonstrated as in dogs, but injection of anterior pituitary extracts combined with partial pancreatectomy, in itself insufficient to produce glycosuria, can also render these species permanently diabetic.

The permanent diabetes brought about in animals by a short treatment with extracts of the anterior pituitary has been named "pituitary diabetes," but this is not to suggest that the diabetes is maintained as a result of continued overaction of the pituitary. Indeed it is certain that this is not the case, for whereas the animal is resistant to insulin during the injections of the extract, it is no longer so after their cessation when the diabetes is established. It would seem, therefore, that permanent damage is somehow done and that this takes the form of atrophy of the pancreatic islets. Dohan, Fish, and Lukens,¹ using as diabetogenic agent a crude saline extract of frozen beef anterior pituitary lobes, have found that the time needed to induce diabetes in their dogs varies according to the doses given and to the nature of the dogs. Thus six dogs injected intraperitoneally with increasing doses became permanently diabetic in fourteen to forty-three days, and two dogs given small and fairly constant doses, in sixty-two to ninety-eight days; two dogs which failed to respond to large doses became permanently diabetic when partial pancreatectomy was followed by injection of a small amount of extract. After the establishment of the permanent diabetic phase, if no insulin were injected, 85% or more of the glucose available from all constituents of the diet could be found in the urine. Some slight evidence was obtained that insulin retarded the progress of the pituitary diabetes in two dogs, and that such dietary changes as fasting or fat feeding also had a similar temporary effect. Histological study of the pancreas of

¹ *Endocrinology*, 1941, 28, 341.

pituitary diabetic dogs showed that there was considerable atrophy of the islets of Langerhans, and such islets as remained consisted chiefly of the alpha cells. This atrophy is not accompanied by fibrosis: the atrophied islets seem to shrink and are smoothly replaced by acinar cells. There are variations in the severity of the clinical picture corresponding with the intensity of the effects on the pancreas, but if suitable conditions are chosen the full clinical picture is reproducible in all cases.

The extracts used contain other pituitary hormones, and some of their effects are observable in the injected animals. As to the nature of the diabetogenic substance and the actual amount of it injected there is no information. Whether the human pituitary can manufacture this substance is not known. But the glycosuria of the acromegalic may be due to the liberation of a similar substance. There are the observations by Davidoff and Cushing that of 100 cases of acromegaly twenty-five had glycosuria, and of these, twelve were cases of true diabetes. It is well known that if a pituitary tumour associated with acromegaly is removed the attendant diabetes may disappear, so that there was evidently no significant permanent lesion of the pancreas. As the glycosuria in acromegaly may be temporary in the developing stage of the disease or permanent after the disease is fully established, it would seem that it is all a question of the intensity of liberation of a diabetogenic substance in the early stages and the amount of islet tissue originally present in the attacked pancreas.

CONCENTRATED RED CELL SUSPENSIONS

Since the publication in this *Journal* in 1940 by MacQuaide and Mollison¹ of their method of transfusing concentrated red cell suspensions this preparation has become increasingly popular. In our present issue members of the Merseyside Transfusion Service analyse the results obtained in seventy-seven transfusions of concentrated red cells. Blood in the bank is converted into plasma when seven days old. This is done by passing a sterile needle through the cap of the blood bottle and sucking off the supernatant plasma. After removal of the plasma the needle is passed down to the bottom of the remaining red cell layer, and the red cells are then in their turn sucked off into another bottle. A rather sticky layer of white cell debris and platelets is left behind. MacQuaide and Mollison originally suggested the addition of a small amount of 1.1% sodium chloride to the cells in order to reduce their viscosity. Williams and Davie found that in their experience such a solution caused undue haemolysis of the red cells, and since no difficulty was experienced on account of the suggested viscosity they add no diluting fluid to their cell suspensions. They emphasize the importance, however, of regulating the flow to not more than 100 c.cm. an hour in order to avoid the risk of cardiac embarrassment in anaemic patients who might be expected to have a damaged myocardium. Concentrated red cells, they suggest, should be used only for cases of chronic anaemia which require replacement of haemoglobin and red cells with minimal increase of circulating blood volume. They divide their cases into four groups: (1) post-haemorrhagic anaemias; (2) anaemias associated with severe infections; (3) anaemias of pregnancy and the puerperium; (4) dyshaemopoietic anaemias. Irrespective of the nature of the condition transfusion with one bottle of 500 c.cm. of concentrated red cell suspension raises the haemoglobin level between 10% and 12%. Exceptions to this rule occur. Low responses, Williams and Davie suggest, are usually due to a rapid exacerbation in the factors causing anaemia. Unexpectedly high results have in some instances been attributable to

operations which not only have removed the cause of the anaemia but may also have produced some degree of haemoconcentration. They point out that there is an unavoidable error in all the haemoglobin readings, since the estimations were made by different observers using different methods. The average figure does, however, agree reasonably well with that of other workers. The reaction rate is considerably higher. The gross reaction rate for the series was 19.5%. Grade III reactions (definite rigors associated with rise of temperature) representing 9.1% of the whole. This suggested that these figures are misleading, as at the time the observations were made Merseyside was subjected to severe bombing, and the usual provisions for pyrogen-free water were not available. Allowing for this disturbance of normal laboratory routine. Williams and Davie agree with MacQuaide and Mollison in believing that reactions with cell suspensions are less than with whole blood. They also describe a group of reactions which they considered allergic in origin: one, which is described in detail, proved fatal. At necropsy petechial haemorrhages were found in the myocardium. The possibility that such a death may have been due to transfusion of infected blood is not considered, and no mention is made of the result of cultures of the patient's or donor's blood. The authors suggest that all donors with a history of allergic manifestations should be excluded from regular panels.

LONDON VOLUNTARY HOSPITALS COMMITTEE

The Voluntary Hospitals Committee for London, elected in 1938, was an almost forgotten body during the early part of the war, for the main issues confronting the voluntary hospitals came within the scope of the War Emergency Committee of the British Hospitals Association, and there were few problems which did not also affect provincial hospitals and thus needed to be dealt with on a national basis. Later, however, questions have arisen affecting voluntary hospitals of London specifically, and the committee has become more active again. It has now issued a brief report for the eighteen months January, 1940, to July, 1941. It will be remembered that the committee represents three main groups of hospitals, each with an almost equal number of representatives—namely, general hospitals with undergraduate schools, general hospitals without schools, and special hospitals. The hope is expressed that the voluntary hospitals of London will take note of the committee's continued existence; by its constitution it is intended to be representative of the governing bodies and medical staffs, and if it is to achieve success, carry weight, and generally serve a useful purpose it must be sure of the support of its constituent hospitals. One piece of work carried out at its instance is the establishment by the King's Fund of a Contributory Schemes Committee for London, upon which the Voluntary Hospitals Committee itself, the King's Fund, the Hospital Saturday Fund, and the Hospital Saving Association are all represented, to deal with questions arising out of the work of contributory schemes and the relationship of such schemes to the hospitals. The chairman of the Voluntary Hospitals Committee is Mr. O. N. Chadwyck-Healey, the vice-chairman Dr. A. M. H. Gray, and the offices are at 10, Old Jewry, E.C.2.

The Hanbury Medal of the Pharmaceutical Society of Great Britain will be presented to Dr. Harold King of the National Institute for Medical Research, on Thursday, November 13, at 2.30 p.m., at 17, Bloomsbury Square. After the presentation Dr. King will give an address on chemistry and pharmacy, dealing with the mutual repercussions of the two subjects and having as its background the *British Pharmacopoeia* of 1932 and the Addenda.

¹ *British Medical Journal*, 1940, 2, 73.

EFFECTS OF EVACUATION AND OF AIR
RAIDS ON CITY CHILDREN

BY

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An attempt is made in this article to assess the effects (a) of evacuation and (b) of air raids on the children attending the Manchester Child Guidance Clinic. So much has been written about the physical advantage to children of being out of big cities that it seems worth while to try in some way to assess and reduce to terms the psychological effects of war on them. Admittedly the numbers are small and represent a selected set of children in that they have been referred to a clinic of this nature, but in one group of figures these numbers are placed side by side with the total school population so that some comparison may be made. So far as the clinic is concerned the numbers represent all cases under treatment there in July, 1939, plus all those referred since that time up to March, 1941. From these figures only two groups have been excluded, the reason for exclusion being obvious: (1) cases coming from neutral and reception areas; (2) cases of proved mental defect.

TABLE I.—Relation of Clinic Cases to School Population

	Clinic Cases	Figures of Total School Population
Total number of cases	131	88,610
Total evacuated since September, 1939	88 (67%)	60,427 (68%)
Returned within 4 months	65 (50%)	65,301 (75%)
Further returned by end of 6 months	18 (15%)	12,065 (14%)
Still evacuated	5 (4%)	
Evacuated after raiding began	20	Further figures not available owing to continuous re-evacuation
Returned within 3 months	3	
Still evacuated	17	

Table I is designed to show the relation of the clinic cases to the general population, and is self-explanatory, except that it should perhaps be stated why the periods of four months and six months have been chosen. The four-months group comprises the children who either failed in evacuation from the beginning or who at any rate were unable to weather the Christmas holiday period. The six-months period is intended to be rather an elastic one covering those children who returned between Christmas and Easter or with their schools at Easter. A considerable number definitely came back for this latter reason, or because they obtained places in secondary schools which themselves had returned. It will be noticed that while the figure for the original evacuation of clinic cases is closely parallel to the percentage of the total school population which evacuated, the children who returned show a considerable discrepancy. It is difficult to explain this or to be sure whether the fact that we were able to pay regular visits to the parents contributed anything towards their stability in this matter.

Table II is an analysis of the reasons for which these children returned and needs more explanation. Under the

heading "Parents' Request" are the cases in which the parents wished to take the child home. The reasons for this change of attitude are important. There was first the question of billeting costs. Only two of the parents complained of this, and in one case the complaint was quite unrelated to reality, and occurred in a family the father of which was in a regular and stable job and before any question of active contribution by parents had been raised. The commonest reason was just that the parents wanted the children home. Some of these cases are perhaps worth quoting, since they show that the parents themselves were maladjusted people.

Case 1.—Girl aged 11. I.Q. 96. Youngest of a family by twelve years; unwanted by mother, who felt very guilty about her feelings. Evacuated in September. Brought home in November. The mother reports: "I was afraid something might happen to her. I thought she wasn't happy. They said she was. I think she was afraid of hurting their feelings."

Case 2.—Boy aged 17. I.Q. 122. Referred for stammer. Father committed suicide, and the boy had found him dead. Youngest of the family and the only one living at home with the mother, the others being married. In a secondary school and doing well. Brought home because the mother was lonely.

Case 3.—Boy aged 12. I.Q. 87. Referred for truancy and pilfering. A difficult, very anxious boy whose mother was in a state of chronic ill-health, and who was extremely antagonistic to all his home surroundings; was taken home suddenly by his father because the foster-parents complained that he was difficult to manage.

Under the heading "Child's Request" we have included those cases in which the child requested and was allowed to come home. Nearly all these cases are reported as "home-sickness"; but in a few the child complained of being lonely when alone in a billet or objected to the billet; one disliked having to be in bed by 6 p.m. Two were specifically anxious about the parents at home.

Case 4.—Boy aged 11. I.Q. 156. Ran away from billet. A stammerer. Ambitious over-earnest parents who are afraid he will not get on, as he is too interested in cricket. He took another boy with him, and they started to walk back home, a distance of some fifty miles, and when this proved impossible went to get advice from the police.

Case 5.—Girl aged 13. I.Q. 111. Referred for truancy. Evacuated at outbreak of war. Returned because she was unhappy and lonely. Is an only child, brought up at first by grandmother because mother wanted to continue going to work; feels neglected in her home and anxiously tries to behave in a grown-up way. Over-developed physically, and looks and behaves like 16. Makes fantasies of having brothers in the Services and of having children; she always has twins, so that they will not be lonely.

The third and biggest group is that in which the request came from the billet, and in it are detailed the various symptoms of which complaint was made; the simple heading "Personal Difficulty in the Billet" is self-explanatory. Perhaps the most interesting feature of this group is that in all the cases under the heading "Truancy" the symptom is said not to have occurred before the war started. This is borne out by an investigation which we recently conducted into cases of truancy reported to this clinic. We found, starting from September, 1937, when the clinic was reorganized under the local authority, that between

TABLE II.—Cases Evacuated in September, 1939; showing Reasons for Return and Apparent Effect of Evacuation

Reason for Return	Age Group			I. Q.			Apparent Effect of Evacuation			Unchanged by Evacuation
	5-8	8-12	Over 12	B.	N.	S.	Better	Worse	Symptom attributed to Evacuation	
Parents' request	5	8	1	3	6	5	2	5	—	6
Child's request	2	7	14	5	10	8	2	4	6	5
Billet's request:										
Enuresis	1	1	2	—	1	3	—	3	—	1
Pilfering	—	4	1	—	3	1	—	—	—	—
Truancy	—	4	3	3	2	2	1	3	2	3
Unmanageable	—	5	4	1	5	3	—	—	—	4
Illness	1	2	1	1	3	—	—	1	—	4
Personal difficulty in billet	—	3	3	1	4	4	1	1	2	—
Other reasons	2	2	6	—	—	—	—	—	—	—
Total	13	39	42	13	41	32	6 (8%)	17 (24%)	19 (28%)	31 (43%)

September, 1937, and September, 1939, 48%, and between September, 1939, and March, 1941, 52% of the total were referred for truancy, though the clinic was closed for two months and was working short time for another two. Of these truants two entirely ceased when they returned home and one after a short period of treatment. Of the pilferers whose symptom was apparently produced by evacuation, one has since died, one has now adjusted himself, and one has continued to steal. Of the group reported unmanageable, one came from a very disturbed home, where the father and mother were in constant disagreement, and the father violent and gaining his ends by violence. This boy's violence started when evacuated, but continued in his own home and, indeed, in any situation in which he was frustrated; a second was returned after three days as incorrigible: he had twitches and temper tantrums, but reacted well to treatment in a group and is now adjusted at home. He shows no anxiety in raids. The cases of enuresis form another interesting feature. Three out of four of these were worse as the result of evacuation, two of them advancing to faecal incontinence during evacuation. It is perhaps noteworthy that all these three are children of very superior intelligence, and that two of them have been very greatly improved with a short period of treatment. The one case of which we have no record we have been unable to trace since the original inquiry as to which of our patients were evacuated.

The results of this investigation go to show that emotional difficulties were either started or made worse in 52% of the cases examined and that in only 8% was the condition improved. One of this last group had been under treatment at the clinic for two years. She had originally been sent for refusing to go to school, or indeed to leave her mother at all, and we had the greatest difficulty in maintaining contact with her. During the period of treatment she gradually freed herself of her mother, at first consenting to being seen alone, then to making the journey alone, then to taking a clerical course in a commercial school, three of which she tried before finally settling down in one. She finally evacuated with this school and returned because she had completed her course. She was originally referred at the age of 13, and had on test then an I.Q. of 106; she was retested by the same psychologist after two years of treatment and had then an I.Q. of 126. She is now in a good job, which she has held eighteen months. While it is in a sense incorrect to say that evacuation helped this girl, since she was so far improved before it, it is nevertheless true that it helped finally to confirm her confidence and independence, and she proved by week-ends at home her ability to go and come as she wished.

Table III refers to the immediate effect of air raids on children examined. We feel that the word "immediate" should be stressed, since we are not yet in a position to assume that we know what the final effect of living in constant risk of this sort of warfare is going to be on either the adult or the child population. It would perhaps be as well first to dismiss the last group, unfortunately a large one, in which we have no report of the child's reaction to raiding. We have therefore written them off as "no change," with the exception of five who are known to have responded badly to evacuation. The reason for this lack of reports is certainly partly that a number of these children

have been re-evacuated, especially since a bad raid at Christmas, 1940, and the parents have probably for this reason failed to answer letters referring to what they doubtless consider a past problem; partly that some of the cases are those discharged from the clinic a long time before, the parents again considering this a raking-up of old difficulties. It was impossible to visit personally so large a number of cases, so that inevitably the work was done by questionnaire. Finally, there undoubtedly exists in some parents' minds the fear that to admit that the child is anxious may lead to his compulsory evacuation.

In the other two groups there are one or two outstanding cases. First there is the single case reported as improved in spite of anxiety in raids. The symptom in this case was truancy from school. The boy was an adolescent in a central school, of superior intelligence, very over-protected by his mother. He broke down in evacuation when he was separated from this protection and anxiety on his behalf, and continued to be difficult on return, trading on his power over his mother, who went so far as to excuse him from attending the clinic when he found it difficult. He has now become an air-raid messenger, and this adult position of responsibility appears to have helped him to a stability in other directions also. It is true that he has perhaps not been in real danger, since he lives on the outskirts of the city, where bombing is slight; but he has nevertheless achieved an adult position, which his mother would never allow him, and has responded to it by giving up his truancy. The statement that he is anxious comes from the mother, who herself is very disturbed by raids.

The next interesting feature is the group of cases in which the symptom was attributed to raids. One of these was sleep-walking in a girl, accompanied by anxiety dreams of "Hitler stabbing her"; the second was general "nervousness"; three were cases of truancy, the second of these being especially striking:

Case 6.—A boy aged 11. I.Q. 82. Referred for truancy from school. He has a cataract in one eye and is afraid of the other boys. Cannot stand up for himself. This boy, after being bombed out of one of the most devastated areas, denied all anxiety in the raid, saying: "The whole of the back of the house fell down and we were sitting on the cellar stairs, and mother was afraid, but I wasn't"; and then described a dream in which he was "shooting at Germans coming down in parachutes, but, of course, I wasn't afraid, but mother is afraid of invasion."

Of those whose symptoms were aggravated by raiding three are enuretics, and the aggravation in two of these bears a definite relation to nights when there are raids. One of these two is a child of 8 with a self-assured manner and a swaggering walk who constantly plays with toys representing the street of a town, with everything huddled close together; always there is a protective fire-engine and sandbags, but the play includes no aeroplane. Two are stammerers: in one of these the stammer is slight except when he is brought to talk on either evacuation or air raids, when it becomes noticeably worse. Two were reported unmanageable and to be pilferers, and one as over-aggressive and quarrelsome. One child aged 8, whose parents insisted he was quite unmoved, produced the following gruesome fantasy, none of which is fact, as there was not even an alert. "Last night I was coming out

TABLE III.—Immediate Effect of Air Raids (Total Number known to have experienced Raids, 114)

Reaction to Raids	Age Group			I.Q.			Effect on Symptom				Symptom attributed to Evacuation	Type of District			
	5-8	8-12	Over 12	B.	N.	S.	Improved	Worse	No Change	Symptom attributed to Raids		Heavily Bombed	Moderately Bombed	Lightly Bombed	
Anxious ..	4	14	9	10	11	6	1	14	6	5	5, in 4 of which raids also made matters worse	6	6	15	
No apparent anxiety ..	7	26	20	8	25	17	—	4	38	1		10	5	14	34
No report ..	6	16	12	6	19	9	—	—	29	—		5	5	15	11
Total ..	..	..	..	..	..	..	1 (1%)	18 (15%)	73 (62%)	6 (5%)	20 (17%)			

of the pictures when the sirens went and a little boy ran across the street, and they dropped a bomb and it went through his back and he was killed, and I went and told his mother and she screamed."

In the second group one case stands out as noteworthy. This boy was referred as a pilferer and as stopping out late at night and being unmanageable. He came from an extremely unhappy home where quarrelling was incessant. Both parents were almost blind; the father was desperately ill and very irritable and difficult in the home, which was completely comfortless and in a heavily bombed area. His father died on the night of an air raid, and he showed no feeling about either one event or the other. One feels that this lad could permit himself to feel nothing lest life should become intolerable. Another was reported to be unaffected, yet will only sleep downstairs. Another, an adopted child, was said to "enjoy" raids and to stay out at night. As this left her adoptive mother alone in the house one wonders whether the mother's conclusion was really the correct one or whether the going out might not have been a deliberate act of aggression against her, as she is undoubtedly afraid.

Conclusion

It is striking that there seems to be little relation between heavily bombed areas and anxiety about raids. This point is strengthened by the fact that in another group of clinics situated in reception areas we have received from parents more complaints of children being anxious and disturbed by talk of raiding or sound of sirens, and that of these cases only two are evacuated from heavily raided areas; the rest have experienced little more than the sound of sirens or distant guns.

The general conclusion to be drawn from these investigations would seem to be that, whatever the ultimate outcome, the immediate effect of evacuation, which is separation from parents and a known and accepted environment, is worse than the immediate effect of raiding—that the fantasy, waking or dream, of the raid is provocative of greater anxiety than the reality.

I wish to thank the Director of Education for Manchester for kind permission to publish these cases, and the staff of the Manchester Child Guidance Clinic for their help in collecting the material.

WARTIME PRESCRIBING

SCOPE OF NATIONAL WAR FORMULARY

Elsewhere in this issue the attention of practitioners is drawn to the *National War Formulary* (H.M. Stationery Office, 6d. net.), compiled by a committee appointed by the Minister of Health. Below we give some account of its scope and contents. From December 1 next this *Formulary* will replace the present *National Formulary* for national health insurance purposes, and on and after that date no preparation should be prescribed by title only unless its formula is contained in the *N.W.F.*, the *British Pharmacopoeia*, or the *British Pharmaceutical Codex*.

Under the heading of "Wartime Prescribing" it offers some remarks on general limitations. Agar, for example, should be reserved for bacteriological uses; the use of cinchona as a bitter is discouraged; quinine should be reserved for the treatment of malaria; digitalis is best administered as 1/2 and 1 grain tablets of powdered digitalis; and ergot, the liquid extract of which is not an economical preparation, is also best administered in tablet form. Vitaminized oil B.P. has the same vitamin content as a high-grade cod-liver oil, and is a satisfactory alternative in most cases. Economy in alcohol is essential, and alternatives to alcohol are suggested for preserving surgical instruments from rust, and to surgical and industrial methylated spirit for the prevention of bed-sores. A circular on economy in the use of alcohol in surgery was recently issued by the War Wounds Committee of the Medical Research Council. Liquid paraffin also must be prescribed with due regard to economy; where oral administration is considered necessary economy can be effected by using a 25% emulsion, but this, too, should be used sparingly.

Liver extracts are controlled under a Defence Regulation; they are not to be administered save to persons suffering from pernicious anaemia or other megalocytic anaemias, nor given otherwise than by injection. Malt extract and preparations containing it should be prescribed only for children and tuberculous patients. Phosphorus is wanted for munitions. Phosphoric acid has been replaced by hydrochloric acid; hypophosphites and glycerophosphates have been excluded, and sodium acid phosphate remains only for use in association with hexamine. Potassium compounds should be prescribed only where the corresponding sodium compounds are not satisfactory, but potassium acetate and potassium chlorate have been retained as the sodium salts are not satisfactory alternatives.

Prescribers are advised against the ordering of confections and lozenges, which require sugar. Dextrose and glucose are rarely necessary except for intravenous and rectal administration. Sulphanilamide, sulphapyridine, and sulphathiazole in tablet form are included in the *Formulary*, but there is a note that the first of these is the most generally useful drug in the group, and should be prescribed unless there are specific indications for either of the others. A list of more than a dozen other drugs and their preparations which should be prescribed with particular regard to economy is given; these include salicylic acid and its salts, mercury and its compounds, hyoscine, and atropine. It is enjoined that the use of distilled water should be restricted to preparations for application to the eye and preparations in which, in the opinion of the dispensing pharmacist, the use of ordinary potable water would result in an undesirable alteration to the medicament.

Proprietary preparations, particularly those of foreign origin, should be avoided if possible. Many of them, in any case, are unobtainable, and their prescription would lead to inconvenience and delay. A list is given of proprietary drugs with corresponding non-proprietary equivalents, and prescribers are urged if possible to use the B.P. preparation.

Replacements and Limitations

Briefly to glance at some of the formulae, the first list is of six preparations for ear-drops. These are the same as in the *N.H.I. Formulary* save for some reduction of glycerin and rounding off of percentages. Five forms of capsule are indicated, but it is stressed that tablets and pills are generally preferable. Certain capsules formerly described, such as those of ergot, sandalwood oil, and preparations of iron, are omitted. On the other hand, capsules of concentrated solutions of vitamins A and D and of halibut-liver oil are added. The linseed poultice is discouraged; the only entry under "Poultices" is the kaolin poultice B.P. Among mouth washes the principal changes are the substitution of sodium for potassium and a new formula to replace glycerin of thymol.

Four flavouring and sweetening emulsions—aniseed, aniseed with peppermint, chloroform, and peppermint alone—have been introduced for mixtures in place of alcoholic preparations. Enemas are a new group as compared with the old *Formulary*; they include enemas of ox bile, of soft soap, and of oil of turpentine. The glycerins number two. A solution containing 25% of glycerin and 10% of sodium chloride has been introduced for intra-uterine use in place of pure glycerin. A glycerin of proflavine, which is evidently considered an improvement on aeriflavine, is also included. The injections are mostly B.P. injections, but a new one, injection of papaveretum (2%), an antispasmodic preparation (dose, 5 to 10 minims), has been introduced. As a vaginal injection zinc sulphocarbolate is replaced by zinc sulphate. A good general linctus, with syrup as the basis, has been provided; in spite of economy in the use of sugar the need for one good sweet preparation was felt.

Linctus Simplex (Linct. Simp.)

Dilute sulphuric acid	..	..	5 minims
Emulsion of anise N.W.F.	..	..	24 "
Emulsion of chloroform B.P.C.	..	..	5 "
Solution of Bordeaux B.P.C.	..	..	1 minim
Syrup ..	..	..	to 60 minims

Liniments have been so framed as to save alcohol and to exclude the drugs mentioned for exclusion in the War Medical Formulary of the M.R.C. It is mentioned that strict economy should be observed in prescribing liniment of soap B.P. because it contains so much alcohol.

The formula of liquor antisepticus has been changed to suit wartime conditions. Chlorine antiseptics have also been excluded. Eusol is not recommended, as being unstable; or E. hauled. Eusol is not recommended, as being unstable; or E. ground Dakin's solution or a new 2% solution of chlorhexidine is preferred. A borax and formaldehyde solution is given for use in place of alcohol for preserving instruments in a

condition and free from rust. This is one of a number of possible formulae for a solution to replace spirit. It is possible that it might be improved by the omission of formaldehyde, to which some surgeons object, and the substitution of chlorocresol for phenol. A new lotion containing 25% of sodium sulphate, approximately saturated at ordinary temperatures, is included for the hypertonic treatment of war wounds and similar conditions. Lotion flavinae, formerly an undefined term, is now specified as a 0.1% solution of proflavine sulphate in normal saline solution.

A Wide Choice of Mixtures

The mixtures—a long list—have in many cases new names, but cross-references to the old mixtures are given. Gentian is replaced by quassia, magnesium sulphate by sodium sulphate, alcohol is reduced in quantity everywhere, glycerin is excluded, phosphoric acid replaced by hydrochloric acid, extract of liquorice as a sweetening agent removed or reduced in quantity. For example:

Mistura Quassiae Acida (Mist. Quass. Acid.)

Dilute hydrochloric acid	10 minims
Infusion of quassia	120
Chloroform water	10 ½ fl. oz.

Dose: ½ fl. oz. three times a day in water.

Bismuth mixtures are entirely discouraged, a list of six alternatives being given, among them new mixtures containing magnesium trisilicate and kaolin, thus:

Mistura Magnesii Trisilicatis Composita (Mist. Mag. Trisil. Co.)

Magnesium trisilicate	10 grains
Light magnesium carbonate	10 "
Sodium bicarbonate	10 "
Peppermint water	to ½ fl. oz.

Dose: ½ fl. oz. three times a day in water.

Mistura kaolini is similar, 15 grains of kaolin replacing the magnesium trisilicate.

A new formula for mistura diuretica is:

Mistura Potassii Acetatis (Mist. Pot. Acet.)

Potassium acetate	30 grains
Decoction of broom B.P.C.	to ½ fl. oz.

Dose: ½ fl. oz. three times a day in water.

Cough mixtures are the subject of a special paragraph. A list of nine is given, and there is a note: "If mistura tussis is prescribed without qualification mistura ammoniacae et ipecacuanhae composita will be supplied":

Mistura Ammoniacae et Ipecacuanhae Composita (Mist. Ammon. et Ipecac. Co.)

Synonym: *Mistura Expectorans, Mistura Expectorans Nigro, Mistura Tussis*

Ammonium carbonate	3 grains
*Liquid extract of ipecacuanha	½ minim
†Concentrated camphorated solution of opium N.W.F.	2 minims
Solution of burnt sugar B.P.C.	7½ "
Water	to ½ fl. oz.

Dose: ½ fl. oz. three times a day in water.

* Equivalent to 10 minims tincture of ipecacuanha.

† Equivalent to 16 minims camphorated tincture of opium.

Sprays, Pastes, and Powders

The list of nebulae includes a new aqueous ephedrine spray (1% in a 0.5% saline solution). Among the pastes is the following new formula:

Pasta Picis Carbonis (Past. Pic. Carbon.)

Commercial coal tar	14 grains	3% approx.
Zinc oxide	120 "	25% "
Starch	120 "	25% "
Yellow soft paraffin	10 480 "	100% "

In wartime strict economy is essential in prescribing this paste. The use of magnesium sulphate paste is not favoured, and the hypertonic lotion of sodium sulphate is recommended as an efficient alternative. The pigments include the following formula for pigmentum triplex, suggested in treatment of burns:

Pigmentum Triplex (Fig. Triplex)

Crystal violet	1 grain	0.25% approx.
Brilliant green	1 "	0.25% "
Proflavine sulphate	½ "	0.1% "
Distilled water	10 1 fl. oz.	100% "

The powders include flavoured preparations of barium sulphate and iodophthalain for diagnostic purposes:

Pulvis Iodophthalaini Compositus (Pulv. Iodophthal. Co.)

Iodophthalain	60 grains
Citric acid	24 "
Lactose	80 "
Sucrose	10 240 "

Dose: 240 grains in a tumblerful of water, stirred until mixture is white.

For internal use, to replace compound bismuth powders, powders containing kaolin and magnesium trisilicate are prescribed, thus:

Pulvis Magnesii Trisilicatis Compositus (Pulv. Mag. Trisil. Co.)

Magnesium trisilicate	240 grains
Sodium bicarbonate	240 "
Heavy magnesium carbonate	240 "
Chalk	240 "

Dose: Half a level teaspoonful in a little water.

Note: The titles "alkaline powder" and "pulvis alkalinus compositus" should not be used to describe this or any other preparation.

Pulvis Kaolini Compositus (Pulv. Kaolin. Co.)

Sodium bicarbonate	160 grains
Heavy magnesium carbonate	320 "
Kaolin	to 960 "

Dose: One level teaspoonful in water or milk.

There is a long list of tablets, and the new ones include ascorbic acid, nicotinic acid, aneurin hydrochloride, sulphamylamide, sulphapyridine, sulphathiazole, laxative compound (cascara compound), digoxin, and stramonium. Sulphathiazole is, however, very scarce at the present time, and, although the tablets are included in the N.W.F., practitioners are requested, in order to avoid delays and difficulties, to refrain from prescribing them for the present.

The Children's Section includes a zinc cream, three malt extract preparations, a simple linctus, and a number of mixtures, several of which are the same as in the General Section but in smaller doses. In the Children's Section it is considered that a reasonable use of syrup may be made.

It will be seen from this outline that the compilers have beld the balance between what is necessary in prescribing and the requirements for the war effort. It is to be hoped that practitioners will second their endeavours.

DRUGS EXEMPT FROM PURCHASE TAX

It will be remembered that in the early announcements on the application of the Purchase Tax to drugs and medicinal preparations (*Journal*, February 1, 1941, p. 163) total exemption from tax was allowed in the case of "essential drugs of an exceptionally costly character." This, as we pointed out, was a clumsy definition, and the first list of the drugs covered was obviously incomplete. The Commissioners of Customs and Excise have now issued in Notice No. 78B a schedule of the classes of drugs which are exempt from the tax. These are as follows (Group 5 is not included, as it refers to substances to be used solely for veterinary purposes):

Group 1.—Exempt only when sold without any added substances: Bromethol; chloroform (anaesthetic); cyclopropane; ether (anaesthetic); ethyl chloride; nitrous oxide; oxygen.

Group 2.—Exempt whether sold as such or prepared with an excipient, vehicle, base, or preservative (mixtures of these substances and mixtures of one or more of them with any other substance not being an excipient, vehicle, base, or preservative, are chargeable): Liver extracts and active principles of liver. Insulin, and compounds whereof the sole constituents are insulin, protamine, and zinc. Preparations of the parathyroid glands. Pituitary (posterior lobe) extract as defined by paragraph 1 of the Fifth Schedule to the Therapeutic Substances Regulations, 1931, made under the Therapeutic Substances Act, 1925, and other preparations of the posterior lobe of the pituitary gland. Thyroxine and preparations of the thyroid gland. Oestrone, oestriol, oestradiol, esters of any of those substances, stilboestrol, and hexoestrol. Extracts of the cortex of the suprarenal glands: corticosterone, desoxycorticosterone, and esters of corticosterone and desoxycorticosterone. Extracts of the corpus luteum: progesterone, and the substance commonly known as pregnenolone or anhydrohydroxyprogesterone. Testosterone and its esters. Chorionic gonadotrophin (human). Desiccated stomach. The dimethylcarbamate ester of 3-hydroxyphenyltrimethylammonium-methylsulphate.

Group 3.—The following may be mixed with one another and with an excipient, vehicle, base, or preservative, and still be exempt, but

the presence of any other substance makes the mixture chargeable: Adrenaline and its salts; amylocaine hydrochloride; arspenamine, derivatives of arspenamine, and salts of such derivatives; cocaine and its salts; ergometrine and its salts; hexobarbitone and hexobarbitone soluble; morphine and its salts; papaveretum; para-aminobenzenesulphonamide and its salts, derivatives of para-aminobenzenesulphonamide having any of the hydrogen atoms of the para-amino group or of the sulphonamide group substituted by another radical, and salts of such derivatives; procaine and its salts; the sodium salt of 5-ethyl-5-(α -methylbutyl)-thio-barbituric acid.

Group 4.—Sera, vaccines, toxins, antitoxins, and antigens which are subject to control and licensing under the Therapeutic Substances Act, 1925, are exempt when prepared for use by injection or by application to the scarified skin; mixtures so prepared are also exempt.

Group 6.—Phenthiazine or thiodiphenylamine is exempt when sold as such.

It is also announced that forceps and tweezers exceeding 3 inches in length or shaped away from the straight, scalpels, lancets, and other chiropody knives with metal handles are exempt from tax.

THE BRITISH HOSPITALS ASSOCIATION

The address of Sir Bernard Docker, chairman of the British Hospitals Association, at the recent annual general meeting of that body, touched on several matters of present and future interest. The first was nurses' salaries. He said that the Minister of Health had announced increases of salary, not only for the Civil Nursing Reserve but for hospital nurses generally. The association had endeavoured to secure financial assistance from the Ministry to enable hospitals to meet the cost of raising nurses' salaries. The Minister's first suggestion was to give certain assistance to voluntary hospitals through local authorities in a manner which was not acceptable, but the association had now been appointed by the Government to distribute grants for the purpose of meeting the cost of the increases. This meant that the association had been recognized as the central and representative body. The association had been considering its policy with regard to co-ordination of hospital services. The statement of policy was now in draft and would be issued shortly.

With regard to the position of hospital staffs called up for various forms of war service, strong representations had been made to the Government on the need for reservation. It was clear that, unless some arrangements of a better nature than those obtaining at present were made, hospitals might be compelled to stop their work, not for want of medical or nursing skill but for want of other staff.

Sir Bernard Docker went on to refer to the reply given in the House of Commons on October 9 by the Minister of Health to a question by Sir Francis Fremantle on post-war hospital policy and organization. He saw nothing in Mr. Ernest Brown's statement that was not fair, friendly, and helpful. The association was in agreement with the object of making the hospital services readily available to every person in need of them. It was evident that the Government intended to maintain the principle by which patients were called upon to make reasonable payment towards cost either through contributory schemes or directly.

Finally he touched upon the scheme recently propounded—and indeed created—by Lord Nuffield, with the object of assisting the formation of mutual insurance to assist the middle and professional classes to meet the cost of specialized or surgical treatment in hospital pay-beds or nursing homes. It will be recalled that Lord Nuffield has established a Provident Guarantee Fund of £150,000 with this end in view (*British Medical Journal*, October 25, p. 584). Sir Bernard Docker said that his association could and should subscribe to this policy. He also welcomed a Government announcement that increased educational grants for teaching hospitals were contemplated. He ended with a tribute to the Minister of Health for the open-minded way in which he had consulted the association on various matters. The Minister had said that it was intended to lay on local authorities the duty of securing close co-operation with voluntary hospitals. Sir Bernard Docker would have welcomed an indication that he was prepared to offer voluntary hospitals a share in statutory responsibility.

Reports of Societies

WATER DEFICIENCY

At a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland, when Dr. A. R. PARSONS presided, Dr. R. H. MICKS read a paper on water deficiency.

Dr. Micks said he intended to discuss the problems of dehydration without reference to the dehydration of surgical shock or the dehydration caused by extensive burns. So much knowledge of these two subjects was at the moment being acquired in other countries that it was too early to attempt to lay down a systematic teaching on the subject. The phenomena of water deficiency might be divided into three stages: the first, those of the falling water reserve, symptomless except for the loss of about one-twentieth of the body weight; second, those of dehydration without circulatory collapse, the symptoms of which were a dry tongue, loss of elasticity of the skin, haemoconcentration, and the beginning of impairment of renal function; third, dehydration plus circulatory collapse. The recognition of the first stage was important, as the proper treatment of dehydration was to anticipate its onset, as could easily be done by careful measurement of the water balance, or, in the infant, frequent weighing. When dehydration was due to excessive loss of body fluids the administration of sodium chloride was just as important as water. In dehydration plus circulatory collapse the intravenous route should be used, and at times hypertonic saline was required. In general the solution administered should be normal saline, but there was evidence that for rapid rectal absorption 0.18% saline was better. Glucose solutions were not necessary except when parenteral feeding had to be maintained for a long time, and sometimes in diabetic coma. There was little reason to think that either special alkalizing fluids or fluids containing calcium or potassium salts were useful, except, possibly, in certain rare cases. Dr. Micks pointed out that there was a danger of over-emphasizing the intravenous route, which was only required in emergencies. In many cases fluid could be administered orally or by nasal tube. Rectal drip, too, was satisfactory in many cases, and enough fluid could be given that way to maintain life and compensate for a considerable abnormal loss. Subcutaneous administration of large volumes of fluid was little practised now, while the intraperitoneal route he considered to be usually unsatisfactory, as little fluid could be administered.

Prof. W. R. FEARON pointed out that water deficiency was usually a question of salt deficiency and salt balance. Once the cell membrane was complete the ions did not tend to escape readily from the cell. There was no mechanism equivalent to that of thirst to indicate when there was too much water in the body. If the osmotic pressure of the urine were known the osmotic curve from hour to hour could be drawn, thus indicating the state of water balance at any time. The treatment of dehydration was physiologically the administration of saline. There was no doubt that far more harm was likely to be done by giving too little water than by giving too much. Prof. W. J. E. JESSOP considered that water restriction in cases being treated by sulphonamides was dangerous on account of the formation of drug crystals in the kidney. He had found such crystals, which had proved to be sulphapyridine. They were deposited on account of the insufficient fluid intake of the patients.

The President (Mr. SETON PRINGLE) said that surgeons had recognized earlier than physicians the possibility of severe and perhaps fatal dehydration. He had been a pupil of Arbuthnot Lane, who in every major operation had inserted a needle under each breast and had given two or three pints of saline. This, of course, was not always applicable, but it was a very great help in the first and second stages of dehydration; it was useless in the third stage. He had found that saline without glucose gave a most satisfactory result. Rectal drip had been the routine method for many years, but in many patients it had proved uncomfortable and inconvenient. If serious dehydration was feared this method was tedious and not really satisfactory. Instead of this drip method a reservoir of saline was now used, which was connected with the rectum through a

wide tube; the saline was only taken up from the bag as it was needed, and thus the rectum never became distended or uncomfortable. Prof. T. W. T. DILLON pointed out that one of the most important things was to have some easy test which would show when enough water had been given. The obvious place to look for such a test was in the urine. If the specific gravity of the urine was taken it would be seen that water repletion coincided with a sharp fall in specific gravity. Dr. R. E. STEEN said early treatment of dehydration was important in cases of gastro-enteritis. While he had had no experience of saline by the intramuscular route, he thought it was possible to give an equal amount more satisfactorily intravenously. There were certainly definite indications for the intravenous drip method in young children.

Mr. J. C. FLOOD thought it wise to emphasize that too much water might be taken. Up to about two years ago there had been a tendency to give water under every condition of surgical collapse. One had to distinguish between dehydration due to water going out of the body and that due to water coming out of the blood channels. There was considerable oedema of the patient being over-dosed if he was suffering from shock associated with a water shift out of the blood vessels into the tissues. When a patient was receiving post-operative transfusions and salines a record should be kept of the total fluid intake and the total fluid excretion every day. Dr. A. SPAIN did not consider that the intravenous route was suitable in an emergency away from a hospital. In such cases the subcutaneous route was very efficient; it was astonishing the rapidity with which a patient would absorb fluid if one pint was put under each breast. This could be done without causing the patient any inconvenience.

Correspondence

Post-war Medicine

SIR,—Much has been written recently on the future of the medical services of this country, and it is perhaps of interest to analyse the factors which have created the present feeling of instability.

1. It is more than probable that the post-war Government will be either socialistic or semi-communistic. The Conservative Party will almost certainly be defeated, for the Labour Party will hold them responsible, rightly or wrongly, for pre-war diplomacy and inadequate preparation for war. The Socialists are already pledged to State medicine and will carry out this policy at the first opportunity.

2. Voluntary hospitals and organizations have previously depended upon charity. It is difficult for anyone to believe that the finances of the country will be able to bear the strain of distributing charity to voluntary hospitals and organizations. Moreover, it is unlikely that bequests to State-aided institutions will be made with any frequency. This implies that voluntary hospitals and organizations must become in time State-aided and perhaps State-controlled.

3. In modern civilization the medical services are far too elaborate and expensive to be dependent upon charity alone. It is argued by some that no sick person should be dependent upon charity for hospital treatment, and that the care of the sick should be the business of the State, just as it is the affair of the Government to educate the children of the working classes.

4. The moment is ripe for planning and reorganization. Surely the first step is to plan a medical Utopia and to let all efforts be directed towards establishing this ideal state of affairs. A medical Utopia cannot be obtained immediately, and obviously many years must elapse before it can be established in running order; yet if the ideal is before us every alteration in the medical services should be directed toward this goal.

5. Correspondence in the medical journals has shown that there is a haunting fear among medical men that they may be smothered by red tape and faulty administration from Govern-

ment bureaucracy. It is most likely, however, that drastic changes will be made in Government administration as a result of the very severe criticisms which have been made during the present war. Furthermore, few people can complain of the efficiency with which the Treasury extracts income tax from us all. Medical men as a whole love their independence, and one of the greatest attractions of the profession is that a man, if he chooses to do so, may carry on his professional work with few restrictions and little interference from higher authorities. Many medical men therefore look with dismay towards the prospect of their professional work being controlled by the State.

The Government has now committed itself to reconstruction and replanning of the nation's medical services. It seems to me that such reconstruction should be planned by the best intellects of our profession. It is essential that the medical profession itself should play a very important part in the reconstruction. Perhaps the best solution would be for a Royal Commission to investigate the problem. The Commission should contain men nominated by the General Medical Council, the British Medical Association, the Medical Research Council, and the Ministry of Health. The Treasury and the Ministry of Public Works and Buildings would have to be represented as well. In my view the members of the committee should be young men under the age of 40. We should remember what was achieved by the young men at Johns Hopkins, and history shows that a man's best original work is usually done before the age of 35. Originality and thoughts of the future are much more important in the work of reconstruction than remembrances of past glories.

In my view it would be a great mistake for the work of reconstruction and the formation of policy to be in the hands of Government Departments. The findings of a Royal Commission would be above the level of Government Departments, and this is perhaps the fundamental consideration.—I am, etc.

Bradford-on-Avon, Oct. 25.

WILFRED SHAW.

The Optimum Size of an Organization

SIR,—Recent discussions open a great problem which must be faced. The optimum size of any organization is a modern problem which is rapidly gaining in importance and receiving attention. It has arisen in my mind largely from the growth of the Victorian Bush Nursing Association. There are built, and organizing, sixty-two hospitals, none of which provides more than thirty beds, mostly less, with a total of more than 700 beds. They are one-storied. They provide bedrooms with one or two beds, and in the later types no wards. They are staffed by doubly and trebly certificated nurses, not by trainees. They receive no Government aid, except passes on the railways for the nurses, but they can, and do in some cases, receive municipal aid. The charges to those who pay 30s. a year subscription for themselves and their children up to the age of 16 are, I think, the lowest in the world for superb accommodation, being about £2 12s. a week—less before the war. They are decentralized and managed locally, subject to the general rules of the association.

People naturally think that if this large number of operating rooms, bathrooms, and nurses' quarters (which are excellent) could be placed in one building the cost of building and administration would be much less. As a matter of fact it would be multiples of their cost. They cost up to £400 a bed, and until the war usually less. The large city hospitals have cost from £1,600 to £2,000 per bed. The personal attention in the small hospital is a factor to which the country people are keenly alive. They have a maternal death rate of 2 per 1,000, whereas the State has a rate of 4.44 per 1,000. The neonatal death rate is half the State rate. This the country women fully understand. The only services they cannot supply are a pathological department and a deep x-ray therapeutic department: but these can be obtained at near-by centres.

But I am not writing to praise the Victorian Bush Nursing Association, but, based on the knowledge gained, to ask some questions. Can a city, a university, a factory, or hotel become uneconomical and almost inhuman from being too large? Bata taught the world this lesson at Zlin, in Czechoslovakia. The huge institution becomes unwieldy from the administrative point of view, and in the case of hospitals from the human point of

view, and is far too costly. Do not all these facts apply with force to any organization? I find town planners who think a city should not contain more than 500,000 people. As the world has developed it is impossible, for example, to decentralize London to any great extent, or even Sydney or Melbourne, but the price paid is heavy—a lower birth rate and heavy mortality in the cities, not to speak of want of space, slums, and the like.

So I ask those who see what is wrong to put to themselves the question: What is the optimum size of any organization? Should, for example, a university be better if it housed nearly 5,000 students—a number being approached in Melbourne—than the huge institutions in the United States? To my knowledge university authorities in some of the magnificent universities in the U.S.A. realized the position many years ago, but found the task of limitation almost impossible, and I am afraid the Australian universities may find similar difficulties.

I may refer to a most remarkable fact which has come under my notice, and to which I drew attention at the Amsterdam Congress on Tropical Colonization, and also long before. Tropical Queensland is largely pastoral and agricultural, but does contain some small cities. The vital statistics in this region, whether birth rate or death rate, are better than in the rest of Australia. The high temperature has done no damage and tropical diseases are practically absent. In general in Australia the country birth rate is always greater than the city birth rate. To tie the lesson is obvious, but the remedy is difficult.—I am, etc.,

JAMES W. BARRETT,

Honorary Secretary, Victorian Bush Nursing Association.

Melbourne, July 28.

Medical Planning

SIR,—Reading the correspondence and the reports that are available from the Medical Planning Commission and listening to medical conversations, it seems to me that attention is focused on what is to be done after the war without first considering what are the defects we wish to remedy and under what conditions the remedies will have to be applied. It is as if a number of doctors were consulting about a patient: one advises ultra-violet light treatment, another sulphapyridine, a third bleeding, and a fourth a winter in Egypt, all without having troubled to make a diagnosis or to consider what treatments may be available.

With great diffidence I suggest that first a list should be drawn up of those points concerning the profession or the public on which reform is desired. It is possible the Commission might agree on these points after discussion. Secondly, there should be an attempt to estimate what will be the after-war conditions under which the reforms will have to take place. About this agreement will be difficult, and whatever the estimates there will be much that has not been foreseen. But the attempt should be made none the less. A small point to serve as illustration. Much practitioner time is wasted giving certificates to chronic invalids. By a medical board system, on the lines of the Pensions Ministry, it should be possible to estimate the disability of these patients, if not permanently, at any rate for some time ahead.—I am, etc.,

Palatton, Oct. 24.

ERNEST WARD.

Hospital Policy

SIR,—The Minister of Health has made an important declaration in Parliament on post-war hospital policy. The substance of this declaration is admirably summarized in the last few lines of your leader (October 18, p. 552) on Government hospital policy—namely, regionalization, co-operation between voluntary hospitals and local authorities, and Exchequer grants.

The Minister has every reason to congratulate himself upon receiving a very good "press" for his declaration of policy, although there may well be some misgivings and doubts in the minds of those who fear that too much control will be given to the local authorities by reason of the fact that apparently the State financial aid will be made through them and not direct to the voluntary hospitals or some recognized organization acting on their behalf, such as the British Hospitals Association, as has already been done in the case of the additional cost of nursing staff.

The Minister's policy has yet to be debated and approved in Parliament, and therefore it may still be capable of modification. In these circumstances it may be worth while considering whether any amendment of the proposals can be suggested which would meet with more general acceptance. In this connexion it should be borne in mind that to bring about close co-operation between the local authorities and the voluntary hospitals it is fully recognized by the Government that "to achieve the best results and to avoid a wasteful multiplication of accommodation and equipment it will be necessary to design such a service by areas substantially larger than those of individual local authorities." In other words, there must be a grouping together of a number of individual local authorities into regional areas. Clearly such regional areas must have regional councils, whose primary concern will be to translate into actual practice the principles underlying the Government's hospital policy.

Regional councils will presumably be constituted of representatives of the local authorities and voluntary hospitals of the area concerned. One of the first practical difficulties will be whether the numbers of such representatives upon the regional council are to be equal or based upon the numbers of municipal and voluntary hospitals or on the numbers of beds or on some other basis. It is obvious that in this direction there are endless possibilities for differences of opinion which alone may seriously prejudice the harmonious co-operation so eminently desirable and, indeed, fundamentally necessary to achieve success for the Government's policy. For this reason I suggest that it should be definitely decided that the representation of the municipal and voluntary hospitals upon such regional councils should be based upon an equal number of representatives, and, further, that in order to ensure, as it were, "fair play" for both parties, the Minister should take power, by Act of Parliament if necessary, to nominate in addition a certain number of representatives of the Ministry, altogether apart from those chosen to represent the local authorities and voluntary hospitals.

Many good reasons could be adduced for this suggestion. Let it suffice, however, to say that such a tripartite constitution is justified, first of all, by reason of the fact that the Government is providing financial assistance, presumably capital as well as maintenance, for both municipal and voluntary hospitals. Secondly, the presence of representatives of the Ministry upon regional councils would help to ensure that the Government's policy is being honestly and conscientiously carried out, and that the Minister through his own representatives is being kept in close touch with the development of the Government's policy throughout the whole country; and, finally, the presence of representatives of the Ministry would go a long way toward the promotion of that mutual confidence and active co-operation between the local authorities and voluntary hospitals which is absolutely vital for the success of the scheme. If it became possible for regional councils throughout the country to be established on such a basis then it seems to me their position and influence would be immensely strengthened by making such councils the agency for the distribution of financial aid provided by the Government, and one would hope, in addition, financial aid provided from local authorities and charitable bodies such as King Edward's Hospital Fund for London and the Nuffield Provincial Hospitals Fund, as well as a host of smaller but none the less important funds.

It is tempting to enlarge still further upon the many advantages which would accrue to the community from such a suggestion as is outlined above, but in the meantime it would be interesting to learn the views of your many readers on that which has already been suggested.—I am, etc.,

Crickeith, Oct. 28.

FREDERICK MENZIES

Voluntary Hospitals

SIR,—The sweeping statement of Dr. G. Osborne (October 18, p. 558) that municipal hospitals are of lower grade than voluntary ones is not "true, kind, or necessary." In fact it merely demonstrates that his personal experience has so far been distinctly limited. In addition, however, it expresses a feeling which is regrettably prevalent among the general public, and which may have inspired Sir Frederick Menzies' first letter. Correspondents have already pointed out that municipal hospitals, any more than voluntary ones, do not

reach the same standards of efficiency, equipment, and staff. Most of the criticisms levelled at municipal hospitals are local ones and not inherent in the system, as Dr. Goodhart (p. 558) has explained.

There is, however, the one essential inherent difference between the two systems. The one type is municipal—that is, maintained by public funds, subject to Government scrutiny and audit, and governed to some extent by law. Thus the voluntary hospital can exercise some selection in admitting patients, but not the municipal one, so that "uninteresting" cases, especially of a chronic nature, gravitate to the latter.

Furthermore, the voluntary hospital, depending on free gifts, of necessity employs and relies on propaganda. This propaganda is directed to the increase of personal interest and often personal voluntary work. This personal interest is the great direction in which the voluntary system as a whole has such an inherent advantage over the municipal, and the interest begets influence. Mass interest of this kind is illustrated by the suppression of justifiable complaints against voluntary hospitals, whereas municipalities are popular targets. The influence of the voluntary system is illustrated in the Emergency Hospital Service, in which an extreme minority of senior administrative positions have fallen to members of the municipal services. It is this aspect which causes disquiet to members of the municipal services when plans for a future national hospital service are discussed.—I am, etc.,

St. Olave's Hospital, Rotherhithe, Oct. 21.

R. NELSON FORD.

SIR.—It is time that the idea of altruism in hospitals should be discarded. Their history shows that they never were either in origin or in their life altruistic. They have been throughout the ages instruments of exploitation. They are so yet. Their origin was the result of exploitation, when the Emperor Claudius started them to patch up for further service his broken slaves. Except that Claudius has changed from time to time to other ages, their function remains to-day the same. That being so, a sewage scheme holds as much altruism as a hospital.

The voluntary hospital is supposed to treat the sick poor. Now sickness treatment is a fundamental necessity of mankind. It should therefore be regarded as a duty like dealing with sewage. Who are the poor? A man is poor either because he is paid an inadequate wage by an employer or, having a sufficient wage, he wastes it. Hospitals therefore bolster up either a bad employer or a bad employee. The voluntary hospital as an instrument of exploitation has been used by kings, emperors, the Church, big business, the politicians, and a section of the medical profession. It is now in its death throes, as the man in the street is awakening to the real meaning of altruism.

The rate-supported hospital has therefore risen on the same honest foundation as has a sewage scheme. It removes the horrible idea of charity in the treatment of sickness and will eventually replace the voluntary hospital. What a travesty of Christianity it is to see the shepherd wrapped in the fleeces of his flock enjoy the amenities of a private nursing home when sick, while his ailing shorn sheep brave the austerities of a public hospital! I admit that the rate-supported hospitals may have certain flaws inseparable from the political atmosphere about them. That seems inherent in all politics, but the courts so far have been able to prune them when too exuberant. We here in Glasgow are busy at present. We have made a good start, and if we go on as we are doing an increasing number of the elected of democracy will be evacuated to more congenial surroundings.—I am, etc.,

Dennistoun, Glasgow, Oct. 27.

JAMES COOK.

The Art of Surgery

SIR.—The distinction drawn by Dr. Frank C. Eve in your columns (October 25, p. 593) between two classes of surgeons, as he sees them, is most intriguing. He says a Class A surgeon practises surgical artistry, whereas Class B is a surgical tradesman. If the distinction could be hammered into all surgeons of all classes it would have the effect of changing many Class B surgeons into Class A surgeons, with great benefit to their patients and to themselves. Such is my faith in human nature.

The surgical artist is one who, when asked to perform an operation, however trivial or serious, thinks along clear lines

of the approach to the patient, the steps of the operation, and the benefit likely to come to the patient. He never gives a thought to the benefit likely to come to himself, except that he may increase his skill for the benefit of the next patient. His mind is a blank about the fee. The surgical tradesman, on the other hand, is alive from the first to the financial reward. He sinks, I fear, the patient's benefit to second place. Such a man never advances the art of surgery by any improvement in technique or theory. He is mundane and no adornment to his job. Whole towns are full of the Class B kind, brought into being, perhaps, by a pioneer surgeon of a past generation or by the general atmosphere of commercialism of the town; but whole towns are, thank God, full of the Class A kind. But among the Class B kind the practitioner who wants the best for his patient can find the surgical artist if he will look.

Here is another point. Every man who "goes in" for surgery does not become a surgeon. Before any man is permitted to sit for a higher surgical qualification, which he hopes will bring the surgery to him, he should go before a surgical "board" of the Royal Colleges and have a test in manual dexterity. It would be quite easy to devise suitable manipulations. Thus would clumsy men be eliminated, for if they go on I believe they become the surgical tradesmen—men working under difficulties, straining to reach the same skill as the artist.

It goes without saying that all surgeons of all classes, and no less physicians, should aspire to be Class A, and if they find themselves drifting should take themselves firmly in hand.—I am, etc.,

Great Malvern, Oct. 25.

A. C. DEVEREUX.

Reaction after Transfusion

SIR.—The cause of reactions following transfusions in many cases remains obscure. It has been suggested that in some instances at least the fault is in the recipient rather than in the donor's blood. The following observations favour this hypothesis. Blood from the same bottle, using the same administering unit, was given to two patients; one had a severe rigor, the other had no reaction. For obvious reasons such an experiment is not easy to arrange; it therefore seems worthy of record.

The first patient (Case S) had a subphrenic abscess and developed an empyema. The haemoglobin prior to transfusion on September 5 was 48% and his red blood cell count 3,900,000 per c.mm.: blood group O (IV). Cross-matching of the blood was not done. A transfusion was started with stored blood (Group O (IV)) at a rate of 40 drops a minute. Following our usual custom, the last two feet of the tube conveying the blood were warmed on a hot-water bottle enclosed in a woollen cover (temperature unknown). After approximately 150 c.cm. of the blood had been run the patient had a severe rigor lasting twenty minutes. The temperature was 101° F., and he was severely ill, requiring the administration of oxygen.

Less than fifteen minutes after stopping the first transfusion, the same bottle of blood and administering unit, with the exception of a clean needle, was set up for a second patient (Case B). This patient had a carcinoma of the bladder with severe haematuria. He had already had several transfusions of stored blood without ill effects. His group was O (IV) and cross-matching of the blood was not done. Prior to transfusion his haemoglobin was 34%, and his red blood cell count was 2,220,000 per c.mm. The blood was given at approximately 40 drops a minute. The remaining 390 c.cm. were taken by this second patient without ill effects, the haemoglobin rising to 40%.

It is of interest to note that the first patient (Case S) had another transfusion of fresh blood, given slowly (40 drops a minute), on September 17. This caused a severe rigor after ten minutes. On September 26, when his haemoglobin was 43%, he took half a pint of stored blood (ten-day-old) given quickly without any ill effect. When his general condition had deteriorated further he had another severe rigor following a transfusion with stored blood given slowly (40 drops a minute) and died six hours later. His death was in no way due to the transfusion, as he had had a long and exhausting illness associated with a liver abscess and large empyema.—I am, etc.,

R. D. N. BISSET, F.R.C.S., D.A.

Park Preston Hospital, Basingstoke, Oct. 27.

Wound Shock: A Heated Couch

SIR,—The whole question of shock seems to be very obscure, but everybody is agreed that a shocked patient is cold and that it is very important to get him warmed up again. If a patient is to be warmed at all it seems only sensible to warm him at once and to warm him quickly. There appears to be no doubt that if a man is chilled by exposure, without any injury, he can restore his own warmth to a great extent if given a reasonable chance. But if a man is wounded his heat-regulating mechanism is put out of action and he cannot restore his own heat: he must be heated. If the patient is wounded and also chilled by exposure his condition soon becomes desperate, and it will be a question whether he can be heated up quickly enough to save his life.

I want to suggest to those responsible for the disposal of air-raid casualties that as a general rule cases should not be sent direct to hospital; they should be sent to a near-by first-aid post to be treated for shock until they are fit for operation. The primary purpose of the F.A.P. should be the treatment of shock, and it should be equipped with everything required for the purpose. It is easy enough to heat a patient quickly if electrical gadgets are available, but it must be assumed that in an air raid the electric current and the gas supply will be cut off. The problem is to get some heat underneath the patient: an oil stove under the stretcher is much too dangerous and metal water-beds are unobtainable. I beg to submit the following improvisation.

A table is built to carry the standard stretcher; in the middle of the table-top a well is made to hold five petrol tins lying on their broad sides. The well is lined with blankets, and the tins, filled with boiling water, are covered over with blankets. A few inches from the corners of the well slots are cut to take the four legs of the stretcher; these slots make sure that the patient is well down on the petrol tins and that the stretcher is always in the right position.

It is essential that there should be a good supply of hot blankets; it is futile to put a patient into cold blankets, and it is not possible to heat up enough blankets after the "alert" has sounded. There must be a cupboard heated by hot-water pipes in which blankets can be kept always warm. That is the first requirement. When the "alert" sounds the warm blankets can be made hot by putting hot-water bottles among them. More blankets can be heated by putting a pile on the hot petrol tins, with an electrically heated cradle over them—so long as the current lasts. If the current goes off the patient, wrapped in hot blankets and lying on five petrol tins filled with boiling water, is surrounded by rubber hot-water bottles. The patient requires careful watching to see that he does not get too hot. A small electric fan to play on to the patient's face is a very pleasant (and perhaps valuable) extra.—I am, etc.,

R. L. KITCHING.

Weltherby, Oct. 24.

Organization of E.N.T. Department in E.M.S.

SIR,—I fully endorse the article by Mr. V. E. Negus (October 11, p. 519) and the letter by Mr. Somerville Hastings (October 25, p. 594), which call attention to a weakness in the emergency hospital services. There is, I am fully aware, a keen desire on the part of the Director-General and those working under him to secure the maximum efficiency in these services, and yet in the ear, nose, and throat departments of these hospitals beds are wasted daily, and Service men remain in hospital for weeks on end with inadequate treatment. I do not feel that the administration have yet fully appreciated these facts, but I seem to detect a dawning interest in the matter. May it bear fruit.

There are a number of efficient surgeons available, but the instruments provided are unsuitable and inadequate, while those required in the wards for dressings are almost unobtainable. There is a grave shortage of nurses trained in E.N.T. work who are capable of doing dressings under illumination and can see what they are doing.

May I make the following suggestions? Operative work should be concentrated in one or more E.N.T. centres in each region. In these centres a full modern set of operative instruments should be supplied, all surgeons in the Region should be allowed to operate there, and all cases, save those unable to be moved, should be concentrated there for operation. We

should then no longer hear of an E.N.T. surgeon being dispatched thirty miles to an outlying hospital to perform one tonsillectomy.

Further, the present system, adopted under advice, of supplying a fixed, restricted set of operative instruments, many of which are archaic, to any hospital where an E.N.T. surgeon is working is uneconomic. I advocate a full set of E.N.T. instruments to the centres and no operative instruments to individual hospitals. If any operation had to take place elsewhere it would be open to the surgeon to borrow from the centre or to take his own. It is obviously impossible to supply a full set to every hospital, and anything less is useless.

I consider the position of treatment in the wards to be most unsatisfactory, and it is here that time, and therefore money, are badly lost. In every modern throat department there is a treatment room equipped with illumination, sterilizers, and instruments for diagnosis and treatment. There is an urgent need for the provision of such facilities in greater or less degree in every E.M.S. hospital. If the treatment room is efficient and under the care of a keen and properly trained sister, the number of cases requiring operation will be greatly reduced. I should like instruments for diagnosis and treatment, which are relatively few in number and inexpensive, supplied to every E.M.S. hospital at which an E.N.T. surgeon attends, and these should be solely allocated for use in the wards.

There is too little effective treatment and too much operative work; an operation is only justified under war conditions if it will enable the patient to return to his unit a reasonably fit man. Too often his stay in hospital after operation is terminated by his being boarded out of the Army.—I am, etc.,

Edgbaston, Oct. 28.

MUSGRAVE WOODMAN.

Possibility of Malaria in Britain

SIR,—Though there is evidence that cases of indigenous malaria may have occurred in this country sporadically until fairly recent years, no malarial outbreak of importance of either indigenous or foreign origin has been reported since that of 1917-18, when 330 civil and military cases of benign tertian were contracted following the return of groups of malaria-infected soldiers from the Near East. Conditions in some parts of our country at the present time are, in respect of the epidemiology of this disease, not unlike those which preceded the 1917 epidemic (Reports to the Local Government Board). When there is close association between the malaria carrier, the anopheline mosquito, and the susceptible individual there is reason to expect new cases of the disease. If, as could happen reasonably enough in a country where malaria is almost unknown, these first new cases were missed or insufficiently treated, there would be a rise in the endemic index of that area, with, it need hardly be said, possible serious results. The object of this letter is to draw the attention of general practitioners and Service medical officers in potential malarious districts to the fact that cases of malaria among men who have never been abroad are more likely to arise now than at any time since the close of the last war.

Of the three main links in the chain of malarial propagation two are perennially present in Britain—namely, the potential malaria-carrying anopheline mosquito and the susceptible individual; while the exigencies of war have intervened to provide the missing link, the malaria carrier, on the absence of which our insular freedom from the ravages of malaria has principally, though not wholly, depended. With regard to the malaria carrier, it is common knowledge that there are many thousands of men in this country at the present time who have fairly recently come from Eastern European and Southern European countries where malaria is endemic or from tropical and sub-tropical parts of the Empire. Many of these men have undoubtedly suffered from malaria, and a number will continue to be subject to recurring attacks and carry gametocytes in the peripheral blood from time to time. Though lacking concrete evidence on the proportion of men who come from either of the above categories, yet the known facts relating to the course of this disease justify the assumption that some of them may harbour infection.

Anopheles maculipennis is not only the most numerous and widely distributed species of the three British anophelines but is also known to be capable of transmitting malaria, but is, from

of its habits, the most likely to be incriminated. Work by the Continental entomologists, Hackett, Martini, and Missiroli,¹ has shed light on the previously obscure problem of the high incidence of malaria in some districts in northern latitudes and the comparative freedom of others, though *A. maculipennis* was present in both. The problem was elucidated by the demonstration of several varieties of *A. maculipennis*, two of which, with widely differing habits, have since been identified in Britain (Marshall²). This discovery is of peculiar importance in connexion with the spread of malaria in temperate climates, and, further, it explains certain perplexing features of the 1917-18 outbreak. The two British varieties are *atroparvus* and *mesaeae*. The former breeds in coastal brackish waters. It is only partially hibernating and seeks blood meals throughout the winter in the warm ill-lighted buildings which it frequents. The latter is found mainly in inland districts and passes through a stage of complete hibernation, before which it bites voraciously to build up the fat body. If at this juncture it becomes infected it can continue infected throughout hibernation and transmit sporozoites when it seeks a pre-oviposition blood meal the succeeding spring. Fortunately, if animals can be obtained it does not readily attack human beings. In the case of *atroparvus*, on the other hand, conveyance of infection to individuals may continue throughout the winter, not only because the insect remains active, but because "the parasite may develop in mosquitoes which live in heated houses even in places as far north as Archangel, and so the disease may be conveyed in the coldest weather." (Rogers and Megaw.³)

It is clear that, given a number of malaria carriers and a close association between them and the female mosquito such as is possible in the Nissen huts in which soldiers are housed and in which a warm humid atmosphere is maintained, conditions are thereby provided which are favourable to the infection of the anophelines and to the transmission of the parasite to simultaneous or subsequent non-infected occupants. The *atroparvus* variety is obviously the more dangerous of the two, and particular care should be exercised in coastal and estuarine districts if soldiers from malarious parts abroad are stationed there. *Mesaeae*, however, should not be overlooked, and in that connexion it is worthy of note that I have recently identified females of *Anopheles maculipennis* in the vicinity of a camp in which Indian troops are quartered.—I am, etc.,

I. F. MACKENZIE.

Deputy County Medical Officer.

Hereford, Oct. 23.

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Practical Results of Diphtheria Immunization

SIR.—What immunization can accomplish in combating diphtheria is shown by the remarkable drop in incidence in Brisbane. The local authority of Brisbane, the city under review, has an area of 375 square miles and a population of 35,520. In January, 1938, I decided to make every effort to speed up the council's free immunization service. I used every available means to impress upon parents the importance of aving their children—especially their children of pre-school age—immunized. The response exceeded my most sanguine expectations.

In the three years and seven months period—namely, from January, 1938, to July 31, 1941—I have fully immunized 22,912 children. This rate of immunization in Brisbane, which is averaging approximately 6,400 per annum, is, in the period under review, considerably in excess of the birth rate. To this must be added an unknown but considerable number of children immunized by private practitioners, and I am pleased to be able to state that as I write the response of children is greater than ever. Records disclose that at least 70% of this total are children of pre-school age. By educative methods the task has now been reached in Brisbane when the vast majority of parents realize that they owe this simple duty to their children.

The maximum incidence of the disease occurs during the second, third, and fourth years of life, and as large numbers of immunized children of this age group are appearing every

day in increasing numbers in Brisbane, the incidence of the disease now shows the anticipated spectacular fall. Here are the figures for this period:

Population and Diphtheria Cases				
	1936	1939	1940	1941 (7 months)
Population	328,890	326,000	333,560	335,520
Cases	459	508	231	156

Diphtheria in recent months has reached epidemic proportions in some cities, but Brisbane, which now has 75% of its susceptible child population immunized, is safe from such an eventuality, and with parents co-operating so wholeheartedly with the council's department of health in its sincere attempt to eradicate this serious disease from their midst, a diphtheria-free Brisbane is not far distant.—I am, etc.,

RALPH WEAVER.

Brisbane, Queensland, Aug. 8.

Medical Officer of Health.

Increase in Tuberculosis

SIR.—Houghton, in his paper on the blood picture in tuberculosis (*Tubercle*, November, 1935), quotes the work of Murphy, Sturm, and Ellis, who found that they were able to increase resistance against experimental tuberculosis in mice by artificially increasing the number of lymphocytes by means of splenectomy, or, more especially, heat. Conversely, mice exposed to x rays in sufficient dosage to produce atrophy of lymphoid tissue were found to become more susceptible than normal to tuberculosis. Also, Taylor (*J. exp. Med.*, 1919, 29, 41) showed that a relative and absolute lymphocytosis occurred in the majority of persons he examined before and after a course of heliotherapy during the summer months. These observations are supported by clinical evidence that healing in tuberculosis is associated with increase of lymphocytes in the circulation, and that failure of resistance is associated with lymphopenia. I have published (*Journal*, November 16, 1940, p. 660, and January 11, 1941, p. 65) clinical observations purporting to show that the lymphatic glands act as a barrier against haematogenous tuberculous infections. Therefore any factors tending to produce lymphocyte leucopenia would lower resistance to tuberculosis. Vitamin-B deficiency is such a factor (Sampson Wright, *Applied Physiology*, 1937). Associated also with vitamin-B deficiency is impairment of absorption of fat from the small intestine. This in turn would favour deficiency in the absorption of vitamin A.

Thus another argument, if another were necessary, can be produced for the consumption of wholemeal bread, which has been recommended by the Government. Also, if it is true that heat and light promote lymphocytosis, confirmation is found for the value of heliotherapy in the treatment of non-pulmonary tuberculous lesions, and an argument is constituted for the use of light-treatment centres by the public during the months when black-out conditions are at their worst. Heat in the form of infra-red rays, as well as ultra-violet light, should be applied at such centres, and this work would be done more safely if it was brought within the purview of the tuberculosis officer.—I am, etc.,

Braintree, Essex, Oct. 20

M. C. WILKINSON, M.B., B.S.

Treatment of Scabies

SIR.—Scabies may be attacked from two aspects: that of the dermatologist, who looks for a cessation of clinical symptoms, and that of the entomologist, who sets out primarily to exterminate the parasite which causes the disease. I consider that dermatologists and entomologists must work in collaboration (and any results that I as an entomologist have been able to obtain are in a great measure due to help and advice freely given by dermatologists); but surely the first thing we must ensure is that our treatment is really killing the sarcoptes in all its stages—that is, the problem should first be attacked from the entomological aspect. Then if (as is the case) it is found that the parasitic infection can be exterminated without a cessation of all clinical symptoms, the dermatologist must carry on from that point. But to try, in the first instance, to cure the symptoms while ignoring the parasite which causes the disease is surely to put the cart before the horse.

The question of whether or not it is always necessary to find living or dead acari has become somewhat confused. Where the treatment of scabies is part of a research programme, then

the worker must surely be expected to be able to demonstrate exactly what his treatment is doing to the parasite. It is because research workers have been so unfamiliar with sarcoptes that so many conflicting results regarding treatment have appeared. It should be possible for the practical man who has to treat the disease to follow the directions of the research worker with the certainty that the disease will be cured at any time or in a known proportion of cases. The ability of the research worker always to find the parasite should save the practical man from this trouble, but the practical man must refrain from calling his results "research" and publishing them for the confusion of others.

New methods have at times been advocated as a result of experiments using far too few cases as well as on insufficient evidence. It is at present premature for me to describe most of my work on this point, but I believe that no new method should be advocated unless it can be shown that in at least fifty cases it has exterminated every parasite and has eventually put an end to the clinical symptoms. I may state that I have found mites alive after treatment of the patient at reputable centres with many different methods, including benzyl benzoate.

While it is difficult to produce evidence to show that a new method is entirely successful, it is much easier to show that an unsatisfactory method is likely to be unsuccessful, for if 100% failure to cure is obtained in even a small number of cases it is obvious that it is hardly worth while continuing its use. This point may perhaps be illustrated by reference to the use of sulphur taken internally as advocated by H. M. Berncastle.¹ The following experiments were made. (1) Two infected volunteers were each fed rather more than 10 grammes of sulphur daily for ten days. This had a slightly purgative effect at the beginning, but the men soon recovered. At the end of ten days both men were more heavily infected than at the start—that is, it was possible to observe a larger number of parasites on their bodies and all stages of the mites appeared to be entirely unaffected; (2) Three uninfected volunteers ate 10 grammes of sulphur daily for seven days. They were then experimentally infected with sarcoptes and continued to eat sulphur for three more days. Biopsies made on the tenth day showed that the mites had burrowed normally and had also laid eggs which were developing in a normal manner. These experiments seem to be sufficient to indicate that this method cannot have a universal application.

Finally, I should like to make a protest. Certain people have accused me of writing, and your *Journal* of publishing, a statement that scabies is "a venereal disease." Reference to my article² will show that I state that I believe the disease to be "normally transmitted by personal contact either of a slight or of a venereal nature." I still hold that view, but to say that it implies a belief that scabies is "a venereal disease" is surely a gross misrepresentation. Non-venereal transmission by personal contact, particularly among children, is probably much more frequent than venereal transmission, but among young adult males in the Army venereal transmission, though very far from universal, appears to account for a certain proportion of the cases.—I am, etc.,

Sorby Research Institute, Sheffield, Oct. 23.

KENNETH MELLANBY.

SIR,—I was particularly interested in the article by Dr. Dorothy L. Carter (September 20, p. 401), because since March I have been treating cases of scabies in one of the Colchester first-aid posts with a sulphur shampoo. The treatment consists of the usual bath and scrubbing, but afterwards the patient is thoroughly shampooed all over with a shaving brush with a shampoo of the following composition: sulphur præcip., 30 grains; glycerin, 4 minims; soap spirit, 120 minims; aq. rosae, ad 1 oz. A well-known firm of chemists makes this shampoo for me at a cost of 2s. 6d. for a 40-oz. bottle, and approximately 1 oz. of the lotion is needed for one treatment of an adult and 1/2 oz. is sufficient for most children. Each patient is given two treatments on consecutive days.

From March 29, 1941, to September 30, 1941, 116 persons have been given this treatment. The result has been that within a fortnight six persons have returned for further treatment owing to the recurrence of itching. It appears to me that a fortnight is a reasonable limit to set. After a fortnight fourteen

persons have returned. The majority of these were undoubtedly reinfections, as they returned months after the first treatment.

The sulphur shampoo is allowed to dry on the patient and he puts clean clothes on over the shampoo when dry. There has been no trouble from sulphur dermatitis even with quite tiny children. The usual disinfection of bedding and clothing is carried out for each case. I am inclined to think that this method is probably simpler and cheaper than any other so far suggested, but the important factor, as in all other methods, is thorough treatment by trained personnel.—I am, etc.,

Health Department, Colchester, Oct. 29.

W. F. CORFIELD.

Diabetes and Chronic Nephritis

SIR,—I should be glad to know if any of your readers have had experience with the action of mersalyl in the treatment of diabetes mellitus. I am sending particulars of a case, which has recently been under my care, in which the use of mersalyl has had a decidedly beneficial effect. I should be glad to hear if anyone can throw a light on what its action is.

The patient is a woman aged 66 suffering from diabetes mellitus and chronic nephritis. She was on insulin soluble 45 units each evening, and zinc-protamine-insulin 45 units with insulin soluble 25 units each morning. In spite of this dosage her urine always gave an orange reaction to Benedict's test. She had increasing ascites and oedema of the face and legs, and did not respond to diuretin, urea, or cardophyllin. After a microscopic examination of her urine, which showed only a few epithelial cells and a few hyaline casts, I decided to give her an intramuscular injection of mersalyl (1 c.cm. diluted to 10 c.cm. with sterile water). One hour before this injection she was given ammonium chloride 30 grains in 1/2 oz. water. Her fasting blood sugar before the injection was 0.332%, and a specimen of urine was taken and gave an orange reaction to Benedict's test and contained albumin +++.

Five hours after the injection a further specimen of urine was tested and no sugar or albumin was found to be present. Insulin was stopped and the urine was sugar-free for the next forty-eight hours. The patient's general condition showed a remarkable improvement; the oedema diminished, and the output of urine was doubled during the following week; it rose to 58 oz. during the twenty-four hours immediately following the injection. At the end of forty-eight hours the fasting blood sugar had fallen to 0.266%. Three days after the mersalyl the urine again gave an orange reaction to Benedict's test, and although the original doses of insulin were resumed the reaction remained orange. A second injection was given eight days after the first, with a resultant output of 92 oz. of urine in the following twenty-four hours. A specimen of urine after this second injection gave a green reaction to Benedict's test, and further tests have also given a green reaction.

Now (nine days after the second injection) the improvement in the patient's general condition has been maintained; she feels, as she says, "a new woman."—I am, etc.,

London, N.21, Oct. 17.

TADEUSZ MARKOWICZ.

Treatment of Varicose Veins

SIR,—Mr. R. T. Payne's exhaustive article on varicose veins (October 18, p. 533) contains some remarkable statements. He tells us that "minimal" operations—i.e., "ligation at the saphenous opening and possibly at one other site"—"even when combined with subsequent injections, rarely lead to complete obliteration"; that "in a case of average severity . . . operation has to be carried out at five or six sites"; that "a mass of tortuous veins . . . calls for free excision," while certain other cases demand "a more extensive excision." And, finally, that "care is needed in planning incisions," and "there is nothing to suggest that surgery should be maximal." "By the twelfth to the fourteenth day," it is gratifying to note, the patient "should be able to walk short distances." But is this "sub-maximal" assault really justified? Can satisfactory obliteration only be achieved by totalitarian methods?

The simple method of ligation at the groin, with a single injection of ethamolin at the time, preferably down an intravenous catheter, has given entirely satisfactory results, both in peacetime and under the severer conditions of war. The patients can travel within eight to ten days; and they do not require "daily injections" four weeks after operation.

¹ British Medical Journal, October 18, 1941, p. 560.

² Ibid., September 20, 1941, p. 405.

"Care is needed," undoubtedly; but it should perhaps be exercised before announcing that such reliable "minimal operations should be avoided."—I am, etc.,

Oct. 24.

C. R. McLAUGHLIN.

Status of the Ship Surgeon

SIR.—Will you allow me somewhat belatedly to refer to some points raised by Dr. James Prendergast (June 14, p. 904) in his letter on the above subject, which I have been unable to read until now owing to absence at sea.

With regard to the objectionable "Voyage Regulations," it seems a pity that those who were responsible for drawing up these did not follow the good example set by the U.S. authorities to meet similar conditions in the last war. At that time those of us who were ship surgeons on vessels carrying American troops were given recognition by the U.S. Government as well as a certain remuneration, in return for which we were asked to advise and guide the military medical officers in their shipboard duties.

In practice things usually work out better than might be expected from a study of the regulations. Actually these can be traversed by the master of the ship, who is responsible for the safety of his crew and ship, and he can ask the ship surgeon to carry out any duties he considers necessary for this purpose, even when this involves the examination of soldiers who may be suspected of being suffering from a serious infectious illness. Such an examination is, of course, carried out in conjunction with the S.M.O., and up to the present I have found the military medical officers only too willing to co-operate for the comfort and well-being of all those on board. On several occasions I have been asked by the S.M.O. to operate on soldiers suffering from appendicitis or to assist him while he operated, and in turn the S.M.O. has always been glad to give an anaesthetic when I found it necessary to operate on one of the crew. When, as a result of enemy action at sea, we had a fairly large number of casualties, the military medical staff and the ship's medical staff worked as a unit. This, of course, is no excuse for the regulations referred to, and Dr. Prendergast has done well to draw attention to them.

In the course of nearly thirty years of service at sea I have never been able to take the view that the duties of looking after the crew were trifling, and I have on more than one occasion known disastrous results happen owing to that view having been taken. Still, I think Dr. Prendergast merely wishes to say that he would like to feel he was doing more. As to the dullness when work is not plentiful, I am afraid nothing much can be done about it. One of the attractions of a medical career at sea is that it provides one of the few escapes for the doctor of a studious turn of mind who is willing to sacrifice a certain amount of financial remuneration for the leisure that will allow him to prosecute his studies, whether scientific or cultural, and at the same time enable him to make up in the quality of his work what it lacks in quantity. I hope this opportunity will long remain open to members of the profession, though I should be the last to deprecate an increase in remuneration.

It is regrettable, I think, that this opportunity is not more widely utilized by men of the required temperament and mental qualities. Our profession would be all the better for being leavened by members who had the time and the inclination to make a serious study of subjects outside the range of ordinary medical or surgical work. Some time ago I read a correspondence conducted on something like equal terms between a leading mathematician of this country and a doctor. The latter was thanked for having pointed out an error in the published work of the former, the work in question dealing with one of the most recent developments in mathematical theory. The doctor, a former ship surgeon, had acquired his mathematical equipment in the intervals between seeing patients at sea. One could cite other instances in support of the view that a ship surgeon's recompense is not to be measured entirely by financial standards. This is not to be construed as a plea in favour of cheap labour or its equivalent in medical practice.

As in status on board, without belittling the necessity at times for extraneous aids, it can hardly be denied that an important part of this status is created by the ship surgeon himself and carried with him from ship to ship.—I am, etc.,

Oct. 25.

A. GARDNER, M.B.

Science and World Order

SIR.—I refer to Dr. A. P. Cawadias's letter (October 25, p. 592) dealing with the British Association's conference on the above subject, in which he states that the conference was not international, that no place was made for foreign delegates, and that on the whole few Allied and foreign scientists participated. The facts are as follows. Of the chairmen of sessions four were foreign representatives and two British. Out of sixty speakers, apart from chairmen, twenty-six were British scientists or technicians: twenty-seven were foreign scientists (either working now as such or formerly having done so), of whom ten were nominees of foreign Governments or institutions now in this country; six were British statesmen or Government servants: one was a writer.

If this conference, the first attempt of its kind, leads to more precise discussion of particular questions at subsequent meetings, whether of the British Association or other bodies, one of its principal objects will have been achieved. A committee of the Division for the Social and International Relations of Science is now inquiring into every concrete proposal made at the conference, endeavouring to inform itself, in respect of each, of what action, if any, is being taken now, or of what should be done, by whom, and how. The extremely important questions of starvation and epidemics referred to by Dr. Cawadias and by at least four speakers at the conference (not one only, as he states) are among these.—I am, etc.,

London, W.1, Oct. 25.

O. J. R. HOWARTH,
Secretary, British Association

Mobile First-aid Posts

SIR.—Dr. C. Grantham-Hill (October 25, p. 594) has stated the textbook conditions under which a mobile unit would go into action. In actual practice there are rarely sufficient casualties in a very restricted area in a town (with hospital near) to warrant setting up a mobile post. So if these conditions were adhered to doctors of mobile units would not often be called upon.

Our experience has indicated that wherever there are a few casualties a mobile unit doctor should go with one or more of his personnel in a car carrying packs of dressings, etc., a doctor's emergency bag, and a few long splints inside, and, in the boot, A.T.S., blankets, hot-water bottles, vacuum flasks of hot water and beef extract, all the latter for that highly dangerous condition, shock. The doctor then goes from "house to house." (Elastoplast dressing-strips are not an official issue, but they save a lot of time!) But if a mobile van has to turn out, I would suggest that it should contain two table-tops (with trestles) on which to lay out dressings, etc., and from which to work. For speed in laying out, all the dressings needed for these tables can be stored conveniently in the top divisions of the A2 box.

Dr. Grantham-Hill's well-equipped van for washing and treating patients is doubtless very useful for rural districts far from hospitals, but in the towns our chief aim is to rush patients to hospital with the maximum speed, where the wounds are cleansed, etc. Incidentally, the dirt is so embedded that it would be impossible for the mobile doctor to get it out.

Finally, mobile unit doctors should make it a duty to spend an hour every month or so with the heads of report centres, discussing matters of common interest. It is amazingly helpful in both parties.—I am, etc.,

Oct. 25.

MAURICE E. J. PACKER,
M.O. in Charge, No. 1 Mobile Unit, Clifton, Bristol.

SIR.—Your correspondent Dr. Grantham-Hill might be interested to know that in the town where I live we have three mobile units built on the lines he describes. They are converted buses, originally designed to carry about 30 people. I believe we are indebted to our medical officer of health for the idea. Such a unit certainly does relieve one of the anxiety of finding suitable premises for working in during a raid. My unit is roomy, well lighted, with operating table, sterilizer, and large water-tanks (these last on the roof). So far my unit has been in use during one (our chief) raid, and, with all modesty possible, I think we were well worth our keep. There is one

point which we found needed altering: a portable light-trap is essential; work cannot be carried on when, every time the door is opened, workers are thrown into darkness inside.

I gather that Dr. Grantham-Hill has had his unit frowned on officially. I, too, detect a certain chilliness in the atmosphere whenever a mobile unit is mentioned, and I am sure our reception would be more cordial if the original Government idea were modified on the lines Dr. Grantham-Hill indicates. In the eventual merger of A.R.P. and Home Guard medical services (surely a very likely merger in a long war), our travelling units may, I feel, earn the gratitude and admiration of the Ministries concerned.—I am, etc.,

Doncaster, Oct. 28.

ROBT. W. L. WARD.

First Aid to the Injured

SIR,—I have read with interest Dr. J. C. Hodgson's letter on "First Aid to the Injured" (October 25, p. 595), in which he suggests that simplicity, flexibility, and improvisation are required in wartime, and considers that a special pamphlet on "First Aid in Time of War" should be published. Is this really necessary? At the time of a heavy air raid these characteristics are certainly required; nothing but simple methods can be used in removing casualties from burning and falling buildings, usually at night, such methods being the steadying and supporting of fractured limbs by bandages, applying tourniquets for severe haemorrhage, and trying to keep the casualty warm. After that the personnel of the post or point will deal with the cases in a deliberate and orthodox manner. All posts and points have a medical man in charge, I believe, or obtainable at call, and he will supervise the best treatment available until the cases are removed by ambulance.

Dr. Hodgson remarks that the tourniquet is not foolproof; I quite agree, but it is more important and often much more urgently required in wartime than in peacetime. It should be of the simple rubber-band type, easily made from the inner tube of a motor-car tyre cut on the spiral.

In my opinion too much has been made of this so-called "wartime first aid"; it is practically all in the 1940 edition of the "Red Cross Manual," although certain things require stressing in lectures.—I am, etc.,

HOWARD M. STRATFORD, F.R.C.S.Ed.

Beckley, East Sussex, Oct. 25.

SIR,—The letter under this title from Dr. John C. Hodgson merits a reply. In my opinion Dr. Hodgson is confusing the issue between "first aid to the injured" and "the after-care of the injured," as he postulates an interval of days between the injury and professional attention. If this is to be so "during a period of invasion, especially in rural areas," then obviously it follows logically that the scope of training should be increased to cover such an eventuality, and I have been asked many times by my own personnel since the war to widen and deepen the training for this very reason.

It is my experience over a great number of years that first aid and casualty work appeal to a very small percentage of the population, and that those who do take it up do so seriously and become experts in their own particular subject and are very keen to add to their knowledge. It takes years to make a really efficient "first-aider," and it is quite useless to expect to produce an efficient casualty service by giving short courses on first aid to the general public. I have done so and I know the result—a smattering of ill-digested knowledge, soon forgotten.

In my opinion a grave mistake has been made in not taking over every St. John Ambulance Division *en bloc* as a working casualty unit and reserving each member for that work. The result of not doing so in my own Division, where we have men, nurses, cadets, and a motor ambulance, is deplorable. Many of our fully trained members have been taken into services totally unconnected with casualty work, and thus all their training virtually wasted, while the few remaining struggle to keep the service going in a rural area liable to invasion.

At the present time there is much confusion in the civilian casualty service between mobile units, first-aid posts and points overlapping the work of the St. John and Red Cross. I would suggest: (1) That the St. John Ambulance Divisions be placed on a war footing and made responsible for all casualty services

in their own district; to organize such services without any interference from any source. (2) That adequate medical supplies be forthcoming to each unit without delay. (3) That each Division should act as a centre for the training of the public and services in emergency first aid, and at the same time give more extended training to those interested or responsible for any post where casualties may have to remain for any length of time.—I am, etc.,

RUPERT PALMER,
Divisional Surgeon, St. John Ambulance,
Lydd Division.

Oct. 26.

A National Health Policy

SIR,—More persons of higher income may become insured; a higher capitation fee may be granted. These actions may injure or benefit the profession, may ensure that illness is promptly treated and its duration shortened, but they will do nothing to reduce the onset of illness. A State Medical Service might be a benefit or a curse, but it, again, would not reduce the sickness incidence in the population. Neither the profession nor the public is at present in a position to deal adequately with such a radical change in the organization of its medical services. This is a debatable matter, and a large proportion of the medical profession is at present absorbed in the Services and unable to attend to a matter which will be vital both to them and to the public.

There is, however, a matter of greater importance to the public and the profession, which has scientific evidence and practical experience in support of its worth, which could and should be put in the front line of defence now and remain in the front line of maintenance in our post-war economy. I refer to the "Medical Testament" of the Cheshire Panel Committee. This practical demonstration of better health for the nation should be made a national policy. It has the support of Sir Albert Howard as an agriculturist, whose work won world-wide acknowledgment; and of Sir Robert McCarrison, an authority on dietetics second to none. Its practical application as a national policy would: (1) Reduce sickness by prevention, which is better than cure. (2) Increase the well-being of the whole population. (3) Reduce the hours lost to productive work and so increase our productive capacity. (4) Increase the quantity and quality of home-produced food to the maximum. (5) Reduce the drain on the country due to cost of medicines and sick pay. (6) Reduce the amount of work to be done by each practitioner without altering his panel, which is the equivalent of a higher capitation fee but without cost to the State. (7) Put agriculture on its feet and keep it there, with adequate wages and return on capital and with increased fertility and production from the soil. (8) Give a higher standard of health and living without an increase in the cost of living.

Probably many will say that all this is impossible. Let them read and think about the "Medical Testament" and the speeches made by Sir Albert Howard and Sir Robert McCarrison in support of that testament, and read, in addition, the former's *Testament of Agriculture*. They will then find that the way is there; we have only to make up the will.—I am, etc.,

Market Rasen, Oct. 26.

DUDLEY F. TORRENS.

The American Association for the Study of Goiter again offers the Van Meter Prize of three hundred dollars and two honourable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The award will be made at the annual meeting of the Association, to be held at Atlanta on June 1, 2, and 3, 1942, providing essays of sufficient merit are presented. The competing essays may cover either clinical or research investigations; should not exceed three thousand words in length; must be presented in English, and a typewritten, double-spaced copy sent to the Corresponding Secretary, Dr. T. C. Davison, 478, Peachtree Street, Atlanta, Georgia, not later than April 1. Dr. Arthur Chapman of Rochester, Minnesota, has received the award for the year 1941 in recognition of his essay entitled "The Relationship of the Thyroid and the Pituitary Glands to Iodine Metabolism and Extrathyroid Iodine Metabolism."

Obituary

The death at the age of 92 of Dr. NATHANIEL BENOLY, for over sixty years a member of the B.M.A., has removed a figure at once venerable and much beloved. His medical activity did not cease till July, 1939, when he had reached the age of 89. Even at so advanced an age he still retained extraordinary energy of mind, body, and spirit, literally looked and felt twenty years younger than he was, and rejected with scorn any suggestion of a well-deserved retirement. The secret of his devotion to his work was the love of a man for his fellow men, and in the East End of London, where he was in general practice during the latter half of his life, he will remain unforgotten by many. For not only was he a doctor of outstanding ability, whose diagnosis was remarkable and whose treatment was based on methods founded on long experience and unexaggerated application of modern therapy, he was also the friend of his patients, the cheerful, often witty counsellor: there must be many a man, and woman and child, too, to whom contact with "the old Doctor" meant a new and more hopeful beginning of life, both physically and spiritually. In his younger years he had travelled considerably in European countries and in South America, and his memories going back further in time than the memories of most, his conversation was often enthralling. He lived in retirement from the beginning of the present war, but except for the last few months, when his health declined, he retained his lucidity of mind, his gay serenity of spirit, and his love of books and men.

G. R. B.

The passing of R. M. LITTLER, F.R.C.S., severs a link with Whitehead, Japp Sinclair, and others who made the Manchester School famous. To both Mr. Walter Whitehead and Sir W. Japp Sinclair he had been house-surgeon. Coming to Southport over forty years ago, Littler was the first secretary of the Southport Medical Society, serving in that capacity for several years and later becoming president. In 1912 he was chairman of the Southport Division of the B.M.A., of which he had been a member for forty-six years. In 1905 he joined the honorary staff of the Southport Infirmary, and from 1924 to 1925 was chairman of the Medical Board. Retiring under the age limit he was appointed honorary consulting surgeon. Cultivating his garden in the broadest sense he found a corner in it for music and a very special one for horticulture. Unfortunately the years of retirement were marred by indifferent health. Of broad view and sound judgment, although at times a little mistrustful of his own ability, Littler's advice and help were often sought by and given to his medical friends, whose respect and affection he had in more than full measure.

W. A. M.

We regret to record the death of Dr. FERGUS MACANDREW DAVIDSON on October 9 at his home in Arbroath at the early age of 52. Born in Aberdeen, he was educated at Ashley School, Robert Gordon's College, and Aberdeen University, from which he graduated M.B., Ch.B. in 1914. He went to Arbroath in 1919, where his kindly and gentle presence soon endeared him to friends and patients alike. He was on the staff of Arbroath Infirmary, where he took a great interest in the electrical department. He was also medical officer for the parish over a long period of years. Dr. Davidson was untiring in his work among his patients, never sparing himself, and this took a heavy toll of his strength. He will be missed in many homes, and the memory he leaves behind him will be a fragrant one and that of a very gallant gentleman. In his infrequent spells of leisure his hobbies were art and philately. A member of the B.M.A. for well over twenty years, he is survived by his wife and by his daughter, who is also a member of the profession.

Dr. GEORGE ALEXANDER COHEN, who died in hospital at Edgware on October 16 at the age of 71, had been a coroner for more than thirty years. A native of Hull, he studied medicine at the University of Edinburgh, at St. Bartholomew's Hospital, and in Dublin, graduating M.B., C.M.Ed. in 1893. After

holding a resident post in London at the National Hospital for Diseases of the Heart he made many voyages as ship surgeon, and returned to London in 1906 to take up general practice at Green Lanes, Harringay. He then became a member of the Middle Temple and read for the Bar, and at the time of his call was awarded the Powell prize in common law and the prize in evidence and legal procedure. In 1910 Dr. Cohen was appointed a part-time coroner, and in 1916 he became full-time coroner for East and Central Middlesex. In his early years he was a keen volunteer, with a commission as captain in the Volunteer Battalion of the Middlesex Regiment; he had also been an instructor and lecturer at the Ambulance School of Instruction. He was a liveryman of one of the City companies and a keen supporter of the Arsenal Football Club.

By the death of Dr. JOHN GILFILLAN RONALD at Torwood Hall, Larbert, on October 22 Stirlingshire loses one of its oldest and best-known medical practitioners, who had been a member of the B.M.A. for nearly half a century. A student of the University of Glasgow, he graduated M.B., C.M. with commendation in 1892, and held a number of important posts during his long period of active work at Larbert. He was an authority on first aid and ambulance work and examined for the British Red Cross Society, which made him an honorary life member. During the last war he served with the rank of captain R.A.M.C.(T.A.), and at the time of his death he was a deputy chairman of the Stirlingshire Medical Recruiting Board, medical officer to the Carron Company, and visiting medical officer at the Camelon Fever Hospital. In 1934 Dr. Ronald was presented with a silver loving cup and a cheque for nearly £300 in gratitude for his medical skill, his devotion to his profession, his sympathy with suffering, and his generosity to the poor.

Dr. JOHN JOSEPH REDFERN, who died in retirement at Compton, near Winchester, on October 23, was born in Belfast in July, 1861, eldest son of the late Prof. Peter Redfern, M.D., of Queen's University. He had a distinguished career as a student, in Belfast, winning a gold medal and scholarships in chemistry, anatomy, and physiology, and graduated B.A. with first-class honours in experimental science in 1881, and M.D. and M.Ch. with first-class honours in 1885. After postgraduate study in London, Vienna, and Berlin, Dr. Redfern settled down in practice at Croydon, where he became honorary physician to the Croydon General Hospital and later physician to the War Hospital. He had been a member of the British Medical Association for just over fifty years.

Dr. ALFRED SKIRROW ROBINSON, who was killed by enemy action last month, had been a member of the British Medical Association since 1899 and for some years took a prominent part in the public life of the North Riding of Yorkshire, serving both on the Redcar County Borough Council and on the North Riding County Council. Born at Leeds in January, 1871, he was educated at the Yorkshire College, Leeds, and Emmanuel College, Cambridge, which he entered with an exhibition from the Haberdashers' Company of London. He graduated B.A. in the Natural Sciences Tripos of 1892, qualified as L.S.A. in 1894, and took the Cambridge M.A., M.B., and B.Ch. degrees in 1896. At Leeds he was house-surgeon and resident anaesthetist at the General Infirmary and acted as clinical assistant to Mr. T. Pridgin Teale. Settling in practice at Redcar he became medical officer and public vaccinator for the Kirkleatham District. Dr. Robinson had been medical officer to the 5th Yorkshire V.A.D., and served during the last war with a temporary commission in the R.A.M.C.

E. Verrill and E. A. Lane (*New York St. J. Med.*, 1941, 41, 1186) record a case in a man, aged 55, who had been a typhoid carrier for the past thirty-six years, during which he did not infect anyone inside or outside his family so far as was known. Removal of the gall-bladder, which contained a gall-stone of unusual size, failed to cure the typhoid carrier condition. There appears to be no previous case on record during the last ten years of the association of the carrier state with an acute exacerbation of chronic cholecystitis.

Medico-Legal

TEMPORARY MENTAL TREATMENT AND DIVORCE

The draftsmen of "Herbert's Act," which so radically altered the law of divorce, could not be expected to foresee all its practical implications. Divorce for insanity was a complete innovation, and on the whole the Act has worked well. One of the most striking gaps in it is, however, the absence of any mention of the "temporary" mental patient. The Act provides that a spouse may have a divorce if he/she can prove that the other party to the marriage is incurably insane and has been continuously under care and treatment for five years before the date of the petition. The patient is deemed to be "under care and treatment" in certain specific circumstances and no others: the words are satisfied if he/she is "detained in pursuance of any order or inquisition under the Lunacy and Mental Treatment Acts, 1890-1930," or under the statutes relating to mental patients in the fighting Services, or as a criminal lunatic. The words are also satisfied if, immediately after a period of such detention, the spouse becomes a voluntary patient and remains so for the rest of the five years, or again comes under detention. The object of this provision is obviously to avoid placing the voluntary status, created by the Mental Treatment Act, 1930, at a disadvantage by making it in any degree a bar to a divorce. Herbert's Act, however, does not say what happens if the patient has during the five years been a temporary patient under Sect. 5 of the 1930 Act.

A Case in Point

The question came before the President this summer¹ when a husband petitioned for a divorce and showed that his wife had been received into a mental hospital for temporary treatment in September, 1933; after the first statutory period of six months her treatment was duly extended for another three months by "directions" of the Board of Control—that is the word used in Sect. 5 of the 1930 Act. At the end of May, 1934, she was discharged relieved, and entered another mental hospital as a voluntary patient. She was still there at the date of the petition, and admittedly incurable. Voluntary treatment only counts for divorce if it follows a period of detention "in pursuance of any order." Was her temporary treatment detention of this kind? The President said that a "direction" is indistinguishable from an "order," and therefore her detention was in pursuance of an order under the 1930 Act. But she had had her temporary treatment extended; he declined to express an opinion on whether, if she had gone straight from her initial period of temporary treatment into voluntary treatment, the result would have been the same. When a temporary patient is received for treatment there is neither order nor direction, only an application and two medical certificates. The law may therefore conceivably be that the original period, unlike the extended period, is not "detention in pursuance of any order." That would be a ridiculous situation, and this point badly needs clearing up in an amending Act.

Desertion and Volition

In another divorce action² the question was whether temporary treatment interrupts a period of desertion. Herbert's Act makes desertion for three years a ground for divorce. By settled law, desertion must be wilful, intentional; and in a divorce appeal³ heard two years ago the Master of the Rolls held that if a deserting spouse is certified under the Lunacy Act, that is irrefutable evidence that he/she could no longer entertain the intention to desert, and the period of desertion was interrupted until the reception order was cancelled by discharge. (This is the only legal situation in which a certified patient is held to be irresponsible merely by reason of the certificate—an anomaly with no basis in reason.) A wife deserted her husband in 1937. Just two years later she was received into a mental hospital as a

temporary patient. A week afterwards she became a voluntary patient, and a month after that she was discharged. Mr. Justice Henn Collins was satisfied that she had deserted her husband for the required three years before the date of the petition, if the period of temporary treatment did not in law annul her *animus deserendi*—the wilful element in the desertion. At first sight there appeared to be a strong argument against the petitioner. To qualify for temporary treatment a patient must be incapable of expressing himself as willing or unwilling to receive such treatment—must, in the medical phrase, lose volition. If the wife had no volition concerning her treatment, she might conceivably have been inferred to have none concerning her desertion of her husband. The learned judge, however, declined to infer that in matters other than that of her treatment she had no will, and was incapable of forming an opinion or having an intention. Moreover, as she was not under certificate he felt himself entitled to consider medical evidence of her state of mind, and this testimony satisfied him that during the whole period of her treatment she was capable of forming an opinion that she did not want to go back to her husband. He added, referring to the decision in *Williams v. Williams*, that, untutored by higher authority, he should have said that once a spouse deserted the other, the desertion continued until the deserter did something positive to put an end to it, and that if any question arose, the burden of proving the end of desertion should fall upon the offending spouse, and should not be lifted merely because that spouse happened to become insane. In the light of the judgment of the Court of Appeal, however, he knew better, and he had only described his unenlightened state in order to say how indebted he was to the judges who had corrected him. On grounds of psychiatry and common sense, his former error seems far preferable to the enlightened view laid down by the Court of Appeal.

Universities and Colleges

UNIVERSITY OF LONDON

At a meeting of the Senate, held on October 29, the following resolution was unanimously adopted: "That the cordial thanks of the Senate be conveyed to Mr. H. L. Eason for his services to the University during his tenure of the office of Principal and, prior to that, as Vice-Chancellor, as Chairman of the Academic Council, the Finance Committee, and the Library Committee, together with an expression of their best wishes for his happiness in retirement." Mr. Eason retired from the office of Principal on September 30.

UNIVERSITY OF GLASGOW

At a graduation ceremony on October 18 the following medical degrees were conferred:

M.D.—C. H. Wilkie, †H. C. McLaren.
M.B., Ch.B.—J. S. Frew, †T. A. Berry, †N. C. Scott, †J. Gilchrist, †W. A. MacLure, †W. Barr, †A. W. McLeod, †W. B. Newson, †Agnes D. D. Murray, †J. Renwick, F. O. Adewole, A. B. Alton, W. A. M. Akiyemi, J. M. Alexander, W. H. N. Angus, R. Auld, A. C. Barry, S. G. A. Bartlett, C. K. Boal, A. Bowman, R. D. C. Brackenridge, O. M. Brewster, C. H. Brown, Johanna J. S. Brunton, W. Burnett, W. F. Caldwell, Janet A. Christie, T. Cochrane, H. B. Cowan, G. McN. Cubic, J. T. Cunningham, P. N. Cunningham, T. McM. Curran, C. C. Cuthbert, Jean W. Cuthbert, J. K. M. Deas, W. A. Dewar, T. M. Donald, W. A. J. Donald, P. A. Duke, R. I. S. Dunn, R. L. Ewing, C. S. Farquharson, H. Ferguson, J. Frazer, Marion K. Gilmour, B. Guyer, J. A. V. Hamilton, J. M. Hamilton, A. R. Harbinson, J. Hemphill, Ruth L. Henderson, A. T. Hendry, M. J. Hood, J. Isaacs, J. Jacobs, Eileen I. Jamieson, J. S. Jeffery, G. Johnston, D. M. Kissen, N. McE. Lamont, N. F. Lang, W. R. C. Lang, I. Lumsden, Mary C. Lynas, R. McAndrew, W. F. McClelland, A. F. McCoubrey, W. M. McDermid, A. MacDonald, J. McGilchrist, R. McIlwraith, Mary K. McKelvie, A. MacKinnon, H. A. MacLachlan, A. G. MacLeod, D. J. MacLeod, J. A. Macleod, N. F. Macleod, J. C. Meek, I. G. McKeljohn, E. Millar, Kathleen M. Miller, W. I. Milligan, R. D. Muckart, J. Murphy, J. Newton, G. W. Pat. W. A. Parker, J. B. Pettigrew, R. E. Potts, A. R. Rennie, T. R. A. Richmond, D. Robertson, N. Sher, D. W. Short, A. M. Smeaton, A. B. C. Smith, J. F. Smith, A. C. Tait, G. R. Thomson, J. Strachan, T. Symington, A. C. Wood, F. W. C. Yardum, Urquhart, A. R. G. Watson, J. C. Wood, F. W. C. Yardum, W. H. Yellowlees, Maïda B. Young, M. J. Young, Violet B. Yeats.

* With honours. † With commendation. ‡ In absentia.

James Shearer Frew gained (a) the Brunton Memorial Prize as the most distinguished graduate in medicine of the year.

¹ *Benson v. Benson* (1941), 2 All E.R., 335.

² *Monckton v. Monckton* (1941), 2 All E.R., 133.

³ *Williams v. Williams* (1939), P. 365.

1941; (b) the West of Scotland R.A.M.C. Memorial Prize as the candidate with the highest aggregate marks in surgery, medicine, and midwifery in the Final M.B., Ch.B. examinations held during 1941; (c) the Macewen Medal in Surgery as the candidate who obtained the highest aggregate marks in surgery in the Final M.B., Ch.B. examinations held during 1941; and (d) the Stockman Medal as the candidate who obtained the highest aggregate marks in the professional examinations in materia medica and therapeutics and medicine (written, oral, and clinical), excluding paediatrics, in 1941.

The John W. Weir Prize was awarded to William Alastair MacIure as the candidate who obtained the highest aggregate marks in midwifery and diseases of women in the final degree examinations in medicine held in 1941.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a quarterly comitia of the Royal College of Physicians of London, held on October 30, with Sir Charles Wilson, President, in the chair, Sir Wilson Jameson, Dr. J. C. Spence, and Dr. W. A. Daley were elected Councillors. The following were re-elected representatives of the College: Sir Adolphe Abrahams on the committee of management of the Conjoint Board; Sir Comyns Berkeley on the council of the Central Midwives Board; Dr. John Hay on the court of governors of Liverpool University; and Sir Stanley Woodwork on the Central Council for District Nursing. Dr. C. Elgood was elected a member of the Library Committee.

The President announced that he had invited Sir Wilson Jameson to give the Harveian Oration and Surgeon Captain Macdonald Critchley to give the Bradshaw Lecture, both in 1942; that the College had awarded Linacre Scholarships at the King's School, Canterbury, to T. Stapleton and D. M. D. Evans; and that the Jenks Scholarship had been awarded to T. R. L. Finnegan, late of Epsom College.

The following, having satisfied the Censors' Board, were elected Members:

Margaret D. Baber, M.D.Lond., W.-W. Bridgen, M.B.Camb., H. A. Burt, M.B.Camb., D. L. Caldwell, M.B.Camb., G. W. M. Findlay, M.D.Ed., G. M. Fitzgerald, M.B., G. Flavell, F.R.C.S., G. S. Graveson, M.B., Ursula James, M.B.Lond., J. Marks, M.D.Lond., T. Parkinson, M.D.Lond., F. T. G. Prunty, M.B.Camb., I. B. Sneddon, M.B., Surg. Lieut. R.N.V.R.

Licences

Licences to practise were conferred upon the following 159 candidates (including twenty-one women) who have passed the final examination of the Conjoint Board and have complied with the necessary by-laws:

H. Anderson, R. H. Andrews, I. J. Anrep, C. D. Baker, H. Barrada, E. Barry-Smith, A. W. Bauer, P. Baxter, H. Beck, N. Bednar, C. J. A. Bell, J. A. R. Bickford, Margaret A. Billingham, D. A. Blacketer-Simmonds, J. Borrowdale, D. S. Boyle, S. V. Brookes, Jean L. Broughton, R. J. D. Browne, C. J. Bruhn, J. D. Bruzard, Olive N. Bywaters, D. A. K. Carnegie, D. W. F. Charlton, W. H. Chase, J. P. Childs, N. F. Clarke, B. U. Coffey, H. I. Coombs, R. A. Craig, A. F. Crick, M. C. Cross, F. X. Darné, R. G. Dewhurst, L. W. D. Drabble, F. M. P. Eckstein, J. R. Ellis, Shifra Ernst, A. T. G. Evans, A. J. Evans, E. J. S. Evans, J. W. G. Evans, J. H. W. Fagan, T. N. Fison, J. M. Fitton, A. W. H. Foxell, Beryl M. Givan, E. C. E. Golden, Gertrude Goldscheider, J. G. Goodhart, A. J. R. Gottfried, J. D. C. Gowans, K. G. Green, B. P. Griffin, H. J. Hagger, C. L. Hall, Doris N. Hall, Constance M. Hallett, J. H. G. Halliday, Penelope K. Hammick, B. E. F. Hammond, P. A. S. Hargrove, C. Harris, R. J. Harvey, T. Haw, Ursula M. Hickman, A. W. Hind, S. J. Hinds, W. K. G. H. L. Hoffmann, A. E. Howarth, D. R. Hughes, Isabella C. F. Hungerford, M. Iché, E. B. Jaffett, R. Jenkins, C. H. Jones, D. G. Jones, K. C. D. Jones, S. Jung, F. L. King-Lewis, F. M. Lancaster, R. Leigh, K. H. Lim, Wai Kwan Lim, J. Lomas, J. D. B. Longley, Helen C. Longmore, M. Lustigman, O. Lustmann, P. M. McAllen, H. McColl, G. Machanik, L. R. McLaren, T. M. M. McLean, H. L. Mcullen, G. MacVicar, Mary B. Maish, Betty M. Margetts, G. Mariani, H. E. S. Marshall, S. M. Ma'tuk, C. H. Merry, J. E. Moore, J. E. E. Morgan, P. J. L. Mumford, J. W. Nelson, R. J. Newman, G. D. R. Patten, Jean W. Paul, A. Pearce, B. O. Pepper, R. K. Phillips, W. A. Porter, Elvira Power, T. M. Pritchard, J. P. Quillan, J. F. P. Quinton, R. J. W. Rees, Edith Rhodes, J. W. F. Richardson, H. A. Ripman, J. T. Robinson, W. G. Roper, I. Rosen, C. F. Ross, R. K. Ross, H. Rotenstein, D. T. Rowlands; D. K. Sambrook, W. Schiller, G. C. Schwizer, H. P. Scurlough, C. F. Scurr, A. G. Seaman, J. P. Sharp, A. L. H. Smith, B. J. Smith, A. J. M. Stevenson, M. Szinay, J. H. Tasker, H. D. Teare, D. I. Thomas, R. D. St. G. Tucker, K. O. A. Vickery, D. G. Vulliamy, E. Vure, G. H. Waddington, Glenys J. Wade, Vera B. Walker, G. G. Wallis, D. P. Walther, C. W. Walton, G. N. Weber, Joan M. Whitman, D. Williams, E. J. Williams, M. H. C. Williams, D. H. Wright, E. J. Young-Thompson.

Diplomas

Diplomas in Child Health were conferred, conjointly with the Royal College of Surgeons of England, upon the eleven candidates whose names were printed in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of October 25 (p. 597). Diplomas in Public Health were conferred, jointly with the Royal College of Surgeons of England, on L. C. Lodha, L. G. Norman, and M. A. G. Ward.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At a quarterly meeting of the council, held on October 25, with the President, Prof. W. Fletcher Shaw, in the chair, changes in the regulations for the Membership, to take effect in January, 1943, were approved.

The following were admitted to the Membership of the College:

G. Boyd, Glasgow, E. Gledhill, Batley, R. MacI. Millen, London, Constance E. Peaker, Leeds, Kathleen M. Robinson, London, Katherine C. Rogers, London, R. X. Sands, London, Violet E. A. Sykes, London, G. Wynn-Williams, London.

The following have satisfied the examiners for the Diploma of the College:

Elizabeth C. W. Barker, London, Constance L. Beynon, Brighton, L. A. Crutenden, Ripley, Dorothy Cunningham, Preston, R. C. Dennis, R.A.F.V.R., A. A. Fyfe, London, R. P. Gamble, Bishop's Stortford, Jean L. Hallum, Birmingham, L. W. Hefferman, Swansea, G. Hollingsworth, Macclesfield, Hilda E. McNamara, Canada, P. S. Norris, Pembury, Jean F. Thompson, Leeds, H. B. Watson, Birmingham, Eva M. M. Willett, Southampton, H. G. Wolskel, London.

Following the meeting the William Blair-Bell Memorial Lecture was given by Mr. W. C. W. Nixon on "Diet in Pregnancy."

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the final examinations, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P.&S.G.:

C. E. V. P. Amerasinghe, B. Beck, G. C. Cope, T. V. Darke, T. Dean, A. M. A. El Far, Y. Faraony, R. Friedman, A. R. Gemmell, M. F. El Gizini, D. F. P. Gordon, D. Granet, B. Greenberg, J. H. Haldane, Margaret M. Hanretty, N. Hornstein, Dorothy L. D. Johnston, G. Johnstone, H. E. Klein, R. I. Kynaston, Henrietta Lennon, J. K. Lounga, B. H. Lunine, H. Macpherson, O. P. Markandya, H. J. F. Mitchell, E. K. Neidich, J. O'Hara, V. Poonosamy, E. H. Reinsberg, C. B. Robinsen, J. Schneiderman, R. Smith, T. Tuller.

The following graduates of recognized foreign universities were also admitted licentiates: S. Riterband, Else Wolfsohn.

The Services

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

The name of Temporary Surgeon Lieut. ROBERT TAYLOR, R.N.V.R., is included as "Missing, Presumed Killed" in an Admiralty Casualty List published on October 25. He was educated at the University of Glasgow, where he graduated M.B., Ch.B. in 1940. He joined the British Medical Association soon after qualification.

ROYAL ARMY MEDICAL CORPS

Prisoner of War

War Substantive Captain John Burrows Sherman.

DEATHS IN THE SERVICES

Major ARTHUR BRODIE HAMILTON BRIDGES, O.B.E., R.A.M.C. (ret.), died at Cheltenham on October 22, after an operation, aged 54. He was born on November 2, 1886, received his medical education at St. Thomas's Hospital, and took the M.R.C.S., L.R.C.P. in 1912. Entering the R.A.M.C. as lieutenant, from the Special Reserve, in 1913, he became captain in 1915, and retired as major in 1933. While on the Reserve of Officers he was employed for a time in London, and was recently residing at Kilmington, Devon. He served during the war of 1914-18, was mentioned in despatches in 1916, and received the O.B.E.

Medical Notes in Parliament

The General Medical Council (Temporary Provisions) Order, 1941, which extends until December 31, 1942, the term of office of certain direct representatives, was laid before both Houses of Parliament on October 16.

Feeding the Children in Wartime

In the House of Lords on October 21 Lord WOOLTON outlined the general policy of the Government on the whole field of nutrition in so far as it was associated with food. Lord Woolton also referred to Mr. Butler's announcement that day in the House of Commons. He said that we were all now living on a diet mainly influenced by the extent of the domestic ration. This ration was based on the average need of the average family; it was not designed to meet the needs of special classes of the community, and there was a danger that those who required special consideration in the matter of their diet, either for the growth of their bodies or the maintenance of more than average physical strength, might find this diet insufficient. This was particularly the case with children, who needed more than average supplies of the body-building foods.

At present there were 5,000,000 children in the elementary and secondary schools, and only 300,000 of them were receiving meals in school. Small as this number was, it represented 100% increase during the past year. The provision of school meals was also extremely uneven in the country: whereas in a few areas as many as 30% of the children were having meals in school, in others there was little or no provision for them. Financial considerations alone had not impeded the development of the feeding of school children. There had been other factors. There was, of course, the question of getting supplies of food. They could now assure local education authorities that a sufficiency of food would be forthcoming, and they had arranged for priority supplies to enable school canteens to serve balanced meals of the type which the medical and scientific advisers of both the Board of Education and the Ministry of Food considered necessary for securing the growth and maintaining the health of school children. These provisions would apply to all schools.

EMERGENCY FEEDING CENTRES TO BE USED

The Ministry of Food had made emergency arrangements for feeding the people in the event of war conditions making it necessary for there to be a great extension of communal feeding: 170 cooking depots had been set up by local authorities, under the auspices of the Ministry of Food: that number would presently be increased to 250. The depots had already a capacity for providing 300,000 meals a day for school children, and this number would be increased to 400,000 meals. These depots would now be used daily for the children of the nation. There were also other wartime cooking facilities, but local authorities would find it necessary to start new individual or central kitchens. These kitchens would be equipped from a central pool of equipment organized by the Ministry of Food, which was already stocked with many of the necessary items and which would be extended to include articles specially suitable for school purposes.

MILK SUPPLIES

Feeding children in schools, he continued, was but one aspect of the problem of maintaining the nutritional life of the country. They could, by adopting an informed and sensible control of the things that we imported and by continuing to benefit by the great effort the farmers were making to grow the food needed, secure that in spite of a restricted diet there should be no deterioration in the standard of health of the nation and no failure of output through shortages of food. The provision of plentiful supplies of milk for nursing mothers and for children under 5 was a plan that was already working. The Government had recently taken some additional control over the milk supplies. The main purpose had been to ensure that growing children, up to and including 17, should have

adequate milk, both at home and at school. That plan was at the present making no call on the forbearance of the country, but as winter proceeded and liquid milk supplies became less it might call for sacrifice on the part of those who were older and who, save in exceptional circumstances for which he had provided, could quite well do with less liquid milk. They had also arranged that such oranges as they were able to bring into the country should be sold in the first instance to children, and on a ration: but recognizing that it was inevitable that there would be a shortage of fruit they had taken special steps to secure fruit juices for distribution to children to make up any deficiency in their diet which, in the ordinary course of events, would be supplied by fruits in their natural state.

The principle that they were adopting to secure the health of children was to see that they should be fed where they were congregated. They had adopted the same policy with industrial workers. They needed widely different foods. Heavy workers needed more meat or cheese or fish than the office worker: in some forms of work more sugar was required than in others. They therefore proposed to allocate foods to industrial canteens and catering establishments according to a broad general classification of their needs. They would divide them into three groups, according as they catered for the heavy worker, the medium-heavy worker, and the sedentary workers or those engaged in light occupations, and provide food accordingly. In the case of miners they would before the end of this year cater in some measure for 85% of the mining population by having a supplementary ration served at the pit-head before the men went down the pit.

MEDICAL APPROVAL

Lord HORDER welcomed Lord Woolton's statement. He said that although so far no overt signs of malnutrition were to be observed, if we waited until those signs did appear we should wait too long. They would mean that grievous injury had been done which would leave a permanent scar for the rest of life. So far we had been fortunate. The Government evacuation scheme had undoubtedly acted as a deterrent against deficiency diseases of children. We did not know at present how far our children might be from a state of malnutrition; modern science gave us no means of measuring the safety of that margin, and for that reason he emphasized the time factor. The child was at the mercy of chance in any rationing scheme, and with most mothers knowledge marred a good way behind affection. That fact was one reason why family allowances, excellent in themselves, could not be expected to preserve the child against malnutrition nor to solve this problem of safeguards. The school was the only place where defects might be made good and hazards warded off. It was gratifying, therefore, that the Government had accepted that principle in full.

It was good to hear that Lord Woolton could see his way to supply the protective and body-forming foods necessary in preparing the diet of a child and to provide the requisite equipment, or a considerable amount of it, and that the local authorities were assured of a Treasury grant of such generous dimensions. Experience showed, however, that quite frequently and for a long time there was a lag at the periphery, even when direction had been given and action taken at the centre, otherwise one could feel quite optimistic about protecting the health of the children. He was not pessimistic, however, and he felt that this was a red-letter day in the annals of our children's nutrition. He did not doubt that the necessary encouragement and stimulation from the President of the Board of Education would be forthcoming, which would be necessary for the local education authorities, the teachers, and the parents to get the machinery going as soon as possible.

Lord ADDISON expressed satisfaction with Lord Woolton's statement. He was, however, very apprehensive about what was going to happen to the milk supply, and he hoped Lord Woolton would waste no time in considering that question.

INCREASED EXCHEQUER GRANTS

On the same day Mr. BUTLER, replying in the House of Commons to Mr. Lees-Smith, made a statement on the development of the school meals and milk services, with a view to ensuring the proper nutrition of children. He said that

active campaign for the expansion of the provision of meals for school children had been conducted by his Department during the past year, and had resulted in doubling the number of children receiving midday meals daily. In consultation with the Minister of Food they had now decided on certain important measures which he hoped would secure an immediate and large development of this service. He had accordingly obtained the Chancellor of the Exchequer's approval to an increase of 10% in the rate of grant on authorities' expenditure on provision of meals, subject to an overriding maximum grant of 95%. He was further raising the minimum rate of grant from 50% to 70%. These steps would go far to remove any financial obstacle to expansion and would, he hoped, lead to a great increase and levelling-up of provision in all areas. The Minister of Food was also placing at the disposal of the local education authorities the facilities provided by the chain of cooking depots which were being set up near the large centres of population. Authorities would now be able to obtain from the depots substantial meals, which would be delivered to schools or school canteens in the neighbourhood in large and increasing numbers. He aimed at securing an increase in the proportion of children receiving milk under the Milk in Schools Scheme from some 60%, where it now stands, to as near 100% as possible. To this end it had been decided that the whole of the cost of the provision of free milk to necessitous children and of the handling of the milk in the schools should be reimbursed by the Exchequer.

Committees on Nurses' Salaries

Mr. ERNEST BROWN, answering Miss Lloyd George on October 16, said he had appointed Lord-Rushcliffe chairman of the committee which he had set up for the purpose of drawing up as soon as possible agreed scales of salaries and emoluments for State-registered nurses employed in England and Wales in hospitals and in the public health services, including the service of district nursing, and for student nurses in hospitals approved as training schools by the General Nursing Council for England and Wales. The committee would consist of two panels, one representing employers and the other employees. He hoped to announce the names in about a fortnight. Some nurses were already covered by agreements made through the National Joint Council for Local Authorities. It would not be appropriate to refer to the committee the salaries of nurses employed in industry.

Asked by Mrs. Hardie about the appointment of a Scottish committee on nurses' salaries, Mr. TOM JOHNSTON said he had appointed Lord Craigville to be chairman of a similar committee for Scotland.

Tuberculosis: Increase in Scotland

On October 21 Mrs. HARDIE asked the Secretary of State for Scotland in what districts in Scotland the increase in notified cases of tuberculosis had taken place. Mr. JOHNSTON, in reply, circulated the following table:

Region	1938			1939			1940			41 weeks to October 11, 1941		
	Pul- mon- ary	Non- pul- mon- ary	Total	Pul- mon- ary	Non- pul- mon- ary	Total	Pul- mon- ary	Non- pul- mon- ary	Total	Pul- mon- ary	Non- pul- mon- ary	Total
Northern Area	149	124	273	174	100	274	165	85	253	129	79	208
North-Eastern Area	238	251	489	248	239	487	283	238	521	231	198	429
South-Eastern Area	495	386	884	449	342	791	531	318	849	442	264	706
Western Area	674	397	1,071	591	309	900	681	366	1,047	564	308	872
Total	3,234	1,614	4,848	3,195	1,450	4,645	3,540	1,494	5,034	3,182	1,139	4,321
	4,793	2,772	7,565	4,657	2,440	7,097	5,200	2,504	7,704	4,548	1,985	6,536

Mrs. Hardie pointed out that the rate had gone up in Glasgow by 20%, and that the increase had been mainly among the young working population. She asked if the Minister did not think that steps ought to be taken to look into the causes

with a view to remedying them, particularly as the figures were still rising.

Mr. JOHNSTON said that they were taking what steps were available, although they were very limited, to examine this matter. The Medical Research Council had had their attention drawn to it. Replying to Mr. Kirkwood, Mr. Johnston said he thought that housing, evacuation, blackout difficulties, war strain, and a number of other causes had contributed to the increase in tuberculosis since the war began. Asked by Dr. Summerskill why, if his reasons were right, the increase should be larger among women, Mr. Johnston said it was possible that the strain of war conditions was greater among them than among men.

School Meals Service for Scottish Children

Mr. JOHNSTON on October 21 informed Mr. G. A. Morrison that he hoped to secure an immediate and substantial development of the schedule meals service in Scotland by arranging for advantage to be taken of facilities provided by the Minister of Food, and, where these were not available, by encouraging education authorities to make their own provision. Scots law at present permitted food to be provided for necessitous children only when the individual child was unable, by reason of lack of food, to take full advantage of the education provided. But malnutrition should be prevented, and a short Bill, designed to give education authorities power to supply food free of charge to necessitous cases without waiting for evidence of malnutrition, would be introduced in the near future.

Registrar-General's Reports

Miss HORSBROUGH told Sir Ernest Graham-Little on October 22 that publication of the Registrar-General's Reports was not discontinued, though wartime conditions had delayed the completion of the report for 1939. It had been decided to print in the first instance a limited edition of this volume, which would be held by the Registrar-General and made available for consultation and study by Government Departments and other bodies or persons having an acknowledged interest in its contents. The interests of medical research would receive sympathetic treatment under this arrangement.

Care of Child Air-raid Casualties

Mr. ANDERSON asked on October 23 what provision had been made for treatment needed by children injured by enemy action. Mr. Brown said children injured by enemy action and needing treatment in hospital were admitted to hospitals in the Emergency Hospital Scheme and provided with all requisite medical attention and care without charge, including, where necessary, the facilities afforded by the specialized treatment centres and the fracture organization. After discharge from hospital any necessary out-patient and domiciliary treatment was given. Amputation cases were referred to the Ministry of Pensions' limb-fitting organization, where suitable artificial limbs were provided and the child was trained in their use. On discharging child casualties, hospitals notified the Board of Education; the local education officers could thus be informed of the arrival of the child in their area, so that any special arrangements for teaching could be made.

Increase in Infant Mortality in Scotland

On October 26 Mr. JOHNSTON told Mrs. Hardie that the latest figures of infantile mortality in Scotland available were those for the first six months of this year. Comparing these rates with the average of the rates for the first six months of 1937, 1938, and 1939, the burghs showing the largest percentage increases were Dumbarton, Rutherglen, Hamilton, and Paisley. Considerable increases were found in the counties of Nairn and Sutherland, but the small number of births in the first six months of 1941 rendered any comparison unreliable.

Answering supplementary questions, Mr. JOHNSTON said that the Department was investigating the causes of infant mortality and endeavouring to prevent it. The increase of infantile mortality arose from a very large number of causes, all directly attributable to war conditions.

Edible Protein from Grass.—Answering Dr. Edith Summerskill on October 15, Major LLOYD GEORGE said research was proceeding on the production of edible protein from young grass. A greyish material looking like cheese had been produced on a purely experimental scale. Considerable technical difficulties must be overcome before large-scale production could be contemplated.

Medical Examination of Evacuated Children.—Mr. MESSER asked on October 16 whether there was a routine medical examination of all evacuated school children. Mr. R. A. BUTLER said routine medical inspection was being carried out in virtually all reception areas. All evacuated children who fell within the prescribed age groups were examined. In one or two areas a modified scheme of inspection had been adopted on the lines suggested in the Board's Circular 1523. The Board laid it down that the facilities provided for medical treatment of local school children in these areas should be equally available for evacuated children.

Return to Work of Unfit Miners.—Mr. RHYS DAVIES asserted on October 16 that ex-miners who had left the pits on medical advice were now directed by the Ministry of Labour to return to work underground against the advice of their own doctors. He further said that the medical officers of the Ministry often passed such men as fit for pit work, although when they reached the pithead the doctor employed by the colliery company declared them medically unfit. Mr. BEVIN refused to accept the suggestion that men were often wrongly certified fit for coal-mining work. In cases of doubt the practice was to call for independent medical evidence.

Death Rate in Wales among Young Women.—On October 21 Miss HORSBROUGH, replying to Mr. J. Griffiths, said that the death rates per 1,000,000 female population in Wales between 15 and 25 were as follows: 1935, 1,749; 1936, 1,737; 1937, 1,566; 1938, 1,423; 1939, 1,454. Figures were not prepared for the separate age groups 15 to 20 and 20 to 25; the corresponding 1940 record was not yet available.

Women Medical Students at London Hospitals.—Miss CAZALET on October 23 asked Mr. Brown, when drawing up his scheme for re-organization of hospital services, to consider the admission of women as medical students to those London voluntary hospitals which did not now accept them. Mr. BROWN said the point would no doubt be taken into consideration.

Notes in Brief

Twenty-two county councils in England and Wales have appropriated the whole or part of Public Assistance Institutions for public hospital purposes.

In England and Wales there were no deaths of children under 5 attributable to small-pox in 1938, 1939, and 1940. Deaths of children under 5 assigned to vaccination numbered 5 in 1938, 1 in 1939, and 6 in 1940. This classification does not rule out the probability that such deaths had other contributory causes.

Since the outbreak of war 141 officers and airmen have been invalided out of the Royal Air Force for defective hearing. From the Navy between September 1, 1939, and March 31, 1941, 287 men were invalided out for the same cause. Similar information for the Army is not available.

A general issue of anti-catarth vaccine is not made in the Royal Air Force; but supplies are available in all cases where medical officers consider this treatment desirable.

Major Lloyd George told Prof. A. V. Hill on October 8 that the question of adding calcium to food, in view of its deficiency in the national diet, was still under consideration by the Ministry of Food. He added that the use of flour of 85% extraction was in accord with the advice given by the Scientific Committee on Food Policy.

Dr. Roderick MacLeod, past chairman of the Sunderland Division, B.M.A., has retired from the post of medical officer of health to Hetton District Council after twenty-five years' service, and has been given a Sheraton writing desk subscribed for by councillors and officials. In making the presentation the chairman of the Council said that Dr. MacLeod had devoted his time and talents without fear to the betterment of the people's health. Dr. MacLeod has also been head of the casualty service in the Hetton district, and he and Mrs. MacLeod recently received a plated entrée dish, suitably inscribed, as a gift from the casualty service personnel.

Medical News

A Chadwick Public Lecture on "Hygiene Technique in Building, or the Economic, Psychological, and Health Aspects of Surface Treatment" will be given by Mr. F. R. HORN, F.R.I.B.A., at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1, on Tuesday next, November 11, at 2.30 p.m.

The British Institute of Philosophy announces a lecture entitled "The Universe in Relation to Modern Physics," to be given by Prof. Herbert Dingle at University Hall, 14, Gordon Square, W.C.1, on Friday, November 14, at 3 p.m. Cards of admission can be obtained on application to the Director of Studies at University Hall.

Colonel Hugh Cairns will deliver a lecture on "Head Injuries" at the Weston Hotel, Bath, on Thursday, November 13, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

Prof. J. C. Drummond, D.Sc., Scientific Adviser to the Ministry of Food, will deliver a series of lectures on "Recent Advances in the Science of Nutrition and their Significance in Wartime" at the Royal Institution, 21, Albemarle Street, W. on Tuesdays, November 25 and December 2, 9, and 16, 2.30 p.m.

A meeting of the North-Western Tuberculosis Society will be held at the Tuberculosis Offices, 352, Oxford Road, Manchester on Thursday, November 13, at 3 p.m., when the president Dr. G. H. Leigh, will speak on "Facts and Fancies and the Tuberculosis Death Rate." The honorary secretary, Dr. J. Fleming (11, Woodvale Road, Knutsford), reminds members of the Tuberculosis Association that they are cordially invited to the society's meetings.

The Czechoslovak Medical Association in Great Britain holding a reception for English doctors, under the auspices of the Czechoslovak Institute in London, on the afternoon of November 11, at 18, Grosvenor Place, S.W.1.

At the annual general meeting of the Association of Anaesthetists of Great Britain and Ireland held on October 28 the following officers were elected for the coming year: President, Lieut.-Colonel Ashley Daly, R.A.M.C.; vice-president, Dr. C. F. Hadfield; treasurer, Dr. Z. Mennell; secretary, Dr. A. D. Marston.

Dr. F. W. Routley, National Commissioner of the Canadian Red Cross, announces that it has been arranged to dispatch to the Russian Red Cross as quickly as possible 100,000 dollars' worth of special medical supplies.

A pamphlet has been issued by the Ministry of Home Security giving guidance to all holders of radium on the precautions which should be taken to prevent dispersal of radium through enemy action. Sketches are reproduced showing the approved type of bore-hole and of steel container. Medical officers of health are asked to take all practicable steps to ensure that the necessary precautions are carried out. A copy of the pamphlet may be obtained on application to the Publications Branch, Ministry of Home Security, Horseferry House, S.W.1.

The National Baby Welfare Council has obtained information from evacuation areas throughout the country as to the number of children under 5 years of age still remaining in such areas. It has been ascertained that the figure exceeds half a million. The Council has called the attention of the Ministry of Health to this fact and has requested that evacuation should be made possible to all children under 5 years of age whose parents are desirous of sending them to safer areas.

The July issue of the *South African Medical Journal* contains a quarterly scientific number, including articles on endemic fluorosis in the Pretoria district, climatic strain in man, and antigenic qualities of certain strains of avirulent *B. pestis*.

Dr. Luzius Ruedi has succeeded Prof. Ulrich as director of the ear, nose, and throat clinic at Zurich.

No. 42

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended October 18.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) Scotland, (d) Eire, (e) Northern Ireland.
Deaths recorded under each infectious disease, in England and Wales (including London).
(b) The 16 principal towns in Scotland.
(d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.
A dash—denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	107	7	32	2	8	144	16	36	—	3
Deaths	—	—	1	—	—	—	—	3	—	—
Diphtheria	1,002	48	309	23	35	1,347	62	386	41	33
Deaths	11	1	6	1	2	44	1	10	3	1
Dysentery	143	12	93	—	—	47	2	60	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	4	1	1	—	—	2	—	—	—	—
Deaths	—	—	—	—	—	—	—	1	—	—
Etiotic (typhoid and paratyphoid) fever*	—	—	—	—	—	37	2	4	6	2
Deaths	—	—	—	—	—	—	—	—	—	1
Erysipelas	—	—	40	2	2	—	20	54	5	6
Deaths	—	—	—	—	—	—	1	2	—	—
Infective enteritis or diarrhoea under 2 years	—	—	—	—	—	—	—	—	—	—
Deaths	46	—	24	25	8	38	5	14	13	4
Measles	783	59	16	57	3	1,129	215	491	—	11
Deaths	1	—	—	—	—	25	—	4	3	—
Ophthalmia neonatorum	86	3	22	1	1	86	2	21	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid	62	4	7	1	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza†	624	18	4	1	3	732	61	9	1	3
Deaths (from influenza)	12	24	1	—	2	14	3	2	—	—
Pneumonia, primary	—	—	159	3	—	—	—	183	8	1
Deaths	—	—	—	7	—	—	—	65	9	—
Polio-encephalitis, acute	2	—	—	—	—	—	—	—	—	—
Deaths	—	1	—	—	—	—	—	—	—	—
Poliomyelitis, acute	50	1	2	1	1	36	—	6	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	4	4	13	1	—	1	1	17	1	1
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	157	10	14	4	143	3	27	—	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,195	43	233	52	32	2,149	86	247	74	45
Deaths	2	—	—	—	—	2	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid	16	2	2	7	—	—	—	—	—	—
Deaths	1	1	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	1,979	222	63	21	7	1,499	9	119	—	21
Deaths	10	4	4	1	—	8	1	—	—	—
Infant mortality rate (per 1,000 live births)	307	27	74	46	18	303	29	61	31	11
Deaths (excluding stillbirths)	3,677	502	548	149	104	5,594	2,003	613	167	106
Annual death rate (per 1,000 persons living)	—	—	11.9	9.9	—	—	—	12.4	11.1	9.3
Live births	5,240	474	814	255	210	5,334	738	840	357	222
Annual rate per 1,000 persons living	—	—	16.6	16.9	—	—	—	17.0	22.5	19.4
Stillbirths	180	18	37	—	—	217	13	46	—	—
Rate per 1,000 total births (including stillbirths)	—	—	43	—	—	—	—	52	—	—

* Except for Northern Ireland, typhoid and paratyphoid are now notified separately.

† Includes primary form for England and Wales, London (administrative county) and Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

The number of notifications of infectious diseases in England and Wales was smaller than in the preceding week. The only exceptions were whooping-cough, with an increase of 9 cases, and poliomyelitis, with a relatively large increase of 12. Scarlet fever and dysentery, with a decrease of 141 and 64 cases respectively, were the only infectious diseases that showed a large deviation from the numbers recorded in the previous week. The incidence of infectious diseases in Scotland was smaller than in the preceding week: scarlet fever, measles, and whooping-cough declined, but there was a small increase of 9 cases of diphtheria, and the number of notifications of cerebrospinal fever was 1 in excess of last week's total.

Poliomyelitis

Fifty cases of poliomyelitis were notified in England and Wales during the week, this being the largest weekly total recorded during the year. The rise was the result of a recurrence of cases in Berkshire (3), Buckinghamshire (3), and Oxfordshire (4), after an interval of one week without any cases, and a rise in the notifications, from 2 to 8, in Surrey. Multiple cases were notified in the administrative areas of Berkshire (New Windsor M.B., 2); Oxfordshire (Oxford C.B., 3); Suffolk West (Bury St. Edmunds M.B., 2); Surrey (Croydon C.B., 2; Godalming C.B., 2); Sussex, East (Brighton C.B., 2).

Dysentery

The notifications of dysentery in England and Wales showed a reduction of 64 cases compared with last week as a result of the decline in the outbreaks in Kent and Somersetshire, where only 4 cases and 1 case respectively were notified, compared with 64 and 18 in the preceding week. Twelve cases, an increase of 6, were returned from Northamptonshire (Northampton R.D.), and 11 cases, an increase of 8, from Epsom and Ewell M.B. (Surrey). A further 21 cases were notified during the week in Bristol C.B. Nine administrative areas contributed to the 26 cases returned from Lancashire.

The notifications in Scotland were 7 fewer than in the preceding week, and, of the 93 cases notified, 35 were reported in Lanark County. The number of notifications increased in Edinburgh, from 10 to 18, and decreased in Glasgow, from 21 to 9, and in Dundee, from 14 to 11.

Scabies

The reports of local medical officers show that scabies is still very prevalent. Although no comparative figures are available it seems that the incidence of this complaint has increased considerably since the war started. It had been steadily increasing in the immediate pre-war years, and the large number of infected persons in some areas is a matter of concern to the local authorities.

Week Ending October 25

The number of cases of infectious diseases notified during the week in England and Wales included scarlet fever 1,224, whooping-cough 1,985, diphtheria 1,017, measles 745, cerebrospinal fever 88, poliomyelitis 50, dysentery 139, paratyphoid 53, and typhoid 23. Fifteen deaths were attributed to influenza.

L. Pelner (*Amer. J. Dis. Child.*, 1941, 62, 358), who records two personal cases, illustrates the rarity of relapses in measles by the fact that Rolleston and Ronaldson noted only nine examples among 11,749 cases of measles, and claimed that in several cases of so-called relapse the prodromal rash had been mistaken for the primary attack. In Pelner's first case, which was that of a boy aged 8, the first attack occurred at the age of 26 months and the second at 8 years. Severe abdominal pain occurred in both attacks. In the second case, which was in a girl aged 9 years, the first attack had appeared at the age of 6 years. Both attacks were mild.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Vocal Resonance and Frenitus

Dr. MARY D. SHERIDAN (Manchester) writes: Will any physiologist be kind enough to explain to me the exact physical explanation of vocal resonance and vocal frenitus? Neither of them, of course, occurs with voiceless consonants, so that they must both have something to do with the vibration of the vocal cords during phonation, but I should be grateful to have a more exact explanation.

Income Tax

Income Arising Abroad

R. S. has recently acquired an income in one of the Dominions which he had not intended to transfer to this country during the war. He is, however, informed that the income is chargeable here whether it is remitted or not.

** That is correct—assuming that the income does not arise from a trade, etc., or employment carried on by our correspondent. We understand, however, that in present circumstances the Revenue authorities are willing to leave the amount of tax involved in abeyance unless and until the income is remitted. We suggest that if practicable R. S. should call and explain the matter to the inspector concerned.

E.M.S.: Billeting Allowance

A. H. inquires whether billeting allowances received in cash are assessable.

** This would seem to be the case, unless the particular circumstances are such as to show that the amounts received are in the nature of travelling or subsistence allowances. The argument in favour of the second alternative would be strengthened if in the particular case the place of employment were subject to fairly frequent change.

Division of Partnership Liability

A. M. inquires as to the method of adjustment, as between two partners, of the amount of tax charged upon the firm.

** The firm as such is legally liable to the Revenue for payment of the tax. But the basis of division of profits is usually incorrect as applied to the sharing of the tax charged (e.g., one partner may be married and the other single), and it is customary for the individual shares of each partner to be agreed with the inspector of taxes and for the partners to pay their respective shares into the firm's bank account.

Local War Committee Bureau

H. B. inquires whether the authorities can require a bureau to supply a statement of the payments made to individual practitioners—both private and insurance fees are involved.

** We do not see on what legal grounds such a statement could be compelled, seeing that the practitioners are not in the employment of the bureau and that the sums passed on are gross receipts rather than "income." We suggest that if the authorities ask for a statement they should be requested to quote the legal authority for their demand.

Life Assurance Relief—Restriction

"K.L.B." wishes to take advantage of Section 4 of the Finance Act for 1941, providing that the "total income" by which the one-sixth restriction of the allowance can be measured may be related

to the year 1938-9. Does that mean the actual income for 1938 or the amount assessable for that year—on the basis, as regards salary, of the actual amount for 1937-8?

** The effect of the section as modifying the main provision—Section 32 (3) (a) of the Income Tax Act, 1918—is that the one-sixth may be applied to the total income for the year 1938-9 from all sources "estimated in accordance with the provisions of the Income Tax Acts." The result is that so far as income from salary is concerned the amount affected is the salary for 1937-8, as that income must be "estimated in accordance with the provisions of the Income Tax Acts" for 1938-9 on the previous year's basis.

Honorarium from Hospital

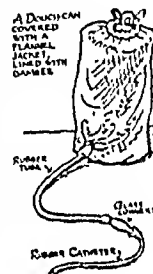
"A."s income is derived partly from salary, assessed under Schedule E, and partly from private practice, assessed under Schedule D. He also has an honorarium of £100 per annum from a hospital. Under which schedule is the honorarium assessable?

** Under Schedule E. There is, however, a practice of long standing under which such honoraria are included with the general practice receipts if that is more convenient and does not materially affect the amount of tax payable—as it would, for instance, if the appointment were a new one.

LETTERS, NOTES, ETC.

Hot Drinks for Trapped People

Dr. MAURICE E. J. PACKER, M.O. in charge of No. 1 Mobile Unit, Bristol, writes: Our experience of air raids has shown us the need for some apparatus that will enable us to give hot stimulating drinks to patients (shocked or otherwise) who are entrapped. My original suggestion was some rubber tubing attached to a feeding cup, but Sister Veitken has made the great improvement shown in the diagram. As so many Morrison shelters are now in use, the scope for such apparatus this winter will be greater than ever.



District Nurse for Home Guard Casualties

The Editor of the *Nursing Mirror* writes: Most writers are agreed that the present medical and surgical provision for Home Guard casualties is insufficient, and that casualties are most likely to occur in isolated country districts where there are few facilities for coping with them. It is being wisely suggested that local Home Guard medical officers should make urgent and speedy effort to remedy this, and equip casualty collecting posts where such posts are needed. May we suggest that they will find most competent assistants in the local district nurses—women who, by training and experience, are equipped to cope with any emergency, to assume responsibility in the absence of a doctor, and to improvise with orthodox material and methods are not available. The district nurse knows the neighbourhood, the buildings, the people. She can advise on choice of post, and organize her own local team of helpers. Most important of all, she can be left under instruction to deal with the casualties while the sorely pressed M.O. goes to other places urgently needing him. The doctor could have a more reliable deputy.

Cigarette Smoking and Tachycardia

Dr. F. GORDON CRAWSTON (Durban) writes: Tachycardia in the Tropics is frequently associated with bowel infection or poor absorption, for which small and repeated doses of an aperient are to be preferred to active purgation; but the report by Claude Fothergill (December 23, 1939, p. 1253) that a diminution of cigarette smoking assists in bringing the pulse back to normal in soldiers convalescing from enteric disease, deserves careful consideration in view of the large quantity of cigarettes contained in comforts for the troops and the possible absorption of poisonous constituents other than nicotine.

A Newspaper's Inquiry

Dr. H. SUGARÉ (Leeds) writes in reply to Dr. E. Starling, who asked by a local newspaper to confirm the birth of a child (October 18, p. 568): This inquiry is done probably in order to prevent the possibility of a hoax. On the birth of our child eighteen months ago I phoned the local evening paper to announce the event. This was only accepted after I had in turn phoned my number—to confirm, no doubt, that Dr. S. was speaking. The explanation given me of the procedure was as mentioned above.

BRITISH MEDICAL JOURNAL

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HEMIPROSTATECTOMY FOR UNILATERAL ADENOMATOUS ENLARGEMENT

BY

W. SAMPSON HANDLEY, M.S., F.R.C.S., Hon. F.A.C.S.

Consulting Surgeon to the Middlesex Hospital

This paper deals exclusively with cases in which obstruction to urination is due to adenomatous enlargement of one lateral lobe of the prostate, while the other remains of normal size. It includes in its survey those numerous cases in which, though no increase of either lateral lobe is appreciable on rectal examination, cystoscopy reveals a middle lobe pushed up behind the urethral outlet by incipient enlargement of one or other lateral lobe. Pure middle-lobe obstructions nearly always belong to the class of unilateral enlargements.

In 1895, at a time when suprapubic operations for enlarged prostate were usually restricted to the removal of the vesical projection, and when consequent failure to relieve obstruction was erroneously attributed to atony of the bladder, Eugene Fuller of New York maintained: "If, however, all the hypertrophies, medial, lateral, and round about the prostatic urethra, are removed . . . the results, as far as the bladder is concerned, are, barring mortality, satisfactory." Thomsson-Walker in 1930 commented on this statement: "Here for the first time was laid down that the routine operation of prostatectomy must include the hypertrophies along the prostatic urethra . . . in other words, the extravescical or rectal enlargement as well as the intravesical projection."

But to remove "all the hypertrophies" does not in all cases involve a bilateral operation. It may be suggested that routine operations are not always good surgery, and that the infinite variety of pathological conditions should imply a corresponding flexibility and variability in surgical treatment. It has long been known that adenomatous enlargement of the prostate may be unilateral, but hitherto no practical conclusions have been drawn from this fact, and for such cases total prostatectomy has remained the rule. The object of this paper is to show that in unilateral cases Eugene Fuller's demand for the complete removal of all the hypertrophies can be fulfilled by a strictly unilateral operation—a hemiprostatectomy—restricted to the enlarged half of the prostate, and that complete relief of the urinary obstruction follows. *Prima facie* evidence is adduced that the unilateral operation is safer and simpler, and unattended by a serious degree of shock. It should certainly be preferred in all unilateral cases in which the immediate risk of a total eucleation appears greater than usual. Two such cases are here recorded, both operated upon this year and both in medical men. In the first case prostatectomy had been deferred by the patient's reluctance for eight years, with such deterioration of his condition that a well-known specialist recently advised permanent suprapubic drainage of the bladder. A further reason for caution was the dependence of the patient's family upon his Service pension. In the second case the

patient had only partially recovered from a complete hemiplegia of six months' standing.

I have performed hemiprostatectomy about six times. The records of my earlier cases, dating back perhaps fifteen years, are inaccessible owing to war conditions. But the evidence suffices to establish a *prima facie* case, perhaps all the stronger because I make no claims to specialist authority on the prostate. On the other hand, I have no apology to offer for my intrusion upon the urological domain. It is in my opinion essential for the future of surgery that general surgeons shall maintain their right of entry to the common lands which, with such success and advantage, have been fenced and cultivated by the various specialties. I recall with some satisfaction that at a Birmingham meeting of the Association of Surgeons I pointed out that clot retention in the bladder can be relieved by the intravesical injection per urethram of a few ounces of a peptoidizing solution, without passing any urethral instrument. Received with scepticism at the time, this suggestion has since had specialist endorsement from Mr. E. W. Riches, who advises injection of 1 oz. of glyc. pepsini undiluted.

I am not prepared to deny that if the patient is a good risk it may be better, even in unilateral enlargement, to do a complete prostatectomy, so as to avert the possibility that the unaffected lobe may in later years undergo hypertrophy. The field of application of the unilateral operation is thus a restricted one, but in my opinion in about one case in five it may prove to be the operation of choice. It is generally admitted that the usual cause of urinary obstruction is the mutual lateral pressure of the two halves of the prostate. Remove the enlarged half and it seems unlikely that serious lateral pressure will recur, even if the remaining half of the prostate at a later date undergoes moderate hypertrophy. My limited clinical experience bears out this conclusion.

Recognition of Unilateral Hypertrophy

Rectal examination in these cases shows that the median prostatic sulcus does not divide the prostatic surface into equal halves. A lateral sweep of the finger-tip, first to the left and then to the right of the sulcus, as far as the prostatic margin, gives a fairly accurate measure of the relative size of the two parts, and enables a provisional diagnosis of unilaterality to be made. A cystoscopic examination shows that the urethra is not median in position with respect to the floor of the bladder. Frequently in unilateral enlargement a post-urethral "median lobe" is present—a protrusion from the enlarged lateral lobe; or an intravesical eminence may border the urethral margin laterally on the side of the enlargement. Final confirmation of unilaterality awaits bimanual examination when the

bladder has been opened. With one finger in the rectum and another in the bladder, and a bladder sound in position, a precise estimate of the relative size of the two lobes is easy. I must pause here to discuss what is the real nature of the operation known as prostatectomy.

Prostatectomy really an Adenectomy

The late Sir John Thomson-Walker said in the preface to his standard work, *Genito-Urinary Surgery*: "In recent works there is a tendency to slur over the science and to make prominent the art of urinary surgery. With this I am not in sympathy. It is, I believe, impossible to carry out good work on a superficial knowledge of the pathological conditions with which the surgeon has to deal." He goes on: "The pathology given in the following pages is not the pathology of the post-mortem room. It is the living pathology of the operating theatre, and as such is of vital importance to proper treatment."

His book was intended as an aid to clinical work, and his exclusion of post-mortem pathology was no doubt deliberate. But a discord which only post-mortem pathology can solve runs through prostatic literature even to the present day and bears directly upon the subject of this paper. On the one hand, authorities like Freyer and Thomson-Walker maintained or assumed that the operation of prostatectomy consists in the removal of the anatomical prostate with its capsule. Other authorities maintain that prostatectomy is really a prostatic adenectomy—a removal from the prostate of adenomatous masses. The "surgical capsule" of the adenoma, formed by pressure atrophy from the surrounding prostatic substance, remains in the body as the floor of the enucleation cavity. The supporters of the former opinion believe that the plane of separation in which the enucleating finger works lies between the anatomical prostatic capsule and the prostatic sheath of pelvic fascia. Those who support the latter opinion believe that enucleation is done in an intraprostatic plane—namely, the plane around the adenoma and just outside its proper capsule. The residuum of compressed prostate is left *in situ*.

There is no shadow of doubt that in some cases the operation done is the enucleation of an adenoma from the prostate. In Case 1, recorded here, there was enucleated from the left lobe, with complete relief of obstructive symptoms, an adenoma of the shape and size of the scaphoid bone of the carpus, with a median projection upwards into the bladder, a constriction corresponding to the grip of the internal sphincter, and a lower portion lying in the left lobe of the prostate. The tumour presented no feature of normal anatomy, and the prostatic urethra remained intact. Just as a uterine myoma may by a process of pressure atrophy free itself from the grip of the uterine muscle and become subserous or submucous, a prostatic adenoma may by a similar process come to lie just under the mucosa of the bladder or of the prostatic urethra. Its relations with the prostatic urethra may in some cases be so close that it may be impossible to take away the adenoma without also bringing away the adherent portion of the prostatic urethra. Some prostates come away in separate halves. In such cases an adenoma has formed in each lateral lobe, but the tumours have remained separate. Others come away as a single mass recognizable as resulting from the fusion of two adenomata behind the urethra, often with a middle lobe formed by the extension upwards of one of the lateral lobes. In front of the urethra the specimen shows no anterior commissure. The prostatic urethra may or may not be removed as part of the specimen. Yet other prostates come away as a single mass entirely surrounding the prostatic urethra, which is found complete, attached to the specimen, upon which the

anterior commissure is plainly recognizable. Such cases lend apparent support to the view that prostatectomy is the removal of the complete anatomical prostate. A case of this kind was investigated by W. G. Richardson of Newcastle as far back as 1904. Following the death of the patient a microscopical examination showed that the bed from which the tumour had been enucleated was composed of compressed prostatic tissue. Richardson asserts that after enucleation of prostatic tumours "a complete bed is always found composed of prostatic tissue, and the undamaged sheath of the prostate is always external to the bed." These observations of Richardson's are fundamental for prostatic surgery, and it is surprising that they have been ignored in the English literature of the subject up to the present time.

American opinion appears to uphold the view that prostatectomy is adenectomy. Prof. Hugh Cabot of the Mayo Foundation trenchantly says regarding Freyer's claim that his operation removed "the entire prostate with its capsule, the line of separation lying between the capsule and the recto-vesical sheath":

"This remarkable statement is, of course, quite without basis in anatomical fact. The operation which he did, and which was technically similar to that of Fuller, sought to enucleate the masses of fibro-adenomatous hyperplasia from within the prostate. The capsule to which Freyer referred was, of course, not the true capsule of the prostate, but what had for many years, at least in this country, been known as the 'surgical capsule' of the prostate. This consists of compressed prostatic tissue flattened by the growing masses of fibro-adenomatous hyperplasia."

This is exactly what Richardson proved in 1904 by his careful post-mortem work. Prostatectomy is adenectomy.

Analogy between Uterine Myoma and Prostatic Adenoma

Richardson says: "There appears to be an analogy between chronic enlargement of the prostate and myomata of the uterus. Both organs are essential to reproduction . . . during the declining years of fertile life both are specially liable to be affected by innocent growths of their essential tissues." It may be added that the analogy between adenomyoma of the uterus and adenoma of the prostate is especially close. The analogy must not be pressed too far. The uterus masculinus, and not the prostate, is the morphological equivalent of the uterus. Moreover, while total hysterectomy is easy, total removal of the prostate is a doubtful possibility. But the analogy does extend to surgical treatment. Hysterectomy is now often replaced by myomectomy. The replacement in unilateral cases of a bilateral adenectomy (prostatectomy) by a unilateral adenectomy (hemiprostatectomy) would be a parallel conservative development.

Frequency of Unilateral Enlargement

Thomson-Walker says: "Both lobes are usually enlarged to an equal degree, but one may be larger than the other, and, rarely, the enlargement may be confined to one lobe. In all such cases that I have examined the apparently normal lobe shows changes on section and microscopical examination which correspond exactly to those in the large lobe." These remarks seem not quite in accordance with the same author's statistical findings, based upon 54 enucleated prostates, with regard to the character of the intravesical projection (*Genito-Urinary Surgery*, p. 745).

(1) Median lobe alone	9
(2) Median and lateral lobes as a collar or distinct	18
(3) Both lateral lobes	15
(4) One lateral lobe	12
Total	54

From this table it seems possible to form an idea of the percentage of cases in which hemiprostatectomy may be

preferable to the bilateral operation. Cases in Groups 1 and 4 are candidates for the smaller operation, unless there is evidence that the lobe not projecting into the bladder is nevertheless enlarged. For the present no more precise statement upon the question is possible.

Advantages of Unilateral over Bilateral Operation

In the strictly unilateral adenomatous prostate it is meddlesome and unnecessary to remove the normal-sized lobe. To do so adds to the severity and risk of the operation without any compensating advantages except the remote and contingent ones to which I shall later refer.

The retention of the normal half of the prostate has great positive advantages. Along with it there is necessarily left the corresponding half of the prostatic urethra, forming along one side of the enucleation cavity a smooth epithelium-lined gutter guiding the urine from the bladder to the urethra. The continuity of the vesical and urethral mucous membranes—often interrupted in the bilateral operation—is maintained throughout. Nature's reconstruction of the complete tube must thus be assisted and facilitated. The residual half of the organ forms, in fact, a kind of splint or support for the enucleation cavity while it is healing and acquiring a new epithelial lining. The formation of a transverse post-prostatic bar obstructing the outflow of urine is impossible, since the residual half of the prostate holds the urethral outlet open and prevents the transverse fold of mucosa which corresponds to the posterior edge of the prostate from closing over it. The inner edge of the funnel formed by the removal of one lobe is supported and made rigid by the other lateral lobe, and so its patency is maintained.

Absence of Shock in Hemiprostectomy

It is my experience that, except during the actual enucleation, which may cause some temporary disturbance of pulse and respiration, very little shock attends a hemiprostectomy, even in old and feeble patients. I have done the operation but a few times, so that this must be regarded merely as a preliminary communication, but I have not lost a case. In the last case operated upon the pulse at the end of the operation was 84, and within a short time of the patient's return to bed it was 72 and of good volume. The evidence, so far as it goes, points to the greater safety of the limited operation, which has invariably proved fully efficient in restoring easy and painless micturition.

The nerve supply of a prostatic adenoma must be a rudimentary and improvised mechanism, if indeed such a tumour contains nerves at all—a point upon which no evidence appears to be available. On the other hand, the nerve apparatus of the prostatic urethra is a delicate and highly organized affair, having intimate relations with the higher centres of the cord and brain. The shock of prostatectomy is probably mainly due to urethral trauma. Though bilateral prostatectomy is possible in certain cases without injury to the prostatic urethra, as Freyer showed, it frequently involves great interference with, and sometimes complete removal of, this part of the urethra. It seems likely that the shock of prostatectomy is proportionate to the degree of injury to the prostatic urethra.

In hemiprostectomy the urethra may remain quite uninjured. Even if it is so adherent to the adenoma that one lateral half of the prostatic urethra is removed, the degree of shock produced may be estimated as one-half the shock of a total prostatectomy. By safeguarding the integrity of the urethra so far as is possible hemiprostectomy lessens the immediate risk of operation.

The First Hemiprostectomy.—The first one on record appears to have been performed by W. G. Richardson about

1904. In a man suffering from signs of urinary obstruction an acute orchitis occurred. Abscess followed, and the left testicle atrophied. Fifteen months later Richardson "enucleated a large adenoma from the right half of the prostate, but there was only a minute tumour which was not enucleated in the left half" (*The Prostate Gland*, p. 85).

Middle-lobe Obstruction

In some cases though rectal enlargement of the prostate is not felt a middle lobe is seen with the cystoscope. Thomson-Walker showed that in most cases the middle lobe springs from one of the lateral lobes, and is due to incipient enlargement of that lateral lobe finding room by passing upwards in the direction of least resistance through the internal sphincter of the bladder. He also showed that obstruction to the passage of urine in such cases is not as a rule due to a corkage action of the middle lobe but to sideways pressure upon the prostatic urethra. These are in my opinion ideal cases for hemiprostectomy.

Transurethral Resection versus Hemiprostectomy

For such cases mere removal of the middle lobe is known to be unsatisfactory. The treatment of them by the Young punch or by urethral diathermy and removal piecemeal of the middle lobe and parts of one or both lateral lobes has proved safe and successful in the hands of a few experts. Nevertheless I believe that these median-lobe enlargements, belonging as most of them do to the strictly unilateral cases with which this paper is concerned, can be dealt with by unilateral enucleation with at least equal safety and success. What is accomplished by diathermy or transurethral resection is at best a partial removal of the adenomatous mass, the rest of which may continue to grow with a return of obstructive symptoms. In certain cases of this kind a prostatectomy has ultimately to be done, and the enucleation is made more difficult and dangerous by the fibrotic reaction of the tissues to the previous resection. Furthermore, it would seem that a clean enucleation of the enlarged lobe offers more security against later carcinoma.

With careful selection of cases the immediate mortality of transurethral resection is given by Mr. Kenneth Walker, who has done so much to develop the method, as under 5%. The period in hospital is about halved as compared with an enucleation. But, according to Mr. Walker, "there is a growing tendency among resectionists to avoid massive removal of tissue at one sitting, and to substitute when necessary several sessions for one." Thus in the long run the period of stay in hospital may not be reduced. He believes that perurethral resection is particularly indicated where it is the vesical rather than the urethral aspect of the prostate that is affected—for example, cases of obstruction due to an enlarged middle lobe, also for the small fibrous prostate, for carcinoma, and in the various forms of prostatic bar. I would dissent from his opinion only in regard to middle-lobe cases. He also says:

"The key to success in perurethral work lies in the careful selection of cases. It is because the method has been abused by certain enthusiasts that it has sometimes been brought into disrepute and its value lost sight of. It should be realized once for all that the perurethral approach is not a general substitute for prostatectomy; it is rather a method of treatment that is applicable to special types of case or to special circumstances."

Dr. Hugh Young, speaking with what must be a unique experience of all types of prostatic operation, but with a known preference for the perineal route, says:

"We are still convinced that in transurethral surgery by means of our prostatic excisor we have the safest method of attacking conditions for which it was originally offered—namely; contractions, bars, valves, median hypertrophies, valves of the posterior

The patient in January, 1941, had had an attack of complete hemiplegia, unattended by loss of consciousness, and could still walk only with difficulty and uncertainty. But his urinary discomforts were so great that I advised a cystotomy with a view to later hemiprostatectomy. A course of injections of staphylococcus "vaccoid" was given to minimize the risk of thrombosis. On June 29 I opened the bladder above the pubes, and removed about ten small uric acid calculi. A Mont-Blanc-like eminence occupied the right lateral vesical aspect of the prostate, but the left lobe appeared of normal size on bimanual examination. The bladder could not be entered by a coude catheter. The cystotomy caused little disturbance, and on July 8, under omopon and evipan given by Dr. C. H. Campbell Ferguson, I did a right unilateral adenectomy. The adenoma was easily enucleated and the shell of the right lobe was packed with vaselined gauze. A large coude catheter, which now passed quite easily, was tied in. At the end of the operation the pulse was 84, and within an hour of his return to bed it was 72 and of good volume. No rise of temperature followed the operation for some days, nor was there any sign of shock. Omission of bladder irrigation on the ninth day was followed by a rigor and pyrexia, but resumption of it brought the temperature down. The patient got up sixteen days after the operation. The bladder wound closed

on July 29, two days after an indwelling catheter was resumed, and on July 30 his pulse was a steady 72 and his temperature normal. The catheter was removed on July 31. Even before its removal fluid injected into the bladder by the catheter returned freely by the urethra outside the catheter. On July 31 a rigor occurred with a temperature of 105° and an acute right orchitis. With Dr. G. S. Haynes's concurrence sulphapyridine was given; the temperature fell in forty-eight hours, and subsequent convalescence was uneventful. Urine was passed naturally and easily after August 1, and the patient describes the stream as "better than normal."

The specimen after removal was an almost globular mass $4\frac{1}{2}$ cm. in diameter, and weighing 1½ oz. On section

the mass was a typical adenoma without cysts. On the left aspect was visible, adherent to but separable from it, a smooth elastic band representing the right half of the prostatic urethra. Above, this broadened out to terminate in a torn edge at the urethral outlet of the bladder. Below, it narrowed to a point short of the verumontanum, where the urethra had been half torn across (see Fig.).

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METHODS FOR THE LOCAL APPLICATION OF SULPHANILAMIDE

BY

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Earlier papers have described the antibacterial effects of local applications of the sulphonamides to experimental wounds infected with the organisms of gas gangrene, and the concentrations in the blood and in the tissues around the wound resulting from such local applications (Hawking, 1941a, 1941b, 1941c). During this experimental work various practical methods have been devised, and these are here described in the hope that they may be helpful to those employing local applications of sulphonamide compounds to human lesions. For the sake of conciseness most references to other workers have been omitted. The compounds used have been either sulphanilamide or sulphathiazole.

Powder

In shallow open wounds this is the simplest form in which to apply the substance. It can be distributed by means of a spoon, a pepper-pot, or an insufflator. Whichever method is used, enough powder should be applied to cover the whole surface liberally, and yet not enough to form large concretions, which take a very long time to dissolve. Gently massaging the powder into the tissues with a spatula will help to get it effectively distributed and dissolved. For use in the operating theatre on fresh wounds it is convenient to have a supply of the powder in 5-gramme lots, put up either in paper packets or in screw-capped bottles. In order to obviate the very slight

risk of fortuitous contamination of the powder, during its manufacture or afterwards, by tetanus or other spores of pathogenic bacteria, it can be sterilized in such packets or bottles by dry heat at 150° C. for one hour. (If sterilized in the autoclave with the cap unscrewed the powder is apt to become crystalline and is no longer suitable for use in an insufflator.) For routine ward work the use of unsterilized powder would seem to be justifiable.

Gauze

In narrow deep sinuses which are packed at regular intervals with ribbon gauze the powder can be inserted into the depths on the packing. This can be done most simply by pouring the powder on to the gauze as it is pushed in, but a better way is to incorporate the powder on to the gauze beforehand. For this purpose small glass pots with a metal screw cap, such as are used for ointments, are taken. A wide slot is cut in the lid. The pot and the gauze are sterilized separately. The gauze is then passed through a thick paste of sulphanilamide and water under sterile precautions and is placed in the pot, the end of the ribbon protruding through the slot. The top of the pot is covered with a piece of sterile oiled silk. For use in the wards the ribbon is pulled out as required. If the gauze is autoclaved after smearing with the paste most of the sulphanilamide forms powdery crystals, which cease to adhere to the ribbon.

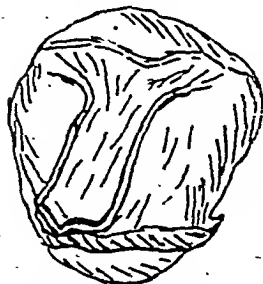
Tablets

It is difficult to transfer powder to the bottom of a deep sinus. The best method in these cases is the use of small tablets made of the compressed compound—e.g., tablets containing about 0.2 gramme of material and measuring about 8 mm. across. Such tablets were first suggested by Dr. A. S. Parkes; they were kindly prepared by the British Drug Houses Ltd. and May and Baker Ltd. The tablets can easily be inserted into the desired position by sinus forceps, and they are then crushed to hasten disintegration; eventually they are completely absorbed and leave no residue which might act as a foreign body. With sulphanilamide, which is fairly soluble, tablets of the pure compound will probably be dissolved in a reasonable time, although it is advantageous to crush them in order to accelerate the process. With sulphathiazole, tablets of the pure compound (uncrushed) were found to persist in a sinus for over two days without much visible change. It is better to use tablets consisting of 0.1 gramme of sulphathiazole and 0.1 gramme of glucose, the glucose being added in order to promote the disintegration of the tablet; when these are crushed after insertion most of the material is dissolved in twenty-four hours. Tablets could also be used in a wound when it was desired to secure a steady supply of sulphonamide over a prolonged period; by choosing tablets of an appropriate size the duration of action could be varied as required. The surface of the tablets can be sterilized by dry heat at 85° C. for one hour; heating to 115° C. causes the tablets which contain glucose to turn brown. This degree of sterilization will not kill spores, but the position is the same as that described for the powder.

Pastes

The results described in this section form the preliminary part of a wider programme, which will be described in more detail when it has been completed. Briefly, the ideal sulphanilamide paste for application to wounds, burns, etc., should have the following properties:

1. It should be satisfactory pharmaceutically—i.e., stable, non-odorous, non-rancid, etc.
2. Its physical consistency should be suitable for the required purpose; burnt surfaces might require a thinner preparation than that used for plugging wounds.



3. It should comprise only materials which are available under present war conditions. Thus, since cod-liver oil, which forms the base of two of the pastes described below, is now in short supply, a search for a suitable substitute forms part of the wider programme now in progress.

4. Sulphanilamide should be liberated from the paste at the optimum rate. Presumably the concentration of sulphanilamide in the fluid in contact with the paste should be as near saturation as possible, provided that: (a) The concentration is not so high as to injure growing tissues or to paralyse leucocytes. Jacoby, Medawar, and Willmer (1941) found that fibroblasts and macrophages are killed by a saturated solution of sulphanilamide (concentration 1:60), are temporarily depressed by concentrations of 1:150, and are not affected at all by concentrations of less than 1:1,000. According to these findings, it might be advantageous if the paste exerted a slight restraint on the rate of solution of the sulphanilamide. (b) The amount absorbed is not so great as to produce a toxic concentration in the blood; probably this will not occur except when the areas to be dressed are large; it can be decided only by blood estimations of treated patients. (In a private communication Colebrook reports that one patient who was treated by sulphanilamide paste for a very extensive burn became cyanotic, and the concentration of compound in the blood was 8 mg. per 100 ml.) The whole question is under investigation.

It may here be noted that mixtures of sulphanilamide and liquid paraffin appear to be in use in some hospitals. According to experiments in this laboratory sulphanilamide is insoluble in paraffin and cannot diffuse across it. In mixtures of paraffin and sulphanilamide, however, the particles of sulphanilamide usually sink to the bottom of the paraffin layer until they come into contact with the underlying watery fluids, in which they dissolve. Hence, if sulphanilamide suspended in paraffin is injected into rabbits subcutaneously it is absorbed almost as quickly as if it were suspended in saline. This occurs because the mixture is unstable and in the body it separates into its component parts; if this separation were prevented—for example, by using petroleum jelly—little or no absorption would presumably take place.

5. The paste should be non-irritant to the tissues and innocuous to leucocytes. It should not delay healing; rather, if possible, it should stimulate it.

The complete solution of all these problems will take a considerable time, and meanwhile casualties occur which require treatment. Therefore this short description is given of the best pastes which have been found to date so that they may be available in hospitals, and clinical experience may be gained which may help to orientate the further researches in hand. For the pharmaceutical side of the present work I am indebted to the British Drug Houses Ltd., who kindly co-operated with their experience in these matters and devised pastes of different properties for my trial. The physiological action of these pastes was tested by injecting them between the muscles of rabbits and into the peritoneum of rats; the irritation which they caused was not appreciably greater than would have been produced by any foreign body in these positions. Three pastes are provisionally recommended to suit three different types of lesion.

1. *Sulphanilamide, 30% ; oleic acid, 1.4% ; triethanolamine, 0.35% ; cetyl alcohol and beeswax, each 1.4% ; water to 100%.*—This is a thin paste to spread over inflamed skin surfaces—e.g., impetigo—in order to apply sulphanilamide with as little other material as possible. It can be used on granulation tissue instead of powdered sulphanilamide, but if inserted into deep wounds it leaves a residue. The sulphanilamide is absorbed from this paste almost as rapidly as when the powdered compound is applied as such. This paste was kindly tested by Dr. A. Glucksmann of the Strangeways Laboratories, who applied it every other day to standard wounds in rats. He found that it caused very

slight irritation, as shown by stimulation of collagen regeneration and slight retardation of epithelial regeneration; but this irritation was so slight as to be unimportant compared with bacterial infection.

2. *Sulphanilamide, 30% ; cod-liver oil, 49% ; oleic acid, 3.5% ; triethanolamine, 1.05% ; cetyl alcohol, beeswax, and other ingredients to diminish rancidity, 3.5% ; water to 100%.*—This is a paste of medium consistency. The absorption of sulphanilamide from it proceeds slightly more slowly than that which occurs when the compound is applied as a simple powder. Besides supplying a large depot of sulphanilamide, which will be taken up by any serous exudate to form an almost saturated solution, a paste of this kind provides an oily protective layer and will also prevent sticking of dressings. This paste was designed especially for the treatment of burns. Colebrook (personal communication) has observed the rapid disappearance of haemolytic streptococci following its use in such injuries; he also found that it is unnecessary to change the dressings more often than every two or three days. Robson and Wallace (1941) have reported very satisfactory results in burns treated with a similar paste made up with albid (p-aminobenzenesulphonacetamide), which is considerably more soluble than sulphanilamide and which accordingly may exert a greater effect upon the less sensitive organisms such as staphylococci and *Ps. pyocyanea*.

3. *Sulphanilamide, 30% ; cod-liver oil, 60% ; beeswax, 10%.*—This is a stiff paste, to be used on gauze for packing wounds, in the same way as vaselined gauze is used. Its consistency can be modified by varying the proportions of cod-liver oil and beeswax. It provides a non-irritant, non-adhesive mechanical support to the sides of the wound, and at the same time gives off a supply of sulphanilamide, liberation of the compound being slow. It tends to become rancid, however, unless preventive measures are taken.

Summary

Methods are described for the local application of sulphanilamide: (a) as a powder to open wounds; (b) as tablets or on gauze to deep sinuses; (c) as various kinds of paste to treat inflamed surfaces, burns, and wounds which must be packed.

Details are given of three pastes which may be recommended for use in three different types of lesion.

Acknowledgments are due to Colonel L. Colebrook for inspiration and advice; to the surgical staff of the New End Hospital, Hampstead, for facilities; to Miss M. Kuck for technical assistance; and to the British Drug Houses Ltd. for co-operation in devising and preparing the pastes.

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M. B. Gordon, N. H. Solomon, and S. F. Pearlman (*J. Pediatr.* 1941, 19, 76) record their observations on 680 scarlet fever patients aged from 10 months to 41 years, most of them being between 8 and 21 years of age. They classify these cases into the three groups of mild, moderate, and severe. The mild cases were divided into two groups: (a) controls and (b) those treated with sulphanilamide. The moderate cases were divided into four groups: (a) controls, (b) those treated with sulphanilamide, (c) those treated with scarlet fever antitoxin, and (d) those treated with sulphanilamide plus scarlet fever antitoxin. The authors' conclusions are as follows: (1) Sulphanilamide reduces the incidence and severity of complications. (2) Scarlet fever antitoxin reduces the length of the febrile period to a further extent than sulphanilamide, but it is not so effective as sulphanilamide in reducing the incidence of complications; the combination of scarlet fever antitoxin and sulphanilamide offers better results than sulphanilamide or scarlet fever antitoxin alone. (3) The toxic effects of sulphanilamide are not grave enough to contraindicate its use in scarlet fever.

TREATMENT OF DIPHThERIA CARRIERS WITH SULPHATHIAZOLE SNUFF*

BY

A. M. THOMAS, M.A., M.B., B.Ch.

Pathologist, E.M.S.

Delafield, Straker, and Topley (1941) have described the effects of antiseptic snuffs on the nasal flora of healthy subjects, and demonstrated an effective if temporary reduction in numbers of potential pathogens. At the end of December, 1940, Professor W. W. C. Topley kindly supplied me with a sample of sulphathiazole snuff for trial on nasal carriers in an isolation hospital. Twenty-eight subjects who were harbouring *Corynebacterium diphtheriae* or other pathogens in the nose were tested with the snuff. Ten per cent. sulphathiazole in magnesium carbonate was used for 26 cases and 33% sulphathiazole in magnesium carbonate for the other 2. The snuff was given six times a day on a small piece of paper, a separate piece being used each time for each child, to avoid passing infection. In all cases except one at least two nasal swabs were taken before treatment was started, in order to give a rough indication of the numbers of *C. diphtheriae* and other organisms present. In most cases a week elapsed before the next swab, which was the first to be taken during snuff treatment; subsequent swabs were taken twice weekly.

In order to reduce to a minimum the sampling errors due to dryness of the nose, the swabs were moistened with sterile broth immediately before use. The moistened swab was originally instituted because the snuff itself was thought to have a drying action on the nasal mucosa, but this was not found in all cases. However, in a few tests, moistening the swabs produced an increase in growth in five cases out of six. Dry swabs and moistened swabs were taken from the same persons on consecutive days. In one instance a moistened swab yielded one colony of *C. diphtheriae* where the dry swab gave none; one moistened swab produced a heavy confluent growth of *Staphylococcus pyogenes* (coagulase-positive) where the dry swab had yielded two colonies of *Staph. pyogenes* and two of *Streptococcus pyogenes* (Lancefield's Group A). The increase was less noticeable in three other cases, and in one instance the dry swab gave a confluent growth of *Staph. pyogenes* where the moist swab gave only 42 colonies.

Each swab was inoculated on to a blood-agar plate, a Gaze's serum tellurite plate, and a Loeffler's slope, in that order; the blood plate was inoculated first so that the effect of the snuff on the nasal flora as a whole might be as clear as possible.

At the beginning of treatment 8 subjects carried *Staph. pyogenes* alone, 10 carried *C. diphtheriae* and *Staph. pyogenes*, 2 carried *C. diphtheriae* and *Str. pyogenes*, 1 carried *Staph. pyogenes* and *Str. pyogenes*, and 6 carried all three organisms. One subject carried only *C. hoffmanni* and *N. catarrhalis*. The results of treatment are summarized in the following table:

Table showing Effect of Sulphathiazole Snuff on Nasal Pathogens

	<i>C. diphtheriae</i>	<i>Str. pyogenes</i>	<i>Staph. pyogenes</i>
No. of cases carrying	29	12	25
(a) No. showing immediate clearance	12	6	17
(b) No. showing delayed clearance	5	3	4
(c) No. showing irregular clearance	3	3	4

* Indicating considerable reduction in numbers but not complete clearance.

Quantitative representation of results is greatly complicated by the use of two media, especially as one is highly

selective; consequently a compromise scheme has been adopted. The approximate numbers of colonies on blood-agar plates after twenty-four hours' incubation, or on tellurite plates after forty-eight hours' incubation, are represented along the ordinates of all the charts by plus signs, which signify as follows:

++++ = approx. 101-500 colonies on blood-agar plates
 +++ = " 51-100 " " " " " " or a heavy growth on tellurite plates
 ++ = " 1-50 " " " " " "
 + = No colonies on blood-agar plates, but a few colonies on tellurite plates only
 0 = No colonies on either plate

Results with Nasal Carriers of *C. diphtheriae*

(a) Cases showing Immediate Clearance after Snuff (12 out of 20).—Eight patients showed a marked change, the colonies of *C. diphtheriae* on the blood-agar plate falling from between 90% and 10% of the total colonies to nil. Chart I is typical of this response. Nasal swabs from the remaining four persons, taken immediately before treat-

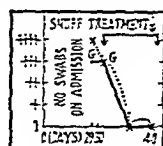


CHART I

Indications for charts:—x...x, *Str. pyogenes*; •—•, *C. diphtheriae*; G=Gravis; M=Mitis (virulent).

ment was started, yielded at the most a moderate number of *C. diphtheriae* colonies; in fact, they were poor subjects for demonstrating any gross change, but nevertheless they, like the other four, were cleared. Chart II illustrates this type of change.

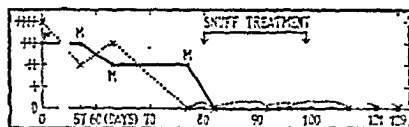


CHART II

(b) Cases showing Delayed Clearance (3 out of 20).—Three patients continued to carry *C. diphtheriae* in large numbers during at least a fortnight of treatment. One of

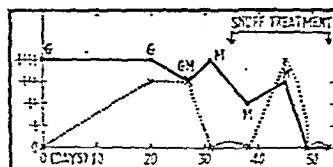


CHART III

these was an infant aged 2 months (Chart III), and in this instance the success of the administration of the snuff is in doubt, since the *Staph. pyogenes* of the nose were not reduced in numbers: although it is possible to make an infant sniff at a proffered powder by forcibly shutting its mouth, this does not ensure adequate or regular dosage. In the two older children the numbers of the other organisms were eventually reduced in quite typical fashion, simultaneously with the decline in the numbers of *C. diphtheriae*, as if the snuff action had been delayed.

(c) Cases showing Irregular Clearance (5 out of 20).—The remaining 5 patients during treatment produced

occasional nasal swabs which yielded a few colonies of *C. diphtheriae* on tellurite plates only (Chart IV).

Follow-up Swabs.—On account of the children being discharged from hospital when clear and passing out of reach of the laboratory, difficulty was experienced in obtaining swabs taken after the cessation of snuff treatment. This was achieved in 4 diphtheria and 9 staphylococcal carriers. Three children, one in Group (b) and two in Group (c), who gave an unsatisfactory or equivocal response

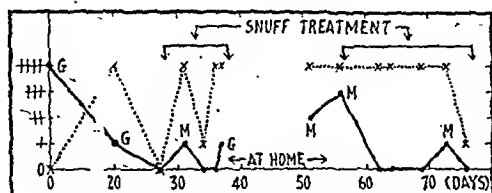


CHART IV

to the snuff, but who were eventually discharged free from *C. diphtheriae*, were found later to be nasal carriers. One child had two and the others three clear nasal swabs before discharge; when swabbed 10, 49, and 60 days respectively after the cessation of snuff they were found to harbour a moderate number of *C. diphtheriae* in nose and throat. Three out of 20 is probably a high proportion of cleared carriers to yield positive swabs more than a week after discharge, and it is obvious that any antiseptic snuff may produce only a transient absence of *C. diphtheriae* from swabs. This is particularly liable to happen when, as during this investigation, there was no interruption of snuff treatment for twelve hours before swabbing, as recommended by Delafield and Straker. In the present investigation swabs were taken at 9 a.m., snuff having been given at 6 a.m.

Types of *C. diphtheriae*.—At the beginning of treatment 14 subjects were carrying *C. diphtheriae* of "gravis" type, 5 of "mitis" type, and one of both types. Ten gravis and 2 mitis carriers were cleared, and 1 gravis and 2 mitis carriers were unaffected; the remaining 5 gave an equivocal response. Five subjects out of 20 showed change of type, all from gravis to mitis, indicating considerable cross-infection.

SIGNIFICANCE OF RESULTS

A general idea of the efficacy of the snuff with *C. diphtheriae* may be gathered from the following considerations. The nasal flora of 24 carriers of *C. diphtheriae* was followed for periods varying from four to fourteen weeks until the diphtheria bacillus disappeared and the patients were discharged. These carriers received no snuff, and serve as a control group. The most striking feature of the snuff treatment was the rapid effect on very heavy carriers. Confining ourselves to this type of patient, 18 heavy carriers were found in the control group, and an examination of their charts showed that a sudden final decline from +++ to no colonies of *C. diphtheriae* in a week or less (as, for example, in Chart I) occurred in 6 out of the 18. Of the 20 snuff-treated cases, only 10 were heavy carriers, and all of them showed a sudden final decline from +++ to nil; in 7 it immediately followed the administration of the snuff, and in 3 (Group c) it occurred fourteen to twenty-four days after the beginning of snuff treatment. If the figures for the control group are taken as representative 33% (6 out of 18) of the treated heavy carriers would be expected naturally to exhibit a sudden final decline. The fact that 70% of the treated heavy carriers did so suggests that the snuff was effective, though the difference between the two groups is not statistically significant. (The difference is 2.3 times its standard error.)

But if we assume that the sudden decline in the treated group was natural it is highly unlikely that in 7 cases out of 10 the administration of the snuff should have been decided upon at the moment a natural decline was due and in 3 cases some fourteen to twenty-three days before it was due. In the absence of more clear control data it is justifiable to assume that the sulphathiazole snuff was responsible for the marked effect that followed its use.

Results with Nasal Carriers of *Staph. pyogenes*

Observations on *Staph. pyogenes*, apart from their direct interest, are of considerable value as an index of satisfactory or unsatisfactory inhalation of the snuff. *Staph. pyogenes* was present, usually in large numbers, in the noses of 75% of the occupants of the diphtheria wards, and so is obviously the indicator organism of choice. Sulphathiazole snuff produced an immediate and marked reduction in the numbers of the organism carried by 17 out of 25 subjects. The reduction was generally from a heavy confluent growth to about half a dozen colonies; on some occasions the heavy growth of *Staph. pyogenes* was replaced by a few colonies of *Staph. albus*. These findings are in agreement with those of Delafield and Straker.

Of the four failures with *Staph. pyogenes*, three occurred in the three subjects who persistently carried *C. diphtheriae* (Group (b), see above). The failure in these cases to reduce in numbers the indicator organism casts doubt upon the successful administration of the snuff.

When the snuff treatment was stopped 3 subjects out of 9 showed a relapse to their original state of heavy carriage after a fortnight.

Results with Nasal Carriers of *Str. pyogenes*

In 6 out of 12 cases the snuff produced an immediate reduction in numbers of *Str. pyogenes* carried. Three subjects continued to carry the organism in considerable numbers. One child (Chart IV) yielded persistently heavy growths of *Str. pyogenes* and only moderate or scanty growths of *Staph. pyogenes* and *C. diphtheriae*. This child had a heavily crusted nose, and it is unlikely that the snuff made adequate contact with the nasal organisms. The carriage of *Str. pyogenes* in the occupants of the diphtheria wards was very irregular throughout the winter, and liable to sudden fluctuations, possibly on account of cross-infection, the occurrence of which with other organisms is suggested by changes in the type of *C. diphtheriae* noted in five carriers.

Summary and Conclusions

The results of treatment of 20 nasal carriers of *C. diphtheriae* with sulphathiazole snuff are promising but not uniformly successful; while in 12 cases the nasal cavity was immediately and finally cleared of *C. diphtheriae*, 3 showed no apparent response for at least a fortnight, and in 5 the response was irregular. Three patients who did not respond immediately to the snuff but who were subsequently discharged from hospital free of *C. diphtheriae* were later found to harbour this organism. Except for two cases, only 10% sulphathiazole snuff was used. Delafield and Straker have recommended 33% sulphathiazole snuff for diphtheria carriers; and, indeed, the two patients in the present series treated with it gave a highly satisfactory response, as shown in Chart I.

The snuff tends to produce a reduction in numbers of *Staph. pyogenes* rather than clearance, which is in agreement with the findings of Delafield and Straker. However, even partial success, producing only a temporary clearing or a reduction in number of pathogens, is undoubtedly of considerable value in minimizing cross-infection in wards by reducing numbers of pathogens.

sprayed in the air. It may also prevent inhaled cross-infecting organisms from establishing themselves in the nose.

An obvious reason for failure is lack of contact between the sulphathiazole and organisms, and there are at least three different ways in which contact may be prevented:

1. Failure to administer the snuff successfully to the very young, particularly if the nasal passages are partly blocked as a result of catarrh, crusting, etc.

2. Heavy crusting in the nose, preventing contact between snuff and organism even after effective inhalation of snuff. The necessity for this thorough contact was stressed by Col. Colebrook when dealing with the dressing of war wounds with sulphonamide powders; he pointed out the need for a thorough wound toilet and a prompt application of powder before the surface of the wound has time to dry and become coated with fibrin. In the nose the same problem presents itself, and it might be beneficial, at least in resistant cases, to perform some kind of nasal toilet immediately before giving the snuff.

3. Presence of *C. diphtheriae* in the nasal sinuses; the snuff would be unlikely to penetrate so far regularly or in quantities sufficient to clear them.

In cases of failure of treatment there still remains the possibility of sulphathiazole-resistant strains of *C. diphtheriae*. However, a study of the rest of the nasal flora is of value here, because, unless this is reduced quantitatively and the *C. diphtheriae* continues to flourish, there are probably some of the above factors at work.

This investigation represents a trial of sulphathiazole under field conditions, and is an attempt to glean information from routine specimens rather than from a carefully planned scheme. The snuff was originally given to subjects who were known to be heavy and long-standing nasal carriers of *Staph. pyogenes*, to find out the effect of this organism. Only incidentally were the effects on *C. diphtheriae*, *Str. pyogenes*, and other organisms noted; these effects appeared pronounced enough to warrant publication. Subsequently diphtheria infection in the district declined, and it was not possible to investigate the problem satisfactorily by a comparison of treated and controlled groups of cases; accordingly the graphic representation of results before and after treatment has been adopted. Considerable difficulty has been experienced as the result of separation of the laboratory and the wards; it is particularly desirable in an investigation of this type to co-ordinate the clinical and laboratory findings. It should be emphasized that the use of an effective snuff in the treatment of diphtheria carriers and convalescents should not be the signal for relaxation of measures designed to prevent the spread of ward infection.

I am indebted to Dr. W. J. Cox, medical officer of health for Watford, for his co-operation and for the facilities extended to me; to Prof. W. W. C. Topley for a supply of snuff; and to Prof. A. A. Miles for his advice and encouragement.

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Dr. Henry F. Vaughan, health commissioner of Detroit, has been appointed professor of public health at the University of Michigan, where he will also take part in planning for a new building and organization of a school of public health. The Kellogg Foundation and the Rockefeller Foundation have undertaken to co-operate in the project, each agreeing to pay £100,000 for the establishment of the school. Not more than half of the total sum will be available for site, building, and equipment; the remainder will be spread over a two-year period for the initial expenses of the school.

THE NUTRITIVE VALUE OF BREAD

FORTIFIED WHITE FLOUR AND NATIONAL WHEATMEAL COMPARED

BY

MARGARET D. WRIGHT, B.A., M.B., B.S.

Despite the importance of estimating the relative nutritive values of the two alternative wartime flours—national wheatmeal of 85% extraction and white flour of 75% extraction fortified with vitamin B₁—experimental work on the subject is not yet extensive. Wholemeal bread, with its higher content of the vitamin-B₂ complex, of vitamin E, and of iron, would appear from a nutritive point of view to have definite advantages.

Dr. Chick's Experiment with White and Wholemeal Bread

Dr. Harriette Chick (1940), describing an experiment in which the two flours were compared by the growth response of young rats, concluded that the advantage lies with wholemeal flour. She summarizes her findings as follows: "The nutritive value of a straight-run white flour [73% extraction] tested on young growing rats has been found inferior to that of wholemeal flour [82% extraction], even when the defects of the former in protein, minerals, and vitamin B₁ have been corrected. The inferiority must be attributed to lack of B₂ vitamins."

The experimental work which led to these conclusions may be described very briefly as a comparison of the effects on the growth of nine young rats of two diets, one based on straight-run white flour of 73% extraction (not 75% as at present in use), the other based on "wholemeal" flour of 82% extraction (not the 85% wheatmeal now being advocated). In view of its slightly higher protein content compared with white flour (13% against 12.1%), the wholemeal flour was fed at the lower level of 82% against 88% for the white flour, the balance being restored so far as carbohydrate is concerned by the addition of 6% of pure maize starch to the wholemeal diet. The two diets were alike in all other respects, except that to each rat on the white-flour diet there was given daily by pipette 10 microgrammes of pure vitamin B₁, this being regarded as an optimal amount.

Examination of the numerical results given for the average weekly gains in weight shows that the rats on the wholemeal-flour diet grew much faster than those on the white-flour diet, and at first sight these figures are impressive. On closer investigation, however, it is seen that during the first week the food intake of the rats on the white-flour diet was much lower than that of rats on the "wholemeal" diet. While this may have been due to nothing more than differences in palatability—since the animals' appetites were presumably normal on their B₁ intake—it nevertheless follows that the carefully computed theoretical equality of protein intake was not attained in practice: the rats on the white-flour diet received 6.25 grammes of protein in the first week, whereas the rats on the wholemeal-flour diet received 9.09 grammes of protein (of a slightly higher biological value). The figures for the second week were 6.8 grammes for rats on the white-flour diet and 10.3 grammes for those on the "wholemeal" diet. It should be observed that this differential intake of protein for the first and second weeks can have been due to nothing more than inacceptability of the white-bread diet to the rat palate. The effect of such a wide difference in protein intake, in a growth-rate experiment designed to be crucial as to the relative value of the diets in other respects, is fundamental.

Certain other possibly less important points appear to arise. Having regard to the food intake of the animals concerned, 82% of "wholemeal" flour—assuming a value of 1 I.U. per gramme—should provide approximately twice as much vitamin B₁ daily as was received by the rats on the white-flour diet. As already stated, 10 microgrammes (3½ I.U.) has been regarded as optimal for these animals, but in such a comparison as is

now being made it should not pass unnoticed that the other group of rats was receiving approximately 6 I.U. of vitamin B₁ daily.

It should be noted that although Dr. Chick attributed her findings to an inferiority of the B₂ vitamins in the white-flour diet, this diet was much inferior to the other in vitamin E also. Published findings on the subject are scanty, and Olcott and Mattill (1937) record the same rate of growth in young rats on an E-deficient as on an E-adequate diet. Yet it is known that adult rats reach a lower maximum weight on diets deficient in vitamin E; the comparison between the two flours in respect of the B₂ vitamins would have been closer if the requirements for vitamin E of rats on the white-flour diet had been satisfied. It has also been shown that vitamin E is not without influence on the fate of vitamin A in the body (Davies and Moore, 1941).

In view of the small number of animals employed (nine in all) we should have liked to examine the significance of the differences between the growths of the rats on the two diets; it has not proved possible to do this, since figures for individual rats are not given. The four points so far enumerated are:

1. The quantitative shortage of protein and of all other ingredients of the white-flour diet during the first and second weeks of the experiment.
2. The imbalance of the diets in respect of vitamin B₁.
3. Their imbalance in respect of vitamin E.
4. The fact that it has not been possible to assess statistically the significance or otherwise of the findings.

Of these points, the only one which would probably be generally regarded as of sufficient weight to throw doubt on Dr. Chick's conclusions is the first, although it is unfortunate from the point of view of the findings of the experiment that the other, minor, objections both operate in favour of the "wholemeal" diet and against the white. The cause of the differences in protein intake in the first and second weeks was clearly the contrast between the two diets in palatability to the rat.

The fundamental nature of this objection is perhaps best appreciated by considering the situation which would arise were it possible to carry out feeding experiments on a sufficiently large number of human subjects. It is generally agreed that white bread is more widely acceptable, and in an *ad lib.* test on growing children the advantage might therefore for this reason well appear to be with white bread. It is clear that such an experiment would not be regarded as conclusive in respect of the relative nutritive values of the two breads. For such a comparison equality of intake is essential. For this and the other reasons already cited it was decided to undertake further work on the relative values of the two main flours suggested for general use under more nearly equal conditions.

First Experiment, comparing Fortified White Flour and National Wheatmeal

Thus, although the work planned was, like Dr. Chick's, a comparative study of the nutritive values of a high-extraction flour and a white flour whose deficiencies of vitamin B₁, protein, and mineral salts were made good, the bases of the diets differed. The materials used in this test were white flour of 75% extraction fortified with 0.2 gramme of aneurin per 280-lb. sack, and national wheatmeal of 85% extraction. Both were purchased direct from one of the largest plant bakeries in North-West London.

	% Ash	% Protein
White flour, 75% extraction	0.53	N ₂ 2.27 × 5.7
Wheatmeal, 85% extraction	0.86	N ₂ 2.39 × 5.7

All previous tests on flours appear to have been carried out with the flour either untreated or cooked by steaming, as was done in Dr. Chick's work; but, since flour is always eaten after cooking and the vast bulk is consumed baked into bread, it seemed that the results obtained would be more directly applicable to human nutrition if the experi-

mental diets were also baked into loaves before feeding. It was necessary to add a small quantity of baker's yeast containing the other vitamins of the B complex. This was not regarded as a disadvantage, since yeast is so widely used in bread-making—contributing, in the quantities generally employed, an addition of vitamins insignificant in human nutrition. The diets were as follows:

- 400 grammes of flour (fortified white of 75% extraction or national wheatmeal).
- 27 grammes of G.L. ashless extracted casein.
- 18 grammes of arachis oil.
- 9 grammes of McCollum's salt mixture.
- 12 grammes of yeast.

The iron in the salt mixture compensated for the deficiency of this mineral in white bread. The yeast used throughout the test was identical and the baking conditions were kept constant.

Young black-and-white rats of our own inbred laboratory strain weighing 36 to 54 grammes were used. They were divided into groups, each group composed of rats as similar as possible, with the sexes and litter-mates proportionately distributed. Two groups were given the diets described, and in addition each rat received daily a drop of cod-liver oil in which α -tocopherol had been mixed at the rate of 170 mg. in 6 oz. of oil. The rats were caged separately. The test lasted for thirty-three days, beginning when the rats were 4 weeks old.

The vitamin B₁ content of white flour of 75% extraction is about 42 units per 100 grammes. The addition of 0.2 gramme aneurin per sack would add approximately 52 units per 100 grammes, thus making a total of 90 to 95 units. The wheatmeal contained 109 units per 100 grammes. Allowing for the water added to mix the diets—more was used for the wheatmeal than for the white-flour loaves—and for some loss in baking, the vitamin B₁ contents found were in accordance with expectations. Thiochrome assays of the two foods showed very comparable vitamin B₁ contents, tests on the baked loaves giving values between 57 and 61 units per 100 grammes.

The wheatmeal loaves had approximately 3% higher moisture content than the white loaves, and allowance was made for this in weighing the slices for the animals. It would have been desirable to add a flavouring agent to both diets to equalize their palatability and thus increase the total intake of food; but since no means of doing this was known it was decided to restrict the intake where necessary, so that all rats consumed approximately equal amounts of food. This was accomplished in practice by always feeding the rats as soon as those eating at the slowest rate had finished or practically finished their previous feed. The animals on the wheatmeal diet always consumed their share before those of the other group.

The weight gains throughout the period of tests were as follows:

TABLE I.—Weight Gains

Diet containing Fortified White Flour		Diet containing Wheatmeal Flour	
49 gm.		48 gm.	
56 "		51 "	
58 "		52 "	
58 "		56 "	
62 "	Mean of 10 = 63.9 gm. σ = 9.67 t = 3.058	58 "	Mean of 15 = 66.55 gm. σ = 7.61 t = 1.517
64 "		58 "	
67 "		59 "	
69 "		61 "	
73 "		62 "	
83 "		64 "	
		65 "	
		65 "	
		67 "	
		68 "	
		74 "	

TABLE II

	Total Food Fed Throughout the Test (Av. per Rat)	Dry Weight of the Food Given (Av. per Rat)	Dry Weight of the Food Wasted (Av. per Rat)	Food Residue Uneaten at End of Test (Av. per Rat)	Actual Intake of Food
Fortified white-bread diet	388 gm.	229.3 gm.	19.3 gm.	6.4 gm.	203.6 gm.
Wheatmeal- bread diet	406 gm.	226.9 gm.	14.3 gm.	1.6 gm.	211.0 gm.

This corresponds to an average weight increase of 1 gramme from a consumption of 3.19 grammes of the white-bread diet and from 3.48 grammes of the wheatmeal diet.

A study of the figures given in Table I shows that there is no significant difference between the gains in weight made by the two groups of animals. The average growth rate is about seven-tenths of the normal for rats of this strain on an unrestricted intake of their adequate stock diet, which is what would be expected having regard to the restriction of food intake in the present test.

Second Experiment: Application to Human Diets

When the experiment just described was being planned it was thought that if its results should show a definite difference between the nutritive values of the two flours it might still be held that this would lose its significance when considering the application to human diets, since man consumes a range of foods not commonly used in laboratory experiments. Concurrently with the first experiment, a second was therefore planned to see how rats would thrive on the same two flours when these were baked into bread and used as a percentage of an ordinary human mixed diet. It was not possible to obtain figures of the wartime consumption of the standard foods, but a formula was chosen based upon the estimated consumption in 1934 (Sir John Orr, 1937) modified, in conformity with present-day rationing arrangements, by reducing the amounts of meat, fish, and eggs, and including greater quantities of potatoes, vegetables, and bread. The diets were as follows:

Bread (fortified white of 75% extraction or wheatmeal of 85% extraction)	35.5%	Margarine	3.0%
Boiled potato	30.0%	Cheese	0.7%
Cooked meat	6.0%	Cooked vegetables	14.0%
Fresh milk	3.0%	Jam	1.2%
Cooked fish	3.0%	Eggs	1.2%
		Sugar	2.4%

The bread was crumbed and the other foods were minced. Three batches of food were prepared during the four-weeks test, and except when required for weighing, were kept refrigerated. The meat used was beef on two occasions and mutton on the third. The vegetables were cooked cabbage and other greens; 1 oz. of raw lettuce was included in each batch. The fish was canned herring on the first occasion, canned salmon on the second, and fresh cooked herring for the third batch. The ingredients were mixed by prolonged hand-kneading, and this was continued for half an hour after the diet looked and felt uniformly mixed. Even so, the analysis suggests that the constituents were not distributed perfectly evenly throughout the whole.

The analyses of the diets were as follows:

	White (75% extraction)	Wheatmeal (85% extraction)
Protein	8.81	8.15
Oil	6.09	5.09
Ash	0.63	0.67
H ₂ O	54.30	55.10
Ca	0.19	0.10
P	0.07	0.20

The rats were given these diets for four weeks, beginning when they were 4 weeks old. They were caged singly and

weighed weekly, being fed weighed quantities of food as soon as all the rats had completely or almost completely finished the last batch.

The weight gains were as follows:

Mixed Diet, with White Bread	Mixed Diet, with Wheatmeal Bread
65 gm.	59 gm.
59 ..	59 ..
59 ..	66 ..
59 ..	68 ..
61 ..	68 ..
65 ..	71 ..
65 ..	71 ..
72 ..	72 ..
73 ..	73 ..
75 ..	76 ..
81 ..	84 ..
Mean = 65.54 gm. $\sigma = 8.35$ $\epsilon = 2.52$	Mean = 69.64 gm. $\sigma = 7.20$ $\epsilon = 2.20$

$$t = 1.23; P = 0.23.$$

Each rat received 603 grammes of food during the four-weeks test. The total food wastage (dry weight) of the two groups was very similar—165 grammes for the white-diet group and 151 grammes for the wheatmeal-diet group. There was no residue to deduct at the end.

Discussion

McCarrison's well-known work demonstrated that young rats thrive very badly on a mixed diet containing unfortified white bread, mixed with the other staple foods characteristic of those used by the poorest people in this country. The animals showed all the signs of vitamin-B deficiency, and some were ultimately killed and eaten by their fellows.

In the present test, using fortified white bread, no doubt of higher extraction than was used by McCarrison, the results were entirely different. The animals grew and showed every sign of health. Comparison of the growth increments of the two experimental groups shows that between the ages of 4 and 8 weeks rat growth appears to be equally well supported by wheatmeal of 85% extraction or by white flour of 75% extraction fortified with vitamin B, when these are mixed with the staple foods into the diets previously described.

Fifty ounces of the mixed diet made up with white bread supplies 2,600 calories, 0.46 gramme calcium, and 79.3 grammes of protein, of which 32.3 grammes is of animal origin. It would thus resemble the diets of Orr's Groups I and II (Orr, 1937) (the lowest-paid groups of the population).

	Calories	Total Protein	Animal Protein	Calcium
Group I (Orr)	2,317	71.6 gm.	50.7 gm.	0.37 gm.
Present experimental mixed diet (50 oz.)	2,600	79.3 gm.	32.3 gm.	0.46 gm.*
Group II (Orr)	2,768	93.8 gm.	80.9 gm.	0.52 gm.

* By calculation.

This particular diet, it should be noted, contains more bread (17.75 oz.) than the average pre-war intake throughout the country (12 oz. daily per head). The riboflavin supplied by these foods in the 2,600-calorie diet would amount to 0.93 mg. (figures from Fixsen and Roscoe, 1940; also some, unpublished, from Dr. Magnus Pyke). Slightly over 16% of this is given by the admittedly large amount of bread. If this were all in the form of wheatmeal the riboflavin it supplies would rise to 23%. The potatoes and vegetables between them supply over 43% of the total riboflavin. The large amounts of bread, potatoes, and vegetables in this diet, and its low animal protein content as compared with those quoted above from Orr's book, are believed to reproduce in the main the changes in our diet during the last two years.

Although we have used considerably more animals than did Dr. Chick and aimed at a stricter control of the other dietary factors that may affect growth, our finding that

wheatmeal bread from flour of 85% extraction and white bread from flour of 75% extraction—fortified in the manner described—do not differ markedly in nutritive value contrasts with Dr. Chick's statement that wholemeal flour of 82% extraction is superior to white flour of 73% extraction corrected for its deficiency of protein, minerals, and vitamin B₁.

A more refined statistical analysis than it is possible to give here somewhat weakens the apparent superiority of the white-flour diet in the first experiment and somewhat strengthens that of the wheatmeal diet in the second, but in both cases the difference between the two diets remains non-significant.

I should like to express my thanks to Dr. D. W. Kent-Jones and to Dr. Magnus Pyke for checking the thiochrome values of the diets used and for their advice and criticism; and to Mr. E. C. Pieller of Boots Ltd., Nottingham, for his statistical analyses of the data.

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lèsions each night. In the morning, with the ointment still on, the patient goes to the ultra-violet radiation department, where the ointment is removed by means of olive oil, a thin film of which is left on; then the ultra-violet irradiation is carried out. This treatment is given every day. At the same time the patient takes 1,000 units of vitamin B₁ by mouth daily. In some cases the ointment is so removed by movement in bed at night that it has to be reapplied in the morning before going to the radiation department. In other cases in which there are particularly thickened lesions I add 20 to 30 grains of salicylic acid to the tar ointment and advise the patient to scrub off the scales with a stiff brush or by the use of pumice stone. The ointment is reapplied after this exfoliating treatment, and then the radiation treatment is carried out as above. In certain cases I have used, in addition to the above measures, 300,000 units of vitamin D daily, but I have found that patients who have not had this have done just as well as those who have.

A word of warning must be given: care should be exercised in the treatment of children by this method, as the danger of lighting up a tuberculous focus is always present when general light baths are taken by young people.

Commentary

A TREATMENT FOR CHRONIC PSORIASIS

BY

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The dermatologist, perhaps more than any of his medical colleagues, views with reserve sweeping claims on behalf of new treatments. The great variation in individual skin sensitivity impresses upon him the truth of the old adage, "One man's meat is another man's poison." Bearing this in mind, I can state that I have been amazed at the uniformity of response of chronic psoriasis to a line of treatment I have recently evolved. The two methods which I have partially combined are those of Madden (1940) and Goeckerman and O'Leary (1932). I will run through these briefly.

Madden's treatment resulted from a most comprehensive investigation of some 259 cases of psoriasis. He divided these into small groups and treated each group by a different method, utilizing the following: vitamin B₁, vitamin B₂, vitamin B whole complex, brewers' yeast, vitamin C, oestrogenic substances, sulphanilamide, bismuth salicylate in oil, anterior pituitary extract, adrenal cortex extract, low-fat diet with vitamin B₁, low-fat diet and liver extract, low-fat diet with vitamin B₁ and anterior pituitary extract; and low-fat diet with vitamin B₁, anterior pituitary extract, and adrenal cortex extract. He came to the conclusion that the best results were obtained with a low-fat diet plus 1,000 international units of vitamin B₁ daily by mouth, combined with an exfoliating ointment. Madden, however, says he realizes that not all cases will respond to this treatment. Goeckerman and O'Leary's line of treatment was as follows: the patient is anointed with a 2% ointment of crude coal tar before retiring at night. In the morning the ointment is removed with olive oil, leaving a thin film on the affected areas, and the body is then exposed to gradually increasing doses of ultra-violet light. In the interval between treatments a bland ointment, such as boric acid salve or petrolatum, should be applied.

Method of Treatment

My method has been as follows. The patient is told to rub 2% crude coal-tar ointment in soft paraffin into all

I have treated some 53 cases in this way. Admittedly the number is not large, but I have watched the condition gradually disappear in every case. Furthermore, the patients tell me from their own experience that they have never been so clear in the whole of their psoriatic life, and, incidentally, have never felt so well before. I am convinced there is a future for this method. The only drawback I can see is difficulty of daily attendance for radiation treatment. As, however, more and more large factories, etc., have increased facilities for their workers, including ultra-violet irradiation, something may yet evolve to overcome the loss of time at work. It is necessary to insist on daily ultra-violet irradiation, as the treatment will not produce the same results if it is given only once or twice a week. This I have proved.

A good many of the patients who received treatment and responded to it have had psoriasis for over 40 years, 30 years, 20 years, 16 years, and lesser periods. They had been constant in their attendance for treatment, and the measures which they had resisted included exfoliating salicylic and tar ointments, cignolin, etc., high-vitamin dietary, protein-shock therapy (T.A.B. vaccine, aolan, peptone, and whole blood), ultra-violet radiation, autogenous vaccines, oestrogenic substances, tar baths, x-ray therapy, and, in one instance, a course of gold therapy (using solganal B oleosum).

I cannot dogmatize on the prognosis of these cases, but from past experience it has been learnt that once a case of psoriasis has been completely cleared that case may remain clear for some considerable time. Should there be a recurrence the patient is warned to attend for treatment immediately, and the prospect is that the condition can be brought under control rapidly while it is still of small extent.

I know that psoriasis can clear for a time without treatment and with almost any treatment, but when it starts to clear in every resistant case dealt with as above I think the treatment must take the credit. Now that I have stated that so far no snags have been encountered I expect they will begin to arrive, but it is the universal response to the line of treatment which has caused me to write this short paper.

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Medical Memoranda

Cysticercosis Epilepsy treated with Sulphathiazole

The recent articles by Blythe (*British Medical Journal*, 1941, 1, 401) and Ewing (*ibid.*, 1941, 2, 263) prompt me to record the following case under my care.

PREVIOUS HISTORY OF THE CASE

A man aged 29 was found unconscious in Sutton Park at 11.50 p.m. on June 29, 1941. He was taken to Sutton Coldfield Cottage Hospital, and transferred to Great Barr Park Colony the following day. He remembered leaving camp on June 29 at 4.30 p.m. and going to Birmingham, and nothing more. There was a slight smell of alcohol in his breath.

The personal history was as follows. No illness as a child. In 1930 he joined the Royal Navy and saw service in the Mediterranean, in 1932 in the Baltic, and in 1935 in China. In 1937 he returned to civilian life, where he worked in Bedfordshire, labouring until 1939. In 1939 he joined the Army and has served at home since.

In 1935, while serving in China, he suffered from "a tropical disease"; he did not know what it was and he is unable to remember the symptoms. Subsequent to this on seven occasions he has had an attack of loss of consciousness with complete amnesia of the incident. Since 1935 he has complained of headaches and mental depression. He has also noticed that on each occasion preceding his seizure the headaches have increased in severity and culminated in the fit. There was no history of vomiting or otorrhoea; he has never suffered from meningitis.

CONDITION ON ADMISSION

His I.Q. falls within normal limits; he is dull and somewhat apathetic. He sleeps quite a lot; often asks for some tablets to make him sleep, but he is asleep before the tablets can be procured. His memory on the whole is fairly good, but he is unable to give many details about himself. No family history of mental disease or of convulsions could be obtained.

Examination of Nervous System.—Pupils equal and responded to light and to accommodation, and ophthalmoscopic examination showed blurring of both disks on the nasal side: also venous pulsation on the right side. Nothing else abnormal found on examination of the cranial nerves. Upper extremity: Power and muscle tone normal and equal on both sides; reflexes average and equal on both sides; no sensory loss; joint sense and muscle sense normal; co-ordinated movements normal; no astereognosis. Abdominal reflexes were normal on the right side but diminished on the left. Lower extremity: Power and muscle tone appeared normal, with no perceptible difference on the two sides; no sensory loss; co-ordinated movements normal; joint sense and muscle sense normal; knee-jerks somewhat increased on both sides, especially the left; ankle-jerks increased, especially on the left side; plantar reflexes, right flexor, left extensor; ankle clonus not obtained; no Rombergism; sphincters normal.

General Examination.—Nothing abnormal found on clinical examination of the heart, lungs, and abdomen; no albuminuria; no glycosuria. Blood pressure: systolic 130, diastolic 88. Blood: Wassermann, negative; Kahn, negative; gonococcal fixation test, negative. Blood film, differential count of leucocytes: polymorphs—neutrophil 58%, eosinophils 6%; monocytes 19%, lymphocytes 17%. A slight increase of eosinophils and a marked increase in the monocytes.

Cerebrospinal Fluid.—Colourless and clear, definitely under increased pressure, degree not measured; cells, 2 per c.c.m.; protein, 35 mg. per 100 c.c.m.; chlorides, 720 mg. per 100 c.c.m.; reducing substance present; Lange gold curve, no change; Wassermann negative in all directions; direct film, no acid-fast bacilli or other organisms seen; culture, no growth.

X-ray Examination.—Head, thorax, and extremities were all radiographed for the presence of cysts. In the left lung there was a cyst about the size of a five-shilling piece, which showed

the features of a hydatid cyst. There was also a suggestion of an infected left maxillary antrum. Nothing else abnormal was found.

In view of these findings it was considered that the symptoms were due to the presence of a hydatid cyst of the brain.

TREATMENT ADOPTED

The report of a case reached me (verbally) of a hydatid cyst of the liver which, at operation, had secondarily infected the peritoneum and had been exposed to sulphonamide treatment (given primarily for a superimposed secondary infection). In this case it was found that the daughter cysts in the peritoneum were being discharged through the wound in a shrivelled condition, and, further, the percentage of sulphonamide in these daughter cysts was greater than that in the blood stream. The effect of chemotherapy was therefore tried in this case, the preparation used being sulphathiazole (M & B 760).

On July 9 the patient was given four tablets (2 grammes), and this was followed after six hours by two tablets (1 gramme) four-hourly for forty-eight hours. This in turn was followed by two tablets six-hourly for forty-eight hours, and the course was completed by giving two tablets three times a day for a further three days. At the end of the week (July 16) the man was re-examined. He was no longer complaining of headaches. There was no mental depression and he was no longer apathetic, nor did he sleep to an abnormal degree. There was a great change in his personality. He became bright and cheerful, and he took a natural interest in the comings and goings in the wards. His abdominal reflexes on the left side, which had been sluggish, reacted normally and equally with those on the right. His left plantar reflex, which had been extensor, now became flexor. His ankle-jerks and knee-jerks on the left side became equal with those on the right, but both remained rather more active than normal. Both disks showed blurring on the nasal side.

The findings were thought to be so promising that it was decided to repeat the course of sulphathiazole. On July 27 this was given as before, except that instead of terminating on the seventh day the course was continued until the twelfth day. On August 8 the patient was re-examined. The improvement had persisted, and the only abnormal findings were that the disks showed some blurring on the nasal side and the knee-jerks and ankle-jerks on both sides were still somewhat overactive. A differential leucocyte count was made: polymorphs—neutrophil 61%, eosinophils 0%; lymphocytes 34%, monocytes 5%. The monocytes had returned to a normal percentage. No eosinophils were formed. A further radiograph of the lungs was taken under conditions (kV, mA, time exposure, and distance) similar to the first picture. It was found that the cyst was less obvious than in the first picture; it was, however, still present. The size as depicted on the radiograph did not appear to be materially altered.

I fully realize that enough time has not elapsed since the treatment was started to allow any conclusions to be drawn. However, in view of the recent articles on cysticercosis epilepsy and the possibility of an approach to it by chemotherapy, I thought this case interesting enough to quote. I would be grateful for any comments.

I must thank Dr. D. M. Macmillan, medical superintendent of this Colony, for permission to publish this case, and also my colleagues for their advice and helpful criticism.

L. J. SEGAL, M.R.C.S., L.R.C.P.

Great Barr Park Colony, Birmingham.

Giant Hydrocele successfully treated by the Sclerosing Method

I have now treated seventy-four cases of hydrocele of the tunica vaginalis, some at the Injection Clinic at the Southend General Hospital and some in private practice, with complete success in every instance, although in about one-third of the cases more than one injection proved necessary in order to effect a complete cure. It takes on an average about three months for a hydrocele to be cured by this method.

The technique is simplicity itself; it consists in tapping the hydrocele and withdrawing all the contained fluid, and then

rather than a medical subject. A closer study convinces one of the value of its arguments to both combatant and medical officers. The first-aid section is adequate, laying stress on the problems of immediate treatment.

This is no book for the complacent—or perhaps it is. It is clear, concise, and deliberately realistic. It is well constructed and well written. As Tom Wintringham puts it in his introduction, this book can be recommended to every citizen "who can help to ensure that our wounded fighting men or civilians get what they deserve in the way of aid and comfort."

Notes on Books

Prof. J. B. S. HALDANE is a doughty controversialist, and his essays entitled *Science in Peace and War* (The Scientific Book Club, 111, Charing Cross Road, W.C.2) are frankly tendentious; naturally so since they first appeared in the defunct *Daily Worker*. Even in the chapter on human physiology the bad capitalist baron is revealed lurking behind the scenes waiting to injure the virtuous worker. People who are honest with themselves must recognize that emotion colours their views—witness the heightened appreciation of Soviet scientists in this country since last June. But it is unusual for a man of the intellectual ability of Prof. Haldane to see everything in such sharply contrasted tones of plain black and white. Each chapter is full of useful information and then ends with a Marxian moral. Interspersed with scientific facts we find such statements as that the classification of animals and plants was invented at the same time as the chronometer because both were needed for the purposes of imperialism (p. 90). But when he writes on page 209, "Our rulers [are] sabotaging the war effort . . . largely through sheer blind hatred of the workers," Prof. Haldane rules himself out of court.

Good Health on War-time Food, by BARBARA CALLOW, M.A., M.Sc. (Oxford University Press, 6d.), gives a short account in very simple language of what is meant by body-building foods, energy foods, and protective foods, and contains many practical hints for making the best use of the food available at the present time. It is evident that the author herself is tackling the problem with courage and real enjoyment, and her book should put fresh heart into numbers of housewives who are only too anxious to feed their families well but who do not always know just how to do it.

In his book *Diet in Sinus Infections and Colds* Dr. E. V. ULLMANN made a useful contribution to the study of the relationship between general disorders and local disturbances of the nasal mucous membrane, and argued effectively that laryngologists should pay more attention to diet when treating sinus troubles and recurrent nasal catarrh. Since the first edition appeared in 1933 there has been much wider recognition of the part played by dietary habits in building up resistance against infection, and as a result the surgical approach to sinus disease has declined in favour of more conservative methods that take into account habits of life, constitutional defects, a deficiency of vitamins, and other dietetic errors. In preparing a new edition (Macmillan and Co., 8s. 6d.) Dr. Ullmann has made some changes in the dietetic treatment recommended, but basically the book remains the same. He has added chapters on mother's milk, on allergy, and on vitamins, with special reference to vitamin A.

The *Bulletin of War Medicine*, under the auspices of the Medical Research Council, is edited by Sir H. Harold Scott and his colleagues at the Bureau of Hygiene and Tropical Diseases. The Index to Volume I (Nos. 1-6), 1940-1, of this valuable publication has now been issued at 6d. by H.M. Stationery Office.

Martin Croft, by JOSEPHINE BELL (Longmans, Green and Co., 8s. 6d.), is a straightforward novel of modern times with a largely medical background. The people and situations are clearly depicted and the writing is commendable. A warped and self-torturing medical man (apparently a hospital physician, but the

point is left obscure) gives his name to the title-page. He and his Victorian period-piece wife—a bad domestic tyrant—are shown against some more attractive human figures, including Dr. Croft's two medical housemates in the Harley Street area, and the girl who acts as secretary to all three doctors and holds the centre of the stage through most of the book. One of the secondary figures is a very nasty unqualified mental healer, who gets his deserts in the long run; there is also an attractive and virile young American with a gift for healing. The author is already known as a competent practitioner in the detective story line. This is a book in which criminal business plays a very subordinate part, the chief motive being the portrayal of character and temperament in the years just before the war, and it ends with the return of Dr. Croft, his outlook changed, from the beaches of Dunkirk.

Preparations and Appliances

A USEFUL SPECULUM

MR. JOHN STALLWORTHY, F.R.C.S., Oxford, writes:

The following very useful modification of Graves's vaginal speculum (Fig. 1) will commend itself widely to general practitioners as well as to those who specialize in gynaecology. The disadvantage often experienced with a metal speculum is the difficulty in obtaining illumination of the cervix and vault. This difficulty has been met by making the lower blade of the speculum of curvite. By this means an indirect illumina-

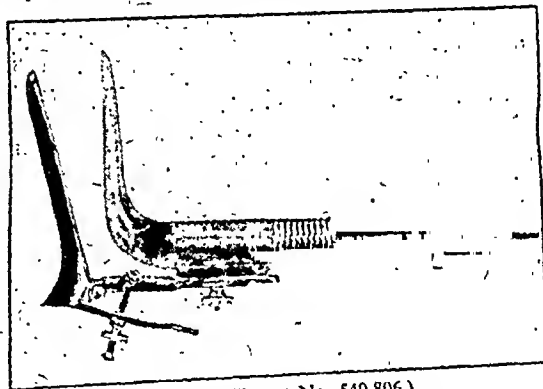


FIG. 1. (Patent No. 540,806.)

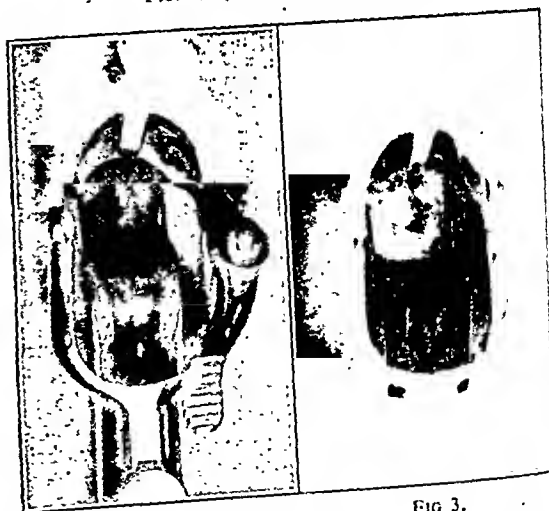


FIG. 2.

FIG. 3.

tion is provided. The power for the light can be obtained from dry cells, or from an electric main if a suitable transformer is used.

An extensive trial of this instrument has proved it to be most efficient. Although metal and curvite join together in the one instrument it can be sterilized by boiling without any dismantling. In place of the screw handle illustrated in the

photograph one fitted with a slot can be obtained. This is of advantage when the instrument is being used in a busy clinic.

Figs. 2 and 3 show the speculum in use, the latter being a photograph taken with the illumination provided by the instrument itself.

The new speculum is made by Vann Bros., Ltd., and can be obtained from them at 63, Weymouth Street, London, W.1.

A SINGLE OR BILATERAL BÖHLER BRAUN LEG SPLINT

Mr. R. BERTRAM BLAIR, M.B., F.R.C.S.Ed., surgeon to the Hull Royal Infirmary Fracture Clinic, and Dr. NORBERT KLEIN write:

We wish to introduce to those who are interested a simple kind of leg splint made after the Böhler Braun type.

try-outs and repeated alterations we produced a single leg splint which could readily be turned into a bilateral when found necessary. Our experience of air-raid casualties satisfied us that the effects of many "incidents" demanded the use of a bilateral leg splint, as many casualties arrive with fractures of both limbs.

It is claimed that the splint is practical, easily manufactured, and comparatively cheap. The material required is as follows:

- 8 ft. 14-in. red deal 8 in. wide by 5/8 in. thick
- 3 ft. red deal 5 in. wide by 5/8 in. thick
- 14 ft. bar iron 3/16 in. by 3/4 in.
- 8 ft. bar iron 1/2 in. by 3/16 in.
- 6 pulleys
- 2 dozen bolts and iron nuts
- 8 corner iron chips

The splint can be made in a hospital workshop at little cost, the material costing no more than 25s. Tarran Industries, Ltd.,

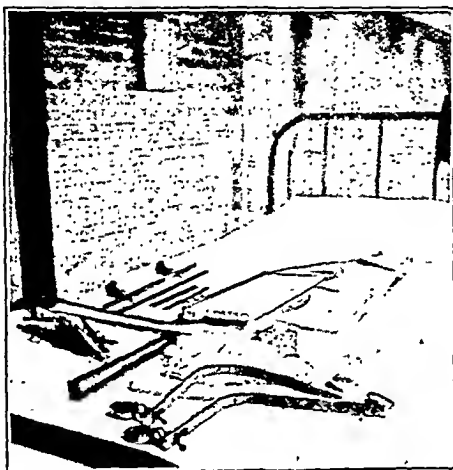


FIG. 1.

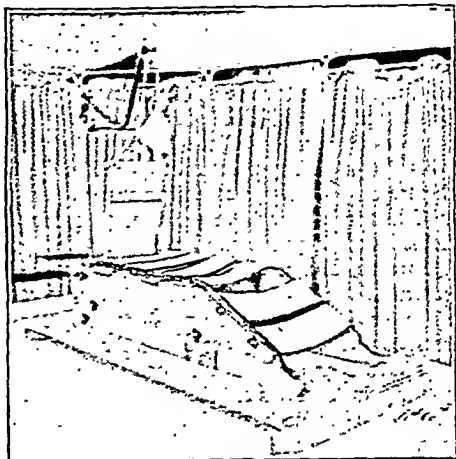


FIG. 2.



FIG. 3.



FIG. 4.

In our "blitzed area" it was soon found that the demand for the Böhler Braun was far greater than the supply. The shortage may have been due to the difficulty in obtaining the necessary labour, but probably more especially due to the lack of the raw material. In addition, the question of cost became an important factor. These considerations led to the idea of devising a simple, readily made splint. With the collaboration of the joiner at a base hospital a splint was made; and after

Hull, have made for us a more finished splint which would cost £2 15s.

The advantages of the splint are that it can be turned out in bulk at £2 15s.—that is to say, at half the cost of any such splint on the market; that it is transportable—when folded up it is parcelled into a space of approximately 33 x 12 x 5 in.

The photographs show the splint ready to be assembled, as a single unit, as a bilateral splint, and actually in use.

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SATURDAY NOVEMBER 15 1941

NEW RULES FOR ASEPSIS

It has become abundantly clear in recent times that "hospital infection" is by no means a thing of the past. It must always have existed, although remaining mostly unrecognized, in "septic" wards, but it has now become a major problem in hospitals dealing extensively with casualties. The detailed study of wound flora, and in particular the typing of haemolytic streptococci, have made it possible to trace the spread of infection from case to case: that this is a frequent occurrence and may involve considerable numbers of patients was shown by the investigations of A. A. Miles and others published in this *Journal* last year. The burden of their argument was that the many precautions taken in the operating theatre do not always extend to ward work, where various faults in technique may cause avoidable wound infections. Few surgeons know everything that goes on in their wards, and many details connected with the sterilization of various materials and the care of wounds are left to the discretion of the nursing staff. It is with no disrespect to the nursing profession that some of their methods have been condemned, since they may reasonably ask that instructions for the proper conduct of such work should be made available; nor are they, in fact, by any means wholly responsible for the defects in technique which have been brought to light. There is need, in fact, for a thorough review of aseptic technique in the light of modern knowledge. So far as it concerns ward work, and as the direct outcome of recent research, this need has been met by the publication of *The Prevention of "Hospital Infection" of Wounds*, a memorandum sponsored by the War Wounds Committee of the Medical Research Council and the Committee of London Sector Pathologists. This furnishes in simple language full instructions for the conduct of dressings, the sterilization of all ward apparatus and materials, and other precautions necessary to safeguard wounds from extraneous infection. It should be widely studied, and may well serve as the basis for generally accepted hospital rules or, indeed, be adopted *in toto* for that purpose.

The chief instructions for avoiding contamination by dust and by droplet infection are already widely observed. Apart from the oiling of floors, it is laid down that sweeping and bed-making should be finished an hour before dressings are begun, and that during the dressing itself bedclothes should be moved gently. Closed plasters are a prolific source of dangerously infected dust, and should be opened only in a special room. A pattern is given for a simple and effective mask, and masking of the staff and silence on the part of other patients are enjoined during the conduct of dressings. The method of doing dressings requires two people, and may be considered too elaborate for

universal employment; on the other hand it is carefully thought out, and every step has its reason. The operator is not required to "scrub up," but merely to wash his hands; he works entirely with forceps, and should not touch the wound and the surrounding skin, the inner dressing, or any sterile material. It should be noted that this technique demands a generous supply of Forceps and certain utensils; a shortage in this direction is the most easily remedied source of difficulty and consequently of danger. Some may wish to vary these instructions, but if so they will do well to bear in mind their underlying principle: that the hand should never touch either the wound or anything supposed to be sterile. The observation of this single rule would perhaps do more than anything else to prevent avoidable wound infections. It is also pointed out that contamination of wounds may take place when they are handled by others than the ordinary surgical staff; precautions must therefore be taken when calling in the services of the radiologist, masseuse, or physiotherapist.

It is now notorious that infection has frequently been transmitted by utensils and other materials which are believed to have been sterilized but have not. Baths of various kinds have played a sinister part in this connexion: a full-sized bath must be treated chemically, and rubbing over with strong lysol is recommended. Arm baths must, if necessary, be treated in the same way, but it is far better to boil them; another strong injunction given is that every ward should possess a sterilizer of such a size that it can contain all bowls, dishes, and other such utensils which require sterilization. Heat is preferable to chemical disinfection whenever it is feasible, and full instructions are given for the proper use of the autoclave; four alternative methods are offered for the sterilization of syringes by heat. There is nevertheless an appendix on chemical disinfectants, dealing only with the three principal types of coal-tar origin, with instructions for their specific uses, and the suggestion that some such instructions should be posted up in every ward. The intelligent co-operation of the nursing staff in all these matters can be secured by teaching them elementary bacteriology from this point of view, preferably with simple practical demonstrations. It is finally suggested that a large hospital needs a senior officer whose chief business it is to supervise the control of infection, both by teaching and by seeing that these rules continue to be observed. We commend this memorandum very strongly to surgical staffs, with the suggestion that they either adopt its rules or make better ones if they can.

SCIATIC PAIN

Sciatica is not a clear-cut syndrome. The only constant symptom is pain, but from time to time and from patient to patient even this varies as much in its localization as in its severity. The pain may or may not be accompanied by scoliosis, muscle wasting, weakness, absence of the ankle-jerk, or a host of eponymous physical signs with a value in inverse ratio to their number. The most interesting feature of the condition known as sciatica is that nearly every one of the symptoms and signs is largely inexplicable at present.

1 *British Medical Journal*, 1940, 2, 855, 895.

2 M.R.C. War Memorandum, No. 6, H.M. Stationery Office, 1941, price 6d.

Sciatic pain is distressingly common and very crippling. It has always been grouped in a class with the equally unexplained pains of lumbago and brachial neuritis. As with them, though there are many known causes of the pain, the greater number of cases have had to be termed "idiopathic." Unfortunately most of the known causes are serious and often fatal conditions. It must be remembered that a minority of the patients with sciatic pain will be suffering from neoplasms of the spinal cord or its coverings, or from invasive new growths in the region of the sciatic nerve itself. Happily this minority is very small, but it is large enough to demand full clinical, radiological, and pathological investigation of any patient with sciatica whose pain has lasted more than about three months, especially if the onset was gradual and if there are signs of impaired conductivity in the nerve or its branches. The recent interest shown on both sides of the Atlantic in prolapse of the nucleus pulposus of the intervertebral disk has thrown much light upon a small number of chronic and persistent cases.¹ But, as Barr and his colleagues² insist, this is a very rare lesion and one which a busy general practitioner is unlikely to meet with more than once in his lifetime. Kellgren³ has recently reported the discovery of fifteen cases of disk prolapse in as few as seventy cases of sciatica. This unduly high incidence must not be regarded as typical, however, and it could have occurred only in the unusual circumstances of a specialized neurosurgical or hospital research unit.

The big problem facing the general practitioner and the general physician lies in the vast majority of the patients in whom a diagnosis of "sciatica" is made. Their sciatic pains, for lack of better knowledge, have had to be labelled "neuritis," "inflammatory," or even "idiopathic." These patients account for at least nine-tenths of the sufferers from sciatica, and anything which will help to elucidate their symptoms will be of great value. Often enough an unsatisfactory diagnosis is the result of an inadequate physical examination, and the patient has been treated by placebos or by empirical physical measures directed towards the sciatic nerve itself. As James Cyriax has pointed out,⁴ the sciatic nerve is probably the most innocent of all the structures that may be causing the pain. What is needed is a thorough clinical examination to determine the site of the causative lesion, the nature of which still unfortunately eludes us. Cyriax⁵ clearly outlines how this should be done, basing his methods of clinical investigation upon the work of Sir Thomas Lewis⁶ and of J. H. Kellgren.⁷ These observers showed that the commonest explanation of "idiopathic" sciatica is that it is a referred pain arising from lesions of muscle, ligament, or fascia around the pelvis and lower lumbar spine. Such pain has been produced experimentally by Kellgren⁸ by injecting very small quantities of hypertonic saline into the erector and other muscles of the lumbar spine. What is perhaps even more important, he has relieved, and has even perma-

nently cured, some cases of sciatica and "neuritis" by injecting local anaesthetics into tender spots in these muscles. The introduction of the needle into the tender spots has reproduced the pain of which the patient complained, and the injection into that point and nowhere else has relieved it. Cyriax now gives us a detailed account of the way in which the site of these lesions may be determined. It is important to note that his clinical examination is detailed and thorough. Many will differ with him over the interpretation of the physical signs which he discusses, but no one can deny the importance of the fact that in this large group of patients the site of the causative lesion may usually be found with considerable accuracy.

The major problem remains. The diagnosis of the site of the lesion, accurately as it may be made and as accurately confirmed by the results of the injection of local anaesthetics, is only half the battle. For what, after all, is "myositis"? How, if at all, does it differ from "fibrositis"? How long will both these terms have to remain names entirely devoid of pathological significance? As each year passes the number of such names increases. "Panniculitis" and "perineuritis" are fairly well established though quite devoid of meaning in terms of morbid anatomy. Obviously the next step lies in the direction of pathology. In the meantime, we may be thankful for further help in the problem of anatomical diagnosis.

HYALURONIDASE

A process which may be of some importance in several acute infections and has hitherto been very imperfectly understood seems now to be undergoing rapid elucidation. The story goes back to the discovery by Duran-Reynals in 1929 of the "spreading factor" which has since been associated with his name; this was contained in a watery extract of testicle, and caused the widespread and rapid diffusion in the tissues of any particulate material injected with it, including micro-organisms, which consequently produced abnormally extensive lesions. It was shown by variations on this form of experiment that the only action of the spreading factor was to increase tissue permeability. Testicle is the only tissue containing it in considerable amount, but four years later Duran-Reynals showed that a substance having the same action is produced by certain bacteria. Its study from this point of view was then taken up by McLean, who had observed that in horses undergoing immunization the swelling produced by an injection of diphtheria toxin subsides slowly, whereas that produced by *Cl. welchii* toxin almost instantaneously disappears. A spreading factor is in fact produced by many bacteria which cause rapidly invasive infections—notably staphylococci, streptococci, pneumococci, and *Cl. welchii*—and it seems reasonable to conclude that invasiveness and the action of the spreading factor are connected. Substances with a similar action exist in some snake venoms, and can also be extracted from malignant tumours. Until quite recently their nature and mode of action were unknown, but these have been elucidated with surprising completeness by the observations and deductions of E. Chain and E. S. Duthie.⁹ These were made possible by the identification some years before by Meyer and others of hyaluronic acid as the substance to which vitreous humour and synovial fluid owe their

¹ See *British Medical Journal*, 1940, 2, 708.

² *J. Bone Jr. Surg.*, 1937, 19, 323.

³ *Lancet*, 1941, 1, 561.

⁴ *J. Chert. Soc. Mass. med. Gym.*, 1941, 26, 230, 253; 1941, 27, 8.

⁵ *British Medical Journal*, 1938, 1, 321.

⁶ *Ibid.*, 325.

⁷ *Clin. Sci.*, 1937, 3, 175.

⁹ *Brit. J. exp. Path.*, 1940, 21, 324.

viscosity. Chain and Duthie showed that testicular and bacterial extracts which had the spreading effect also reduced the viscosity of a hyaluronic acid solution to that of water, the degree of both activities corresponding; by also demonstrating that a substance having the properties of hyaluronic acid exists in skin they linked the two phenomena, and made it appear certain that the increased tissue permeability which underlies the spreading effect is due to the breakdown of hyaluronic acid in the tissues. The enzyme responsible for this action they have named hyaluronidase, and it remains to be determined whether there is only one such substance, regardless of its origin, or whether the enzymes formed by bacteria and those found in testicle or snake venom differ in any of their properties. That there may be such differences appears likely from the recent work of K. Meyer and others,² who had previously noted discrepancies between hyaluronidase content and capacity for causing spreading. They now report that there is a difference in optimum pH for activity between extracts of testis and bacteria, and find also that extracts of many strains of haemolytic streptococci, though of high spreading activity, have little or no power to break down hyaluronic acid. Studies on these lines have brought to light an extraordinary feature in the behaviour of haemolytic streptococci. It is well known that in the first few hours of growth in a fresh medium these organisms sometimes form capsules which later disappear. This capsule is composed of a substance indistinguishable from hyaluronic acid, and it now appears that by subsequent production of hyaluronidase the organism brings about the dissolution of its own capsule. This phenomenon has recently been studied by D. McLean,⁴ who confirms the fact that in streptococci of Groups A and C capsule formation and hyaluronidase production are mutually exclusive. Pneumococci also produce hyaluronidase, but their capsules are not composed of hyaluronic acid and therefore persist, although pneumococcus hyaluronidase will destroy streptococcus capsule. McLean found also that the addition of hyaluronic acid to a culture medium for streptococci led not to increased capsulation but to greatly increased hyaluronidase production. It is quite possible that this process has an equivalent in tissues subject to rapid streptococcal invasion. It is at least probable in a broader sense that this enzyme plays an important part in acute inflammation, and its study should amplify our understanding of that process.

PECTIN AS A BLOOD SUBSTITUTE

The successful use of blood derivatives in the treatment of shock has demonstrated the necessity in such cases for replenishing the volume of circulating fluid with a fluid which has identical or similar physical characteristics. Blood derivatives are inevitably limited in amount and expensive to prepare. A substitute is highly desirable. Gum acacia was used for this purpose in the last war: it has the disadvantage that it is toxic and difficult to reprepare. Recently Taylor and Waters⁵ have proposed the use of isinglass or fish gelatin, and preliminary experiments have given satisfactory results. Pectin solution is now proposed by Drs. Hartman, Schelling, Harkins, and Brush⁶ as a possible alternative. Pectin may be described as a colloidal carbohydrate of a high molecular weight and rather complex composition. It is prepared from plant cells, where it is probably combined with cellulose. For

the purpose of the present investigation solutions were made from a commercial dry powder, great care being taken in sterilization and buffering of the final product. One-half per cent. of the pure pectin solution has about the same viscosity and osmotic pressure as whole blood. As with other colloidal solutions, every lot does not turn out alike, and every batch of pectin solution has to be tested against citrated blood and suspensions of red blood cells, including examination for haemolysis, rapid sedimentation, and preparation of film.

Experimental observations show that pectin is retained in the body for a short period, and is then eliminated rapidly in the urine. There is no obvious cumulative effect. Liver function as measured by the fractional bromsulphalein test and fibrinogen shows slight depression only with massive doses. Preliminary experiments on dogs and rabbits proved that pectin solutions were non-toxic and non-antigenic. The low blood-pressure level in dogs after haemorrhage was rectified by injections of pectin. Similar satisfactory results followed the treatment of dogs with experimental bile peritonitis. The observations made on human operative cases are, however, not convincing. Only four cases are quoted, and in only one of these was the blood pressure low before the pectin solution was given. Far more controlled proof of the clinical value of pectin solutions is needed before it is considered in any way as an alternative to blood derivatives in the treatment of shock.

X RAYS IN TREATMENT OF INFLAMMATIONS

A timely review by Pendergrass and Hodes⁷ of the x-ray treatment of inflammation opens with the statement that its value has been well recognized by radiologists from the beginning of the century, but that the majority of other physicians remain to be convinced of its benefits. This scepticism, they think, is in some measure due to a lack of well-controlled experimental evidence, and they accordingly devote part of their paper to a summary of recent work in this field. Although a bactericidal effect can be demonstrated with large amounts of radiation, it is agreed that the small doses in therapeutic use are unlikely to have a direct influence on bacterial morphology or physiology. A uniform and characteristic response to such small doses, however, is dilatation of the blood and lymph capillary vessels, so that the passive hyperaemia of an inflamed volume of tissue is transformed into a region of active hyperaemia, with speedier resolution as the result. The radiosensitivity of leucocytes is also such that even a small dose of radiation destroys a sufficient number to "decompress" the inflamed focus, and it can do this at an earlier stage in the process than can surgical incision and drainage, which usually awaits the localization of the infection in a definite abscess. These two effects are probably enough to account for the benefit given by radiotherapy in inflammatory conditions, though there may also be enhancement of the normal immunological responses and the setting free of protective antibodies.

A more important cause of scepticism is the natural suspicion with which a therapeutic agent is viewed when it is reported efficacious in a wide variety of conditions. But the two effects referred to above are a reasonable explanation not only of how radiations work but also of why they are of value in so many different diseases, for the basis of inflammation is the same, whether the disease is called parotitis, actinomycosis, whitlow, carbuncle, and so on. Pendergrass and Hodes report their results in many such conditions, and call a case successful only if it is

¹ *J. exp. Med.*, 1941, 73, 309.

² *Ibid.*, 1941, 73, 109.

³ *J. Path. Bact.*, 1941, 53, 13.

⁴ See *British Medical Journal*, 1941, 2, 166.

⁵ *Ann. Surg.*, 1941, 114, 212.

⁷ *Amer. J. Roentgen*, 1941, 45, 74.

relieved in a considerably shorter time than is usual when radiotherapy is not employed. On this basis the proportion of successful results in bursitis is 52%, in carbuncles 45%, in cellulitis 78%, in erysipelas 83%, in furuncles 72%, in acute post-operative parotitis 52%, and in warts 98%. These modest claims should inspire confidence, and when in addition their paper is supported by a bibliography of nearly 200 references, by no means confined to radiological literature, it is rather surprising that the scepticism referred to should persist. The treatment of septic fingers in the out-patient departments of our hospitals is seldom such as to merit congratulation, and any registrar or house-surgeon who is in the habit of referring such cases to the x-ray therapy department can testify not only to the shortening of the period of incapacity but also to the restoration of useful function in fingers which would otherwise have been amputated. At a time when every man-hour is of such importance, the attachment of radiotherapists to industrial centres where much time is lost through septic fingers and other minor inflammatory conditions would be of great value. The technique of radiotherapy in these conditions is simple, and the doses required are so small—Pendergrass and Hodes usually give 100 to 200 r daily for three to five days—that there is no risk of radiation injuries; thus with the present shortage of radiotherapists the hospital or armament works casualty officer could be taught the essentials in a few weeks. The radiotherapist interested in the treatment of inflammatory conditions has gained from experience the indications for varying the time intervals between successive doses and the size of such doses, but there is no reason to suppose that the casualty officer would be any less apt.

SCHISTOSOME DERMATITIS

Since Cort¹ described the occurrence of an acute dermatitis from penetration of the skin by the cercariae of a schistosome the subject has been intensively studied in America. The condition is common on the bathing beaches of Northern Michigan, Wisconsin, and Manitoba, but it also happens in Europe, and its occurrence in at least one place in the British Isles—Cardiff—has been reported by Matheson.² Cort described his own symptoms as a prickling sensation about ten minutes after immersion of his hand in water infested with the cercariae, followed quickly by urticarial blotches which subsided in about half an hour, leaving minute macules. In less than twenty-four hours intense itching developed, papules began to appear, and in two days the hand was swollen and painful and the papules became pustular. The condition began to subside in five days. Horny skin was not affected: the cercariae seemed to make their entry by the hair follicles. The disease naturally acquired by bathers follows a similar course, though pustular complications do not seem to be common unless the water is otherwise polluted: but sometimes the lesions have taken as long as three weeks to subside. Outside the experimental field, those who suffer have almost always been bathing or wading, so that the disease is popularly known as bather's or swimmer's or water itch. The cercaria first identified by Cort as causing the condition was *C. elvae* Miller. That occurring in Cardiff was *C. ocellata*, which appears to be the common schistosome in European outbreaks. Subsequent work in America has established that dermatitis may be caused by at least three others—namely, *C. douliitti*, *C. physellae*, and *C. stagnicola*—and Cort suspects that most of the twenty-odd

cercariae of schistosomes which do not set up the systemic disease, schistosomiasis, may in man nevertheless be capable of causing dermatitis. The immediate hosts are water-snails: either *Lymnaeidae*, of which the species *Stagnicola emarginata angulata* (Sowderby) is the commonest in Michigan, while several others figure in Wisconsin; or *Physidae*, which, as Brackett³ has shown, also harbour cercariae in the latter State. The carrier snail at Cardiff was *Lymnaea stagnalis*. A particular species of cercaria is not entirely specific to any one variety of snail. Much less is known about the adult schistosomes and their hosts, but it is generally believed that they occur in water birds: it is suggested, for instance, that *C. physellae* may be the larval stage of *Pseudobilharzia querequedulae* of the blue-winged teal. One cercaria, *C. douliitti*, is known to be derived from a schistosome infesting mice, musk-rats, guinea-pigs, and rabbits, and certain experiments with it are interesting. It has been assumed that the violent cutaneous reaction of human beings to invasion by cercariae is a measure of their inability to penetrate beyond the skin. Brackett⁴ experimentally infected a young rhesus monkey with *C. douliitti* by almost daily immersions over a week, and found at necropsy four weeks after the first infection not the slightest trace of dissemination. In experiments on himself with *C. stagnicola* and *C. elvae* he found no trace of the parasites in sectioned skin at twenty-nine and fifty hours after infection, but there was ample evidence of burrows, some of them blind, extending no further than the Malpighian layer. He concluded that these experiments confirmed the observed epidemiological fact that no case of systemic infection had ever been noted in the areas where bather's dermatitis is present. The possibility that one or other of these cercariae might assume the faculty of invading the human body, like *S. haematobium* or *mansoni* or *japonicum*, would indeed be alarming in view of their prevalence. A recent communication by Penner⁵ is therefore likely to lead to further examination of the subject. He immersed a healthy young rhesus monkey for an hour in water containing *C. douliitti*, estimated to number 28,000. At necropsy five and a half days later there was evidence of extensive but mild dermatitis. Migrating worms were plentiful in the lungs and slight haemorrhage was noted. He suggests that the same process might occur in man, and especially in young children, and that the migrant cercariae, even if they went no further, might carry other infections mechanically from the outside to the lungs and intervening tissues. Full details of his work are not yet available. It is possible that this unexpected finding was due to some exceptional feature of the experiment, out of the range of the circumstances associated with natural infection.

PICROTOXIN IN ANOTHER ASPECT

German textbooks on pharmacology of thirty years ago had much to say on convulsive poisons such as picrotoxin. To a young English student at the time they seemed only to be stressing their lack of relation to useful therapeutics. Recently, however, convulsive poisons have found a use, and all who have tried it realize that picrotoxin is a certain weapon in the fight against an overdose of narcotic. Barbiturate coma, no matter how deep, can be dispelled by hourly intravenous injections of 10 mg. of picrotoxin, and it is likely that other forms of narcosis are equally tractable. This dose repeated in a normal person would be apt to

¹ *J. Amer. med. Ass.*, 1928, 90, 1027.

² *Trans. roy. Soc. trop. Med. Hyg.*, 1930, 23, 421.

³ *Amer. J. Hyg.*, 1940, 32 (Sec. D), 85.

⁴ *Ibid.*, 1940, 31 (Sec. D), 49.

⁵ *Arch. Derm. Syph.*, 1940, 42, 410.

⁶ *Science*, 1941, 53, 327.

produce convulsions, but after an overdosage of barbiturate it exerts an effect which is entirely beneficial. Unfortunately picrotoxin is no proprietary drug! it has no manufacturer's advertising power behind it, and so its value is still too little known.

The antagonism between picrotoxin and barbiturates can easily be demonstrated in animals.¹ If a group of mice are injected with a dose of nembutal which will kill 80% of them their lives can be saved if they are also injected with a dose of picrotoxin which by itself would kill 80% of them. Recently a paper by F. E. Rosenthal² has appeared which reminds us of another aspect of the physiological action of picrotoxin. Injected into normal rabbits it causes a fall of body temperature; this observation was made by Harnack so long ago as 1894. If the injection is given subcutaneously the dose must be very large (1.2 mg. per kg.); if, however, the injection is made vertically downwards through the brain to the neighbourhood of the hypothalamus, as a "para-infundibular" injection, then so small a dose as 1 microgramme of picrotoxin in 0.05 c.cm. of distilled water will cause a fall of 4.1° C. in four and a half hours. Now barbiturates given in large dose subcutaneously will also cause a fall in temperature; thus phenobarbitone (luminal) in a dose of 0.05 gramme per kg. caused a fall of 5° C. in a rabbit in five hours. This is, of course, a very large dose, corresponding to 45 grains for a man of 60 kg. If picrotoxin and phenobarbitone are given simultaneously the effect of the one is neutralized by the other and the body temperature remains normal. The same phenomenon is seen with picrotoxin and paraldehyde. As the cooling effect of picrotoxin is accompanied by bradycardia, and as it is a stimulant substance, its action is believed by Rosenthal to be due to stimulation of a cooling centre in the diencephalon closely related to the centres controlling the parasympathetic system. When phenobarbitone is given simultaneously the absence of temperature fall is thought to be due to narcosis of this cooling centre, and not to be related to the fact that phenobarbitone itself causes a fall of temperature. For other substances which can cause a fall of temperature act additively with picrotoxin. Thus calcium chloride, administered by a para-infundibular injection, and aconitine both act additively with picrotoxin in causing a fall of temperature.

Interesting observations can be made by injecting small doses of potent substances into the hypothalamic region. It is, however, unlikely that a precise analysis of their effects will be possible until new technical methods of studying the activity of the brain are developed.

PLAGUE IN SOUTHERN INDIA

Not so long ago, perhaps as a result of memories of the Middle Ages and of the Great Plague of London, it was commonly believed that plague was an urban disease which tended to spread from one city to another along the trade routes. This view accorded well with the discovery that fleas of the black rat and to a less extent of the grey rat carried the disease to man. More recent observations, however, have shown that plague is often a rural infection carried on either as an enzootic or epizootic of wild animals whose association with man is as sporadic as it is accidental. Sylvatic plague is already well known in Manchuria, California, and South Africa, but hitherto its presence in India has been undetected. George and Timothy,³ however, have now brought forward evidence

which strongly suggests that sylvatic plague occurs in the Nilgiris in Southern India. The Nilgiris form a plateau in Madras Province roughly 1,000 square miles in extent with an average altitude of 6,500 feet, though some of the peaks rise to over 8,000 feet. The climate is equable and temperate, the warmest months being only about 9° F. hotter than the coolest. Plague first attacked the district in 1903 and has been present ever since, a rough periodicity of three to four years being evident in maximum incidences. Previous observations by George and Webster⁴ have shown that sylvatic plague does not occur in the plains in Southern India, but in the hills the common occurrence of sporadic outbreaks of human and rodent plague, apart from the lines of communication, and the not infrequent appearance of pneumonic cases are features which are not unusual in those countries where the sylvatic type is known to exist. A preliminary survey of the rodent and flea population of the Nilgiris showed the presence, in addition to the black rat *Rattus rattus*, of a number of common animals, including what the authors refer to as a bandicoot, the mole rat *Gnomys kok*, the field mouse *Leggada booduga*, the bush rat *Golunda ellioti*, the "musk rat" *Pachyura caerulea* (really a shrew), and the house mouse *Mus musculus*. The flea fauna comprised *Xenopsylla cheopis*, *X. astia*, *X. brasiliensis*, *Ceratophyllus nilgiriensis*, *Stivalius* sp., *Leptopsylla musculi*, *Ctenocephalus* sp., and *Pulex irritans*; of these fleas *X. brasiliensis* was found naturally infected on a black rat, while experimental evidence shows that *Stivalius*, of which three subspecies are present in the area, and *Ceratophyllus nilgiriensis* are able to transmit plague from one mouse to another. The three *Xenopsylla* fleas are excellent vectors, while *Leptopsylla musculi* has been found by Chinese workers to transmit infection; as it bites man only with reluctance, however, it is probably not of great importance. Since the three species of *Xenopsylla* and also *C. nilgiriensis* were all found on mole rats, which have no close association with man, it is obvious that conditions for the existence of sylvatic plague are almost ideal. Actual proof of the presence of this form of plague must, however, await the discovery of infected fleas or infected rodents living entirely apart from man and his haunts.

At a recent meeting of the Council of the Royal Society of Medicine Sir Henry Dale, M.D., P.R.S., was presented with the Gold Medal of the Society, which is awarded triennially for valuable contributions to the science and art of medicine.

Surgeon Rear-Admiral G. Gordon-Taylor has arrived in Boston to attend the Clinical Congress of the American College of Surgeons as a representative of the Royal Navy and the Royal College of Surgeons of England.

The Canadian Medical Association Journal announces that the C.M.A. has set up a committee on industrial medicine under the chairmanship of Dr. J. G. Cunningham of Toronto. The purposes of the committee are to survey the situation and define the scope and objectives of industrial medicine; to consider the qualifications and training of physicians and nurses for service in this special branch; and to take stock of the personnel and training situation in Canada to-day, with a view to fuller prosecution of the war.

¹ J. Pharmacol. exp. Therap., 1939, 67, 153.

² Ibid., 1941, 71, 305.

³ Indian Med. Gaz., 1941, 76, 142.

⁴ Indian J. med. Res., 1934, 22, 77.

"PERFECT SIGHT WITHOUT GLASSES"

BY

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This attractive slogan, or some modification of it, makes its appearance every few years, and lately it has bobbed up again, this time in the programme of the B.B.C. Brains Trust. The public are recommended to read two books on the subject in which it is stated that perfect sight can be achieved by exercises (and one of the two insists on a diet as well) and without the aid of glasses. It can be said at once that neither of these books is to be taken seriously, and there is very little truth or sense in either. The purpose of this article is not to expose the tricks of ophthalmic quacks, but to state what can and what cannot be done by eye exercises.

What Exercises Cannot Do

No exercise has been devised which can make a large eye smaller or a small eye larger, or which can change the shape or refractive index of the eye in any permanent way. In other words, and it cannot be stated too clearly, exercises are not a substitute for glasses in long sight, short sight, or astigmatism. This is as much as to say that no exercise will replace glasses which are genuinely needed; but unfortunately there are many of us wearing glasses unnecessarily, for they are prescribed by practitioners baving no medical knowledge. It is not surprising that exercises cure some people of wearing glasses which should not have been prescribed at all.

What Exercises Can Do: A. Convergence Insufficiency

To look at any near object requires an effort of convergence, and the nearer the object the greater the effort. In people who spend the day on such work it may be that the necessary effort cannot be sustained and one eye will then diverge. Binocular vision is thus broken, and diplopia results, which is interpreted by the individual as "blurring of the print." It is sometimes for this reason that one stops reading and covers the eyes for a few minutes, after which the rested internal recti can once more produce the necessary effort.

Now that the majority of the population are engaged on near work of some kind, cases of convergence insufficiency are not uncommon, and for these patients a course of suitable eye exercises is beneficial, and if the general health is sound a cure is likely to result. A holiday may also have the same effect.

To complain that the print is blurred is, in some quarters, as much as to ask for a pair of glasses. And another member will then have joined the host of wearers of unnecessary spectacles. Such a person will be a godsend to the curer of bad sight without glasses. A competent oculist would not have given him glasses in the first place, but would have put him on exercises from the start.

B. Heterophoria

A person with two good eyes working in complete harmony is said to have full binocular vision. The image he sees with the right eye is a little different from the image seen with the left, but these two images are fused into one complete picture, which thus has depth as well as height and breadth. This is stereoscopic vision.

On the other hand there is the person who has a squint. The images he sees are so dissimilar that no effort can fuse them into one stereoscopic whole, and he therefore uses one or other eye and suppresses the unwanted image—monocular vision.

In between these two types is the patient who has a heterophoria or latent squint. Here the desire for binocular vision keeps the eyes working together, provided that the general health is good and the eyes not tired. But when fatigued the eye muscles cannot summon up the effort required to sustain binocular vision, which therefore breaks down, and the eyes assume a position of rest, one eye squinting up, down, in, or out. His "hold" on binocular vision is not good and breaks down under a strain, and he momentarily becomes monocular.

The immediate effect of becoming monocular is to throw out one's judgment of distance, for the amount of convergence

required to see an object is a valuable guide to its distance from the observer. This is well demonstrated by covering one eye and trying to pour water at arm's length into a wineglass. If one eye is permanently lost other means of judging distance are called into play—for instance, the amount of accommodation required and the relative size of the object—and eventually such a person will readjust his values and once more become a good judge of distance. It is only when fatigue deprives one of binocular vision, on which one has always largely depended for judgment of distance, that any difficulty arises.

All this was perhaps of academic interest before flying became general, but it was then realized that some pilots, when learning to fly, were quite unable to land an aircraft with safety, and this although their visual acuity was up to standard; they could never tell whether they were going to land six feet up or hit the earth with a smack. The toll of aircraft so damaged became high and interest was aroused, and it was found that the majority of these young men had heterophoria.

Exercises will make many of these men first-class pilots, and to talk to them after such treatment is to be convinced. As one young man said who had been turned down for bad landing, "Now I can do a real 'daisy-cutter' every time." The development of this side of ophthalmology carries with it the names of Group Captain Livingston and Group Captain Clements, who were the pioneers of this work in the Royal Air Force, and whose study of heterophoria as it concerns flying is well known. While others are in a better position to make this statement than I, I believe that a man who has lost one eye while still young, and has had time to readjust himself, will make a perfectly safe civil pilot if the other eye is sound, but because of his restricted visual field is obviously unsafe as a Service pilot.

DIET IN PREGNANCY

BLAIR-BELL MEMORIAL LECTURE

The fourth William Blair-Bell Memorial Lecture was delivered at the Royal College of Obstetricians and Gynaecologists by Mr. W. C. W. NIXON on October 25. His subject was diet in pregnancy.

He discussed the effect of diet on health. In East Africa an interesting investigation was undertaken on two tribes, the Masai and Kikuyu, who have different dietetic habits. There were more bronchitis, tropical ulcer, and malaria among the Kikuyu, who largely ate cereals, than among the Masai, who lived on meat, milk, and raw blood. In Vienna during the last war there was starvation, and the death rate from tuberculosis was doubled in the period 1915-19. But in the province of Salzburg, where milk, butter, meat, and vegetables were still obtainable, there was little change. Again, in Germany the mortality from puerperal fever was almost doubled in twelve months as the result of the blockade. In this country it had been shown that boys from the elementary schools had poorer physique than those from the preparatory and public schools. Infectious diseases were much more serious among the children of the poor, and the incidence of dental caries was higher in the lower-income group of the population.

Deficiencies revealed by Pregnancy

He showed how the strain of pregnancy would reveal a borderline state of nutrition. Pregnancy was a "diet efficiency" test. Particularly did this apply to vitamin B₁. In Hong Kong he had seen Chinese women who early in pregnancy appeared quite normal, but later showed incipient beriberi with each additional month of pregnancy, eventually being brought into hospital *in extremis*. In some cases beriberi did not become obvious until a few days after delivery. It was the strain of labour that precipitated the condition of acute avitaminosis. Other deficiencies would reveal themselves in a pregnant woman more often than in her non-pregnant sister. This was well exemplified in Vienna in the last war, when night-blindness (due to vitamin A deficiency) developed first among the expectant mothers. Osteomalacia (Maxwell's disease) or adult

rickets resulted from the excessive drain upon the maternal calcium. It was probable that women in this country suffered from minor degrees of this disease in the form of pelvic outlet contraction. Increased demand for calcium by the mother was apparent from the dental caries which resulted from decalcification of the dentine and enamel. The foetal needs were greatest in the last trimester of pregnancy, and it was then that most of the tragic complications arose.

In 1938 McCance analysed the food eaten by 116 pregnant women of different economic levels. He found that the composition of the diet varied according to personal taste and income. The calorific value was 2,100 to 2,700 a day. Women in the poorer classes were shorter than the well-to-do. The haemoglobin level rose with income. Likewise, with a higher weekly wage there was an increased consumption of eggs, green vegetables, raw fruit, milk, brown bread, meat, and fish. In America and Holland there have been similar surveys with the special object of detecting vitamin B₁ deficiency. An investigation had been undertaken in London by the People's League of Health to consider the nutrition of expectant and nursing mothers in relation to maternal mortality and morbidity. Five thousand expectant mothers were investigated. One-half of them were given special tablets of vitamins and mineral salts. The report, shortly to be published, would be most illuminating.

The Technical Commission of the League of Nations had evaluated the physiological bases of nutrition. Nutrition experts (Mellanby, McCance, Orr) were agreed on the importance of milk and dairy produce, eggs, vegetables, fruit, and cod-liver oil during pregnancy.

There were several pregnancy states attributable to malnutrition. Wernicke's encephalopathy was a terminal phase of hyperemesis. Polyneuritis was not commonly seen in this country. In Hong Kong it was naturally more often met with owing to the marked deficiency of vitamin B₁ in the diet of the poor. In 1937 a series of 27 cases had been collected in the University clinic there. Vomiting was common to all patients in the early months of pregnancy. In habitual abortion doubt had been cast on the importance of vitamin E. Nutritional anaemia was all too common among the women attending ante-natal clinics in this country. Anaemia did have some slight influence on puerperal pyrexia. In a recent epidemic of puerperal sepsis, on analysis of the ante-natal notes, two cases had haemoglobin levels of 45% and 50% respectively two weeks before delivery. More haemoglobin estimations in ante-natal clinics would detect anaemia, and much ill-health in mother and child would be prevented. Osteomalacia had been put on the "nutritional map" by the classical researches of Preston Maxwell in Peking. It was one of the best examples of how pregnancy would reveal a malnutritional state. In puerperal sepsis Sir Edward Mellanby had shown there was a nutritional factor. He had reduced puerperal morbidity by giving pregnant women vitamin A.

Oedema, Toxaemia, and Avitaminosis B.

The triad—oedema, toxaemia, and avitaminosis B₁—had impressed itself on Mr. Nixon at an early stage of his career in Hong Kong. In 1936 he found that 10% of those delivered had had oedema in pregnancy at some time or other, lasting for more than seven days. Avitaminosis B₁ was a causative factor in many of them. Many pregnant women in this country noticed at different times swelling of the hands in the absence of toxaemia, anaemia, protein lack, and excessive salt intake. In collaboration with Dr. Margaret Wright of the research laboratories of Vitamins Ltd. fourteen of these oedematous cases had been examined. It was felt that some might be due to lack of vitamin B₁ in the diet, just as in the Hong Kong patients. Hyperemesis, hypertension, pre-eclampsia, and, of course, controls were also investigated from the vitamin B₁ aspect. Prof. Gordon King was now in charge of the Hong Kong University obstetric clinic. In the preface to his 1939 report he drew attention to the association of oedema, toxaemia, and avitaminosis B₁. His 1940 report had just arrived here. In studying this an interesting fact emerged. There had been an alarming increase in the number of eclampsia and beriberi cases. The severer the degree of eclampsia the higher the incidence of avitaminosis B₁, with concomitant increased morbidity. An analysis of the eclampsia table was significant.

There were 42 cases, and 19 (45%) of these were complicated by avitaminosis B₁. Of the 13 fatal cases 11 also had this complication. Thus in 85% of eclampsia deaths there was the double lesion, eclampsia and avitaminosis B₁.

Dr. Margaret Wright and Mr. Nixon had collected 8 cases of eclampsia from different hospitals in this country, and had investigated their vitamin B₁ excretion. A statistical examination of the figures showed that in these the excretion of vitamin B₁ was significantly below that of the normal control pregnant women. Thus they had now proved that there was a positive correlation between eclampsia and a severely diminished vitamin B₁ excretion. The vitamin B₁ content of the placenta of the eclamptic patients was also significantly low compared with the normal. The placenta of 24 normal women had been examined, the average content of vitamin B₁ being 19 units per 100 grammes (average weight of placenta, 520 grammes). The placenta was a storehouse for vitamins. In the future it might be found that biochemical examination of the placenta would provide an indication of the state of nutrition of the mother and her offspring.

The assessment of nutrition was possible by simple clinical methods. A biochemical laboratory was not always to hand. A diet and economic questionnaire was of great assistance. The lower the income and the larger the family the less the food the mother would herself be taking. Stature was an indication of the dietary capacity of the community, provided hereditary factors were eliminated. Texture of hair, the nails, colour of mucous membranes, condition of skin, presence of petechiae, the teeth, gums, atrophy of the tongue papillae, sores at the angles of the mouth—all these could be rapidly observed. Follicular hyperkeratosis (vitamin A deficiency) was a special and early sign of improper feeding. In 1940 Pemberton estimated that of 3,000 children investigated in this country it was present in 5%. It was commonly seen in China, and responded with improvement of the diet and halibut-liver oil. Workers in Peking had noticed these skin changes due to vitamin A deficiency in the absence of ocular manifestations such as night-blindness and xerophthalmia. It was possible that in the coming winter we might find this evidence of vitamin A deficiency more widespread unless cod-liver oil were more universally administered in ante-natal clinics. Haemoglobin estimation would detect nutritional anaemia, and it should be done at the first visit to the clinic and be repeated at the thirty-sixth week.

Review of the Present Position

The rest of the lecture was devoted to a review of the present position. Mr. Nixon said:

Are pregnant women suffering from lack of essential food-stuffs? Will those of us who survive the next twenty years be able to point then to the adolescent with one or more nutritional stigmata and say he or she was a war baby? The survey of Sir John Orr before the war revealed the amount of malnutrition in this country. In present circumstances it hardly seems possible that there has been an amelioration of that nutritional state. Tuberculosis, a barometer of a community's nutrition, is on the increase. Many pregnant women are working long hours in factories where meals in canteens are far from ideal. At the end of the day how can they be expected to cook a health-giving meal? By interrogation of ante-natal mothers I find that the class of woman who is having difficulty in obtaining the proper kind of food is, regrettably, the soldier's wife with two or three children. The price of certain essential commodities, especially vegetables for making salads, is quite beyond her reach. Meat, eggs, milk, fruit, and cheese are restricted. Herrings, which should be eaten much more, are at times difficult to obtain. National wheatmeal bread is unobtainable in some districts.

If some of the expectant mothers are not getting the proper food should we resort to synthetic substances? It has been computed that in the U.S.A. 90 million dollars a year is spent on vitamin pills. Is it to be pills or food? The Nazis learned from an experiment in the Swiss Army. Soldiers were given vitamin C, iron, yeast, and gelatinous sugar. The results were poor. The German soldier gets his vitamins from butter, bread, yeast extract, soya bean, vegetables, and milk.

The produce from the land, if properly prepared and cooked, is more assimilable than the capsules from the laboratory. There is a psychological side to nutrition, as Pavlov has shown with his dogs. Let us hope we shall never live in a "brave new world" of Aldous Huxley with tabloid meals. We must make our obeisance to the biochemists and their epic researches, yet remind them of Ruskin. "What," he cried in a burst of righteous wrath, "what are we good for but to damage the spire, break down half the houses, and burn the library—and declare there is no God but chemistry."

Granted that malnutrition and poverty are twin sisters, entirely economic and therefore preventable, yet no one can gainsay the fact that vitamins are being thrown down the sink. The ignorance of many of our women in cooking food is appalling, and the apathy and obstinacy of their menfolk towards the subject almost universal. Dame Louise McIlroy's has been a voice crying in the wilderness: so often has she declared that the problem of maternal mortality and morbidity may be solved in the kitchen rather than in the laboratory. In war the fighting Forces require first consideration, yet it must never be forgotten that the pregnant and nursing mother is the next most important member of the community. Germany lost the last war on the home front—the kitchen front. Those of us who see to the welfare of expectant mothers have a heavy responsibility these days. Not only their fate but also that of the future generation is in our hands. We, as doctors, must interest ourselves more in the question, "Do they know how to buy, what to buy, and what to do with the food when they have bought it?" The worst type of obscurantism regarding diet is sometimes to be found among doctors and nurses. What exactly is the connotation of bland fluids, a light diet?

Three Lines of Attack

The problem of nutrition needs to be attacked on a broad front, and we in the medical profession have a big contribution to make; but we are lagging. In the belief that the health of the community in general and pregnant women in particular would be improved, I submit the following suggestions for your consideration:

1. *Maternity and Child Welfare Clinics.*—The supervision of diet should be one of the primary functions of all those working in maternity and child welfare clinics. These clinics are attended by a great number of women, who could be instructed in the art of buying and cooking food. The sum-total of hours spent and wasted by these women in waiting-rooms must amount to an astronomical figure. To lessen this monotony and at the same time benefit the health of the expectant mother I suggest that there should be in every waiting-room: (a) A milk bar attractively arranged, where a pint or more of milk should be given free. For those who do not like milk (and there are quite a number) varieties of "milk shakes" should be available. (b) A counter with salads, national wheatmeal bread, etc., daintily prepared—in fact, an Oslo meal. These should be distributed free or at minimum cost. (c) A demonstrator who would discuss with the women what best to buy at current prices with their limited means. She should demonstrate fully the preparation of dishes and talk over culinary problems in a simple, sympathetic, and practical way. She should act as an adviser, not teacher of the academic kind. If possible, communal feeding at the clinic would be ideal. Women of the poorer classes, particularly those of younger years, are only too willing to be educated in health matters when these are explained simply, and the benefits that accrue to them and their babies are emphasized by a doctor or nurse. It is for this reason I propose that the "food advice bureau" should be linked with the ante-natal and post-natal clinics. Thus by precept and example could the elementary principles of proper feeding be inculcated and the methods so demonstrated practised at home. In this way would the mothers of our country be guided so that they would themselves be contributing to one of the greatest measures in public health—proper nutrition. A start in this direction has been made at the Soho Hospital for Women. Through the good offices of Dr. B. S. Platt of the staff of the Medical Research Council I now have at my out-patient clinic an L.C.C. demonstrator who imparts to the waiting patients simple methods of preparing food for optimum health. The hospital provides all the materials necessary.

2. *Provision of Instruction for Doctors and Nurses in Dietetic Measures.*—There is an unfortunate and disappointing lag on the part of doctors and nurses in putting into practice the newer knowledge of nutrition. An awakening of a food conscience is necessary. Their opportunities for spreading the food gospel are unique, and yet many lay people are in advance of them in this respect. In their hospital instruction more practical dietetics should be included. For those who have graduated, short courses could now be arranged and practical hints published in the medical press. As nearly 60% of the women of England and Wales are confined by midwives it follows that these nurses are in a particularly good position to give dietetic instruction to their patients. The Central Midwives Board could assist in this direction.

3. *The Improvement of Diet in Hospitals and Institutions.*—Hospitals are lamentably behind in the provision of proper diet. Good food is ruined in the kitchen. The matron and the probationer, the steward and the wardmaid, the medical officers—all must develop an awareness of the transcendent importance of the kitchen front and take practical steps to ensure proper feeding not only of their patients but also of themselves. A proper perspective of preventive medicine—social medicine in contradistinction to curative—needs to be inculcated. Good health and good feeding cannot be divorced, and the marriage between midwifery and housewifery is long overdue.

CO-ORDINATION OF HOSPITAL ADMINISTRATORS

While public authorities and the governing bodies of voluntary hospitals are in conference on matters of hospital policy, plans have also been laid for the setting up of a single professional association of lay hospital administrators to give a lead both nationally and in the regions on all matters touching the recruitment and training of hospital administrators, their work and responsibilities, and to make recommendations to regional and national hospital councils on administration and management.

The Incorporated Association of Hospital Officers, founded in 1902, has hitherto restricted its membership to the administrative staffs of voluntary hospitals. The Incorporated Association of Clerks and Stewards of Mental Hospitals, founded in 1904, is representative of lay administrative officers of mental hospitals. These are the only two organizations restricting their membership and professional qualifications to lay hospital administrators, and their councils have decided to recommend to the members the adoption of an agreement for fusion under which at the same time provision will be made for the admission of stewards and other administrative officers of hospitals managed by public health committees of local authorities, Departments of State, such as the Department of Health for Scotland, and other analogous bodies. It is proposed that, for the time being, the educational work of the two bodies should continue on the present lines, but that a special committee should be set up at an early date to consider the problem of recruitment and training of hospital administrative staff in all its aspects. The committee will have to mind the recommendations in the Sankey and Hadow reports, as well as the results of the work of such bodies as the American College of Hospital Administrators.

Co-ordination of hospital services on a regional basis cutting across the old divisions between public and voluntary institutions will call for a certain uniformity in methods of business administration and a common system of accounts. It is hoped that the reconstituted association embracing lay administrators of all types of hospital will do valuable work in solving problems which will arise in the development of a satisfactory administrative system for all hospitals. As the principles and practice of management develop towards uniformity in all types of hospital there can no longer be room for entirely independent qualifications for lay administrators in the different sections of the hospital service. The united association will work out a system of recruitment and training which, while common to all, will allow for some degree of specialization by means of alternative examination papers.

POLISH MEDICAL FACULTY AT EDINBURGH

ADDRESS BY THE DEAN, PROF. JURASZ

The recent foundation of the Polish Medical Faculty within the University of Edinburgh was the subject of an address given by the Dean of the Faculty, Prof. A. T. Jurasz, at a meeting of the History of Medicine Section of the Royal Society of Medicine on November 5. Dr. J. F. Halls Dally, president of the Section, was in the chair.

Prof. Jurasz, who spoke excellent English, began by describing the Hitlerian war on Polish culture. From the University of Cracow 180 professors and others were sent to a concentration camp in November, 1939. A like fate befell representatives of the University of Poznan, and later of Lwow and Warsaw. Some eminent men of science had been sentenced to death; libraries had been closed and the contents confiscated; others had been reopned to serve the cause of the Germanization of Poland. Everything of special value had been taken from the museums and other collections and sent to Germany. Cathedrals and churches had been robbed of their treasures. Even German professors of distinction who had formerly been guests at scientific congresses in Poland had taken an active part in this plunder. This systematic and premeditated looting after hostilities had ceased had brought to the Polish nation a loss not smaller than that represented by the aerial and artillery bombardment of Warsaw. Buildings connected with education had been requisitioned. The Ministry of Public Instruction was occupied by the Gestapo, Warsaw University housed the security police, and secondary schools were taken over by the army.

A Scottish Welcome

In July, 1940, Prof. Jurasz continued, the remnant of the Polish Army, which included many doctors, was brought to the British Isles. In view of the presence of many Poles in Scotland Colonel Irvine Fortescue, D.D.M.S., Scottish Command, sought to organize a means of occupying and refreshing the minds of the medical men among them. He consulted Prof. F. A. E. Crew, who was commanding a military hospital with the rank of Lieut.-Colonel, and he arranged for batches of twenty Polish medical officers at a time to be attached to that hospital for periods of a fortnight. Further arrangements were made with the Medical Faculty of Edinburgh University and with the managing board of the Royal Infirmary whereby Polish medical officers might be spread among different departments and clinics. Linguistic difficulties, however, prevented these well-intentioned schemes from fully serving their purpose.

Finding that among the Polish medical officers in Scotland were many who had held academic positions in the Polish universities and that among the troops there were many students of medicine whose studies had been interrupted by the war, Colonel Crew made the further suggestion that these professors be given facilities at Edinburgh to teach their own people in their own language, and that the undergraduates should be allowed to complete their curriculum and proceed to graduation. These suggestions were gratefully accepted by the Director of the Medical Services of the Polish Forces in Scotland and by the Polish military authorities in London, who agreed to permit medical officers of academic standing to work in Edinburgh, and students to go up for refresher courses of from three to six months, and thereafter graduate, and return to the Army as reinforcements for the medical services.

The consent of General Sikorski, commander-in-chief of the Polish Army, was obtained, and the idea was embraced with enthusiasm by M. Cot, Minister of the Interior, who saw in it a closer cultural link between the Polish and British peoples.

The Beginnings of the Faculty

In October of last year, Prof. Jurasz said, he was instructed to go to Edinburgh and make contact with the University authorities. Prof. Sydney Smith placed before the Medical Faculty the proposal that a Polish Medical School be formed, and this received unanimous approval. In the Senate the proposal had the powerful support of Sir Thomas Holland,

the Principal, and was approved. The heads of the departments of the Medical Faculty placed their resources at the services of their Polish colleagues, and the Board of Management of the Royal Infirmary agreed to open their lecture theatres and wards to Polish professors, lecturers, and students, and more recently accommodation in municipal hospitals had also been placed at their disposal. The secretary of the University and the legal adviser to the Polish Government worked out the constitution of the new School, and drew up an agreement which was signed on February 24. The head of the School was the Dean. The teaching staff comprised six professors, seven lecturers, and ten other specialists. Edinburgh professors represented in the Faculty subjects for which no Polish lecturers were available. The curriculum and standards of teaching and examination were the same as those required in the Medical Faculties of Polish Universities. The programme of teaching was somewhat different from the British, but was according to Polish law. The examinations were practical, theoretical, and oral, and the chairman of the Examinations Board was the Dean. The Faculty comprised the Dean and seven Polish and nine British members, the latter being professors of Edinburgh University.

The inauguration took place in March last in the presence of the President of the Republic (M. Raczkiewicz). To those who participated, said Prof. Jurasz, it was one of their proudest moments since leaving Poland. They felt that a great responsibility had been entrusted to them, that they had the confidence of the authorities of the University of Edinburgh and held in their keeping the faith of Polish youth.

A Polish Hospital

A Polish hospital, named after Paderewski, had been organized in the grounds of the Western General Hospital. It had been equipped with generous help from America and was intended for the treatment of Polish civil as well as military cases. It was staffed by members of the Polish Medical Faculty and contained 80 beds and an out-patient department. Surgical beds in the Western General Hospital had been placed at the disposal of the Poles, as well as the use of operating theatre and x-ray department.

The School began with 77 students, 47 of whom were serving in the Forces. Some 30 had finished their studies in Poland but had not passed their examinations, and a refresher course was arranged for them. Prof. Sydney Smith and Prof. T. J. Mackie had kindly undertaken the examination of the students in forensic medicine and bacteriology respectively. For the second academic year, which had just started, there were 120 students, of whom five were Czechs. The first student to receive his diploma, M.B., B.Ch., at the hands of the Dean of the Faculty was Lieut.-Pilot K. Bazarnik of the Polish Air Force, who returned immediately to his fighter squadron.

Prof. Jurasz concluded by affirming the determination to maintain the high standard of Polish learning and by paying a tribute to their Scottish colleagues, from whom they had received every possible support and facility. The Polish Medical Faculty was an effective post in the front line of the fight against a destructive barbarism which had sought to impose its own perverted culture upon Europe. It was also a reaffirmation of the international ideal of learning and science.

The lecture was followed by a reception at the Polish Embassy in Portland Place. Among the British guests welcomed there by the Ambassador were Sir Henry Dale, President of the Royal Society; Sir Charles Wilson, President of the Royal College of Physicians of London; Sir Alfred Webb-Johnson, President of the Royal College of Surgeons of England; Sir Edward Mellanby, Secretary of the Medical Research Council; Mr. E. Rock Carling, Senior Surgeon, Westminster Hospital; Dr. H. E. A. Boldero, Dean of the Middlesex Hospital Medical School; and Capt. G. S. Elliston, M.P.

J. Bonaba, J. R. Marcos, and M. de Agorio (*Arch. de Pediat. del Uruguay*, 1941, 12, 317) record four cases of encephalitis complicating pneumonia in children aged from 3 to 13 years. The encephalitis was indicated in the first case by aphasia, in the second by convulsions and coma, in the third by an extrapyramidal syndrome, and in the fourth by an ataxo-cerebellar syndrome. All made a complete and permanent recovery.

MALARIA ILLUSTRATED BY CINEMATOGRAPH FILM

The value of the cinematograph film as a means of conveying instruction in hygiene and health precaution was never better shown than in a sound film entitled "Malaria" which has been produced for world-wide distribution by the Shell Film Unit in collaboration with the Ross Institute of Tropical Medicine. With this film, which takes about half an hour to pass through the projector, the scientific critic can find no fault (except, perhaps, that the title refers to "microphotography" when "photomicrography" is meant—rather an important distinction now that microphotography has suddenly come into such wide use), and the lay spectator gains a great deal of information which is essential and even life-saving if his travels should take him to the malaria regions. Some of the photography was done at Horton Hospital, Epsom, in the malaria unit there, and some, particularly that dealing with methods of control, has been done in tropical lands. The first part of the film, which includes an interesting flash of Sir Ronald Ross at work with his microscope, illustrates, mostly by clever cartoon, the life cycle of the parasite. The way in which the malaria germ attacks and destroys the red blood corpuscles is vividly shown. The second part concerns the carrier, and compresses into a few minutes the two or three weeks which elapse between the laying of the egg, through the larval and chrysalid stages, and the emergence of the adult mosquito. Nothing could be better than the "shots" illustrating the mosquito actually laying its eggs or its method of taking its blood meal.

Control of Mosquitoes

The third part of the film deals with mosquito control. The importance of such control is suggested by rapid pictures of great engineering works, such as Singapore docks, which have been made possible only by the most resolute measures to suppress the mosquito. But the point is brought home that malaria control can only be successful, whatever method is employed, if the co-operation of every member of the community in the malarial region is enlisted. The most important methods of stopping the larvae are shown to be by draining the land where mosquitoes breed, by spraying the surface of the water with oil, or blowing on to it a poisonous dust such as Paris green. To destroy or keep away the adult insect, spraying, mosquito-proofing, and the use of mosquito nets are advocated, and all these are shown in action. Control in the long run resolves itself into careful choice of healthy sites for houses in mosquito-ridden countries, taking suitable measures against breeding grounds, and personal protection against the adult insect. The technique of the film and the imagination shown in the choice and use of material deserve high praise. It is being issued for instructional purposes to H.M. Forces.

Local News

IRELAND

Health of Eire

The public health of Eire as reflected in the statistics for infectious diseases for the year 1939-40 continues to improve, the total of 6,146 notifications—roughly 1,900 fewer than in the previous year—being the lowest recorded since 1950. The incidence of diphtheria, which in 1938-9 (2,983 cases) was disappointingly high, was lower in 1939-40 than it had been for some years, the figure being 2,097. This is attributed in the Health Department's report to the immunization campaign which is being actively pursued, but regret is expressed "that the unfortunate dispute with the medical profession regarding fees for immunization . . . is still unsettled and consequently many children are still unprotected." The report records, however, that many practitioners "to their credit are carrying out the work without fee or reward." There were increases in the incidence of both typhoid and influenza pneumonia, that of typhoid being attributed to a serious outbreak in County Kerry in the summer months. Mortality from the principal infectious diseases declined notably during the year; the aggregate figure

of 385 deaths was the lowest yet recorded; in 1936 these deaths numbered 687. Although the total number of tuberculosis patients treated in 1939 was 18,521, or 443 more than in 1938, the number of cases under observation showed a decline of 1,057. Deaths from all forms of tuberculosis numbered 3,304, a rate of 1.13 per 1,000, as against a decennial average of 1.23. Both maternal and infant mortality compared favourably with the figures for the preceding year and those for the decennial period 1929-38.

SCOTLAND

New Blood Transfusion Plant for Scotland

The Government have agreed to make a grant to Scottish Blood Transfusion Services towards the establishment of two centres in Scotland for the processing of plasma taken from blood supplied by voluntary blood donors for use in hospitals. To each centre will be attached a whole-time mobile blood-withdrawal team, so that the services of country donors will be more readily utilizable than has hitherto been the case. One centre is to be under the direction of Prof. James P. Todd; the other, directed by Dr. C. P. Stewart, is also to be equipped with up-to-date plant for the preparation of dried plasma. While scientists in Scotland have done much useful work in the study of blood transfusion, they have not hitherto had the opportunity of developing the drying of plasma, the only drying plants in existence being attached to centres in England. The plant will be utilized not only in the preparation of plasma but also in experimental work. As dried plasma is believed to have better keeping qualities than liquid plasma, especially under difficult temperature conditions, it will now be possible to keep much larger stores of plasma available for Scottish civilian hospitals and for the Forces without risk of wastage, and adequate supplies will be ready for immediate use in bombarded areas. The services of Scottish blood donors were placed at the full disposal of the Forces at the outbreak of war, and it is hoped that by the establishment of these new centres the help given in this direction may be greatly increased. The address of the Scottish National Blood Transfusion Association is 10, Duke Street, Edinburgh, 1.

Cleanliness of Glasgow School Children

The first year of war, which saw the evacuation of school children from the large cities, the return of many of them, the closing of schools and dislocation of education, and the slow re-establishment of a modified regime, must stand by itself so far as statistics of medical inspection of school children are concerned; it can offer no useful comparison with previous years. The report, just issued, of the education health service in Glasgow during the year ended July, 1940, does, however, suggest that the improvement in the physical condition of school children which has been built up in recent years has been maintained. Measurements were taken between September, 1940, and April, 1941, of between 6,000 and 7,000 boys and a similar number of girls at 5 and at 13 years of age, and on comparing the measurements with those for 1939 a distinct improvement is shown, though, admittedly, the figures are not a true reflection of school population. The main attention of the school medical staff in Glasgow has been devoted to scabies, which has been increasingly prevalent; to pediculosis capitis, which was the most frequent cause of complaint against evacuated children; and to enuresis, which was greatly on the increase in 1940. It is admitted that as regards nits and vermin of the head the children evacuated from Glasgow were not as free as they should have been. The trouble is that so little can be done with the child whose head is not kept clean. A child may be cleansed, but hair cannot be cut without the parents' permission, and cleansing without cutting takes time. It is suggested that an attempt might be made to impose as a condition of attendance at school shorter hair styles for children; also that powers should be extended to allow examination of the person and clothing of the school child in the home. Enuresis was also the subject of widespread complaint from the reception areas at the first evacuation. Subsequently the presence of this defect was admitted in about 3% of the children examined. The school service has obtained good results by a combination of parental co-operation and gradually increasing doses of tincture of belladonna.

Correspondence

Radiographs and Pelvic Disproportion

SIR,—The leading article on "Radiology to the Help of Obstetrics" (p. 551) and the article by Mr. J. V. O'Sullivan on "radiographs and disproportion" (p. 543) in your issue of October 18 raise the very interesting question—the place that should be assigned to radiography as a guide to treatment in cases of pelvic disproportion. In their enthusiasm for this wonderful aid to diagnosis a number of obstetricians would have us believe that all is now simplified, and that from films of maternal pelvis and foetal head plotted out with exactness, as can now be done, the treatment is obvious. Such obstetricians are a menace to expectant mothers. There is a large number of cases in which from radiographs, no matter how perfect, you cannot tell whether the head will or will not pass, just as there are the other two groups: (a) cases in which the head can certainly pass (normal pelvis); (b) cases in which the head can certainly not pass (markedly abnormal pelvis).

Unfortunately there are three conditions which cannot be determined by x rays or any other means beforehand; and they are the most important factors of labour in minor pelvic disproportion: (1) the adjustment of head to pelvis which occurs as the lower segment develops and under strain of "labour pains"; (2) the give of the pelvis, which increases very markedly in the "premonitory" stage of labour; (3) the strength of the uterine contractions. Referring to "trial labour," here is what Chassar Moir wrote recently (*Edinb. med. J.*, 1941, 48, 361): "I do not intend to enter into a discussion of this topic: it is, however, not unfair to say that extensive use of trial labour amounts to an admission of inability to foretell the probable course of events in individual cases. There is little doubt that the main cause of this uncertainty lies in the difficulty in obtaining accurate measurements, and, secondly, of understanding the significance of the observed variations of pelvic size and structure." DeLee states in the 1940 *Year Book of Obstetrics and Gynecology*: "Since the x ray cannot measure the strength of the pains, or the moldability of the head, or the expansibility of the pelvic joints, or the nutation of the sacrum, or the rigidity of the soft parts, or the nervous mechanism of labour, or the metabolism of a parturient, etc.—you can see what a small role it plays in the routine conduct of a delivery; but I would not do without it" (p. 38). "The x-ray—even in stereo form—is not a perfect guide for the conduct of labour; we must watch it, but we can learn many things, and I would not do without it" (p. 42).

The procedure should be: (1) pelvic mensuration; (2) radiography of pelvis; (3) estimate of relative size of head and pelvis by hands. By these means cases can be segregated into: (a) those in which spontaneous delivery (with possibly assistance with forceps at outlet) is certain because of the good formation of pelvis; (b) those in which Caesarean section is necessary because of pronounced deformity; (c) those on borderline in which there is uncertainty, and consequently the "trial of labour" is necessary—there is a large number of such cases.

In these borderline cases the trial of labour is necessary to complete the diagnosis as to whether the head will or will not pass—in other words, whether the labour should be allowed to proceed or Caesarean section should be employed. Here, as Thoms and O'Sullivan claim, a lateral radiograph is helpful. By observing large numbers of cases the obstetrician gains such knowledge that comparatively early in labour he can make a fairly correct surmise as to whether or not the head will pass. In a few cases, however, he may have to let the labour proceed into the "second stage," but a prolonged second stage should not be permitted, because of the danger to the child.

Cases of breech presentation at full term where the pelvis shows by x rays a minor degree of disproportion should be treated by Caesarean section; it is inadvisable to perform prophylactic version in order to test the relative size of head and pelvis.—I am, etc.,

J. M. MUNRO KERR.

Canterbury, Nov. 1.

Increase of Tuberculosis

SIR,—Prof. Lyle Cummins (November 1, p. 632) has suggested that the rise in incidence and death rate from tuberculosis observed in this country since 1939 is to be explained entirely by the discharge from sanatoria of "a great many tuberculous persons" at the outbreak of the war. I am not aware of the actual number so discharged, but it can hardly have been more than one-half of the total number undergoing institutional treatment for tuberculosis. The total number of tuberculosis beds in England and Wales at the end of 1937 was approximately 33,000.

The number of new cases of tuberculosis notified annually in England and Wales is in the region of 60,000 (tuberculosis of respiratory organs about 45,000). On the usually accepted view that the average duration of the disease is about five years, we must conclude that the total number of notified cases "at large" in England and Wales at the outbreak of the war was not much smaller than 300,000, and this takes no account of the unknown number of undiagnosed and therefore unnotified cases.

It is not easy to believe that the dispersal of about 16,000 cases among a population which already harboured more than 300,000 cases would so increase the amount of tuberculous infection in the community as to account for the rise in incidence and mortality observed during the present war. The theory becomes still less acceptable when we remember that the number of sources of infection outside institutional control in normal times is so great that practically every member of the community has been infected with tuberculosis by the time middle life has been reached. This continues to be so, notwithstanding the steady decline in tuberculosis mortality in this country during the present century, a decline interrupted only by the two great European wars. Little is gained by attempts to simplify what is in fact a complex problem, but if we are to concentrate our attention on a single one of the many factors involved let it be something more practicable and promising than suggestions for the incarceration of every possible source of infection.

During the war of 1914-18 there was a striking increase in tuberculosis mortality in all European countries engaged in the war or affected by its blockade, and study of this phenomenon has produced ample evidence of the importance of the nutritional factor. The case of Denmark provides the most convincing evidence. In Denmark tuberculosis mortality rose steadily during 1915 and 1916, but fell sharply in 1917 and continued to decline afterwards. Faber has shown how closely these changes coincided with the deterioration in the Danish food situation up to 1916 and improvement from 1917 onwards. In Britain tuberculosis mortality fell sharply in 1918. The highest mortality rise occurred in Germany, and though this began to fall from 1919 to 1921 it rose again from 1921 to 1923 during the period of economic distress and inflation. These are only a few of the facts which emphasize the importance of the nutritional factor. Other factors are certainly involved, perhaps not least increased hours of work and increased strain among the adolescent, but there is little evidence for the belief that changes in the infection factor are of great importance.

The use of such rhetorical phrases as "a bomb thrown among the public" is out of place in a scientific journal, and over-emphasis of one of the minor aspects of the problem can only result in distracting attention from vitally important aspects.—I am, etc.,

A. L. JACOBS, M.R.C.P.

London, E.1, Nov. 1.

SIR,—Dr. A. H. Bartley (October 25, p. 594) calls attention to the danger arising from tuberculous individuals with T.B. sputum, and asks for more rigid control. May I suggest that the best remedy would be careful education of every such patient in the precautions taught in a well-managed sanatorium? The danger from cases of open pulmonary tuberculosis is conditional, and can in most cases be prevented by such precautions.

Although not now in active practice I was concerned in the management of tuberculous cases for nearly thirty years, and found ample evidence that there is very little danger of the

spread of tuberculous illness if the usual rules are observed. Unfortunately many patients are insufficiently trained, or become careless after leaving a sanatorium, and this is a weak spot which always needs attention. Dragooning would not succeed in this country; but systematic education followed by tactful supervision is invaluable. It would occupy too much space to give the evidence for my statements, but they are supported by the records of Papworth and of some of our best sanatoria.—I am, etc.,

Farnham, Oct. 30.

F. R. WALTERS.

Fats and Carbohydrate Metabolism

SIR.—Your report of Dr. R. B. Lawrence's presidential address before the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on carbohydrate and fat metabolism (October 25, p. 591) is provocative of many questions, because the great interest of the facts disclosed requires of us an attempt at interpretation.

The facts are apparently that in diabetes: (1) ketone bodies are burned (a word implying use and not storage) in the peripheral tissues; (2) ketone (ketonaemia) is harmful when it appears suddenly; (3) the precursors of the ketone bodies in the blood can, at least on occasion, be derived from depot supplies as distinct from diet; (4) the sequestration of fats in depots, as distinct, presumably, from their burning in peripheral tissues, can be increased by the deficiency of certain protein fragments in the diet (especially choline); (5) when the precursors of ketone bodies are depot supplies the metabolic pattern through which they pass may run parallel with hyperglycaemia—an event which, we have come to consider, is linked with the pattern of pituitary influence.

The first obvious question is this—If ketone bodies are burned in peripheral tissues, is this necessarily harmful to those tissues? If not, are we faced with a failure of the peripheral tissues to metabolize ketones when ketonaemia is associated with ketonuria and the toxic effects ascribed to ketosis? Are we to understand that insulin facilitates the burning of ketone bodies in the peripheral tissues and that this contributes not to their pathology but to their physiology?

The next question concerns the occasional correlation of lipaemia and hyperglycaemia. The implication here is that the lipaemia is derived from the pituitary metabolic pattern. Since this is here associated with inability to store fat subcutaneously, can this be the opposite pole of the process which produces pituitary obesity? How does this connect with the fact that in the experimental animal choline does not prevent the deposition of fat in the liver when injections of anterior pituitary extract have been given?

Is there not a contradiction in supposing, on the one hand, that hyperglycaemia facilitates lipaemia without subcutaneous deposition of fat, and, on the other, that it produces the subcutaneous deposits of diabetic obesity?

Whilst I appreciate the dangers of speculation in science, I feel that an ignorant man may at least help himself by asking obvious questions—that is, if he can get anyone to reply to him.—I am, etc.,

Coventry, Oct. 27.

K. E. BARLOW, M.R.C.S., L.R.C.P.

Vitamin-E Therapy in Neuromuscular Disorders

SIR.—The leading article on vitamin-E therapy in neuromuscular disorders (November 1, p. 618) is an excellent example of careful and unbiased criticism, in which the evidence for and against the proposed method of treatment, as well as the underlying physiological and pathological phenomena, are summarized, weighed, and evaluated. The conclusion reached is one with which few would wish to quarrel, in so far as it states that you find nothing yet to persuade you that "any disturbance of . . . locomotion in man is due to deficiency of vitamin E or is alleviated by treatment with it." This conclusion is based upon, and justified by, the evidence summarized in the article, but you have, I suggest, unfortunately gone beyond your brief in extending it and writing actually as follows: "We find nothing yet to persuade us that any human disease, or any disturbance of child-bearing or locomotion in man, is due to deficiency of vitamin E or is alleviated by treat-

ment with it." This statement can only mean that the treatment of habitual abortion with vitamin E also has no evidence to support it.

One welcomes all indications that the organ of scepticism is actively secreting, but one cannot be quite so pleased at signs of marked hypertrophy, accompanied, as so often, by an inability to distinguish simple conclusions even in the light of logic. Some two years ago you published a paper by myself (*British Medical Journal*, 1941, 1, 890) in which the records of cases of habitual abortion treated with wheat-germ oil or concentrates were summarized and compared with Malpas's figures, analysed by him to establish the chances of full-term pregnancy for untreated women who have aborted two, three, four, or more times (*J. Obstet. Gynaec. Brit. Emp.*, 1938, 45, 932). There can be no doubt about the figures. Malpas's analysis of 2,000 untreated cases shows that the expected number of full-term deliveries from forty-two women who have aborted four times or more is three; that number of treated abortants showed thirty-three successful full-term deliveries. The odds against this being due to chance were found to be about 10^4 to 1. One would have thought that such astronomical odds might have carried some kind of conviction even to the hypertrophic sceptic.

Apart from the forty-two cases mentioned above, there were fifty others that had had between two and four consecutive spontaneous abortions: here again the differences between the number of pregnancies experienced and the number expected in the absence of treatment were highly significant. From these figures there is to be drawn an obvious conclusion, which should surely be accepted provisionally, if only on the principle of Occam's razor. This conclusion is that the treatment was responsible for the differences between actual live birth rate and the rates expected on the basis of Malpas's analysis. The only other conceivable explanation is that Vogt-Möller's two series of cases, investigated in Copenhagen some years apart, and the cases treated by Watson and Tew several thousands of miles away in Canada, were all alike influenced in a favourable direction by some unknown and unsuspected cause rather than by the vitamin-E therapy to which these patients had been submitted, the only known common respect in which they differed from Malpas's untreated cases. This, surely, would be too much of a coincidence even for a critic of normal scepticism.

I submit, therefore, that the adventitious and irrelevant introduction of your leader writer's reference to child-bearing has no justification.—I am, etc.,

A. L. BACHARACH.

Glaston Laboratories, Ltd., Greenford, Middlesex, Nov. 6.

Treatment of Hallux Valgus in Soldiers

SIR.—May I crave space to make some comments on Lieutenant Colonel R. Brooke's article on the treatment of hallux valgus deformity in soldiers (November 1, p. 605). It contains important points which may be summarized as follows: (1) The patients are young males with only slight deformity. (They would not be in the Army if it were severe.) (2) Palliative treatment should be the method of choice. (3) If operation be necessary minimal procedures are best.

There are, however, certain other aspects which need to be considered, for on them depends the success or failure of treatment. Hallux valgus *per se* is merely part of a deformity-complex or general derangement of the fore-foot, and is the direct result of the pull of the adductor and other muscles on the great toe owing to spreading or fanning of the metatarsals. This spreading can be seen in all x-ray photographs, though it may not be marked in the slight cases, and involves only the first metatarsal. The metatarsal exostosis is due to intermittent pressure of the boot. I have yet to see a "bunion" not associated with alterations of the first metatarsal axis.

The metatarsal spreading is due comparatively infrequently to "toxic" causes such as rheumatoid and gonococcal arthritis. The much more common cause is hypermobility, instability, or incompetence of the first metatarsal. There is no space to enter fully into this matter. Sufficient to say that it is discussed in the publications of D. J. Morton, Lambrinudi, Girdlestone, and myself. I am at present preparing a cine film co-ordinating and amplifying the various observations.

Consequently the ideal treatment must include some correction of the position of the first metatarsal, and Lieut.-Colonel Brooke's suggestion of fixing the extensor hallucis longus to the inner side is of value. Undoubtedly the majority of the younger males require nothing further than excision of the metatarsal exostosis, and very many females even with an apparently bad metatarsal spread are perfectly satisfied without an arthroplasty of the metatarsophalangeal joint. I cannot agree that all arthroplasties end with flail toes, nor that it is impossible to correct the valgus deformity by this means. I have serial x-ray photographs showing that after removal of the proximal half of the proximal phalanx the actual correction of the position of the great toe equals the theoretical one. It is, of course, essential that any arthroplasty should not consist of removal of the head of the first metatarsal, because its removal destroys the supporting effect and merely exaggerates the incompetence of the bone. After an efficient arthroplasty there is a flail toe for some weeks, but if the operation be performed correctly voluntary control returns and is quite effective.

There will always be stiffness if the following points are ignored. It is essential to remove half the proximal phalanx, and in the younger members of the community (approximately those under 35) where new bone formation is fairly profuse the interposition of fascia by one of several methods is essential. In the older patients this fascial interposition is not required.

Finally, there is no essential difference between the civilian and the soldier. It is incorrect to say that good functional recovery is impossible in the case of the soldier. There is a much too common belief that in the majority of cases recovery is complete in a few weeks. Anybody who has followed up the series of these cases knows that recovery is by no means complete until the expiration of six months; that the period in which the patient returns to work, whether civil or military, depends on the type of work, and is shorter for the lighter forms of work and longer for the heavier. The rate of recovery and the degree of recovery depend far more on the care and skill of the operator and on the after-treatment than on the type of operation performed. It is common for the after-treatment to consist of early movements, but in view of the fact that in an arthroplasty we desire to obtain movement, that movement is restricted by the formation of excessive scar tissue, and that minimum scar tissue demands complete fixation in the early stages, I have always maintained that the correct after-treatment for at least three weeks is complete fixation in plaster-of-Paris. The best position to immobilize the toe is in about 20 degrees of dorsiflexion, because when we walk, and particularly when wearing boots, there is always a certain amount of dorsiflexion owing to the height of the heel. When the plaster is removed physiotherapy is of great value. Another reason for applying plaster-of-Paris is so that the metatarsal arch can be remoulded and held corrected through the early convalescent period.

I feel confident that attention to these points will alter Lieut.-Colonel Brooke's opinions on the results of operative treatment in soldiers as well as in civilians.—I am, etc.,

Manchester, Nov. 4.

W. SAYLE CREER.

SIR.—The article by Lieut.-Colonel R. Brooke deals with a problem of special importance at the present time. All are agreed that this condition, so amenable to treatment in peacetime, presents many difficulties now. The association of flat-foot with hallux valgus is almost a constant one, and it may be that treatment is not being sufficiently comprehensive to deal with this. A course of flat-foot exercises, as indicated by Lieut.-Colonel Brooke, should form the basis of treatment, and the exercises themselves ought to become almost instinctive. Many people go through life with quite symptomless flat-foot and hallux valgus. The increased strain of Army life and the wearing of Army boots by such individuals will often precipitate bunion formation and consequent breakdown in the foot mechanics. The boot, therefore, is not to be regarded as blameless. The soldier cannot discard his footwear, but much may be done to adapt it to the new conditions. The hard leather which overlies the bunion can be softened and stretched, or an inlet of soft leather substituted, so as to relieve pressure over the tender area. At the same time an ordinary football bar, placed behind the tread, will do much to relieve the strain on an irritable first metatarsophalangeal joint.

Where conservative measures fail radical operation is preferable to a soft-tissue reconstruction. Hallux valgus has an insidious onset, and many years may elapse before the patient is seen. This means that the cartilage on the head of the first metatarsal, where the original normal articulation took place, has degenerated. At operation it is seen to be thinned, eroded, or, in the later cases, to be frankly arthritic with osteophyte formation. Except in the earliest cases, therefore, any operation which replaces the first phalanx on this abnormal cartilage must be disposed to ultimate failure. Removal of the proximal half of the proximal phalanx, with excision of the exostosis on the metatarsal head (Keller's operation), will give the most satisfactory end-results. At least half of the phalanx should be cleanly excised, and the tendon of the extensor hallucis longus tenotomized well away from the wound to avoid adherence in the scar. The wearing of a pad of cotton-wool between the great and second toes should be insisted upon for at least six weeks.

Lieut.-Colonel Brooke's assertion that after this type of operation the valgus deformity persists is not borne out by my own experience, nor does the toe become a useless appendage. The return of function, indeed, is often remarkable. If care be the keynote of treatment in this complex condition there seems no adequate reason why the majority of patients should not return to their former duty.—I am, etc.,

Southport, Nov. 5.

R. S. GARDEN, F.R.C.S.Ed.

Diagnosis of Early Venereal Disease

SIR.—May I be allowed to endorse the importance of Dr. Noel F. Rowstron's letter (November 1, p. 632).

I agree that sulphonamides should never be administered to the patient who is about to visit a V.D. specialist for diagnosis. The diagnosis of venereal diseases must always be supported by pathological tests. The venereologist finds the gonococcus evasive enough without having it first of all doped by sulphonamides. Dr. Rowstron's remarks on the early diagnosis of genital sores are also very true.

The triad of the "venereologist's nightmare" is, in my opinion: (1) the "clinical" gonorrhoea, treated with sulphonamides; (2) the "cured" case, who has received no tests of cure; (3) the undiagnosed genital sore, previously treated with antiseptics.—I am, etc.,

Nov. 3.

C. HAMILTON WILKIE, M.D.,
Director of V.D. Services, Leicester.

Future of Mental Health

SIR.—Dr. Karin Stepien (October 25, p. 589) would appear to look to something called "psychotherapy" as the predestined cure for, and preventive of, all the mental and moral troubles of our present age. Formerly the great guardians of the *mens sana* were supposed to be our churches and our schools, and it is to be remembered that these institutions are still carrying on, although often—like the schools of "psychotherapy" themselves—sadly distracted by internecine feuds.

In short, no "theory" of mental and spiritual health has yet found anything like general acceptance in our distracted Western world, and under these circumstances it seems idle to discuss the setting up here and now of any official or semi-official organization to deal with the matter. Let none of our enthusiastic "post-war planners" take it upon themselves to propose the institution of a new "ministry" for which "candidates" have to be selected, examined, and "licensed" to deal with the "souls" of their fellow-countrymen. We doctors at least certainly do not yet know enough to arrogate to ourselves any such function. Let us rather go on individually studying the subject of mental stability and imbalance, and discussing our experiences in such papers as the *B.M.J.* Perhaps in the end some finally unchallengeable findings will be arrived at; then we can begin to talk of "organization," statutory or academic.

Towards this goal may I, as one who had much experience of so-called "shell shock" in the last war and regrets not being similarly employed in the present one, offer just a single contribution—a hint as to "how not to do it."

Any nervous or quasi-mental patient who is definitely cured and yet who is not getting better "of himself" needs in the

first place definitely individual treatment. This emphatically precludes the would-be psychotherapist from taking on a large number of cases simultaneously. Secondly—a perhaps even more important point—the patient must be treated in a mentally healthy milieu. In other words, on account of the strong effect of suggestibility, he must so far as possible live among sane people, who will be an example and encouragement to him. Such patients should obviously under no circumstances—so long as their ultimate cure is considered a possibility—be herded together among a lot of definitely insane people. Hence no institution which, for other reasons, is forced to deal with its inmates *en masse* is justified in calling itself a "mental hospital." Although many such institutions to-day include a considerable amount of hospitalization, they are primarily concerned with the care and maintenance of the incurably insane. Therefore the name "hospitals" should not be applied to them: it also gives the public a false idea of their essential function, which in the long run will be found bad policy.

There is much wisdom in what Dr. Karin Stephen says, particularly in her reservations. Yes indeed: *Quis custodiet ipsos custodes?* Who is to train the trainers of the trainees?—I am, etc.,

Durres, Sutherland, Oct. 30.

A. J. BRÖCK.

Loss of Vision following Haemorrhage

SIR.—The article by Dr. H. L. Tidy (May 24, p. 774) is full of interest. Quite a number of years ago I saw a few cases sometimes with loss of vision in one or both eyes. It followed haematemesis, haemoptysis, or post-partum haemorrhage, but never a traumatic haemorrhage. In the last war, now sometimes called the "first German war," I never heard of a case in Egypt during four years. The cases I saw in civil life never recovered. Elaborate investigation failed to throw any light on the cause. In the anaemias I have seen disturbance of the optic disk but never the total loss of vision which follows the haemorrhages referred to. So far as I am aware it remains an unsolved problem. Fortunately it is very rare.—I am, etc.,

Melbourne, Sept. 9.

JAMES W. BARRETT.

Nasal Snuffs

SIR.—With reference to the article on antiseptic snuffs by Dr. M. E. Delafield, Dr. Edith Straker, and Prof. W. W. C. Topley (February 1, p. 145), although confirmation of the results of using antiseptic snuffs for nasal infection does not seem available in South African research institutions at present, there can be little question of the benefit obtained by the local application of sulphanilamide derivatives to certain infective conditions of the nose in Natal, provided the drug is used as a dry powder in small enough doses to produce a comfortably clear condition without destroying nasopharyngeal protection. This suggests that inhalation of the dry powder would be effective in cases of pneumonia and save the large quantities at present prescribed orally for these patients. Moderation would be essential to avoid irritation of the bronchial tubes, though the immediate destruction of the infective organisms *in situ* might well be expected to give relief by carefully regulated application of the powder to all portions of the respiratory organs, including the nasal cavity.—I am, etc.,

Durban, S.A., Sept. 25.

F. GORDON CAWSTON, M.D. Cantab.

Industrial Medical Boards for Women

SIR.—Thousands of young women are joining munition factories, leaving their jobs and taking up work of national importance; thousands more are wanted, but the response to appeals and entreaties is not satisfactory. I suggest that one of the causes of the present reluctance to join is the fact that no attempt whatever is being made to grade the girls as to their physical suitability for the work they are taking up. As there is no medical examination we may find girls suffering from tuberculosis working and freely mixing in canteens and hostels with others; verminous girls infecting their more fastidious sisters; girls unfit for heavy work put to manipulate heavy machines. I have had some experience in examining and grading girls in the distributive industry, where the work is not

too strenuous, and even then my colleagues and I have found a number of girls unsuitable, on medical grounds, for the work. It is obvious there must be many more in heavy industry.

I would plead for the immediate institution of nation-wide medical boards, similar to the medical boards in the Army, to examine and grade women for work in industry. A lot of wasted effort in training girls who could be classified as unsuitable on medical grounds alone would be avoided, more suitable labour could be chosen, and absenteeism materially reduced. The expense of these examinations would be well repaid by the weeding out of infectious and unfit people, who could and should be referred to their doctors, medical officers of health, or hospitals. We would thus do a great work of preventive and curative medicine and use a unique opportunity to improve the health of the future mothers of the nation.

Needless to say that medical supervision should be continued in factory and workshop the adjustments be made, as the strain of industry will make itself felt.—I am, etc.,

London W.1, Nov. 3.

E. M. HERBERT.

A Municipal Hospital

SIR.—In view of the numerous statements concerning municipal hospitals which have recently been made and reiterated in the correspondence columns of the *Journal*, we consider it desirable that the following facts regarding the particular hospital which we serve should be put on record.

1. The medical superintendent does not seek to exercise his authority over the clinical work of the staff but rather to encourage their independence and initiative.

2. The senior clinical staff are men of high qualifications and attainments, and continuity of tenure is assured to them.

3. The members of the senior clinical staff devote the whole of their time and energies to the care of their patients in the hospital, and they are constantly available to guide and instruct the junior staff in the performance of the duties entrusted to them.

4. By liberal grants of study leave the Middlesex County Council encourages the clinical staff to visit medical and surgical centres at home and abroad. Until the outbreak of war full advantage was taken of these opportunities.

5. A medical society, which includes all the staff of the six general hospitals controlled by the Council, provides in its clinical meetings, held in each hospital in turn, a fruitful field for discussion and mutual criticism.

If these admirable conditions can be created in one group of hospitals under a county council they can be achieved by all. Where they exist "atmosphere" can be left to look after itself.—We are, etc.,

L. I. M. CASTLEDEN.

J. L. HAMILTON-PATERSON.

D. B. CRAIG.

G. H. JENNINGS.

J. N. DEACON.

R. M. MILLEN.

F. FORTY.

E. AD I. ROSSER.

Redhill County Hospital, Edwars, Middlesex, Nov. 3.

Students and the Curriculum

SIR.—Mr. J. L. Taylor's letter (November 1, p. 629) would doubtless interest all those who are interested in the student's point of view. May I, through the courtesy of your columns, show that we Scottish students have not been idle in putting forward our views?

In each of the four universities discussions are to be held on the topic of medical education. It is probable that these will be along the same general lines as Mr. Taylor indicated. Each medical school will draw up its own report based on these discussions and on the discussions of the Medical Faculty Committee, and it will then be forwarded to the Scottish National Union of Students' Medical Bureau, which will draw up the final draft of the report.

There are many problems peculiar to the Scottish schools, and we hope that our efforts will enable us to ferret them out and draw them up in concise and presentable manner. We are only too well aware of the responsibilities which complete reservation from National Service places upon us, and are no less eager than our English fellow-students to play our part in the crises of to-day and the castles of to-morrow. This year has seen much closer co-operation between the respective

English and Scottish students to the benefit of both. I have every confidence that this is only the beginning of a long period of close and beneficial relations.—I am, etc.,

Glasgow, Nov. 2.

ROY MCL. ARCHIBALD,
Interim Convener, S.N.U.S. Medical Bureau.

Air-raid Shock

SIR,—We have had "railway spine," "traumatic neurasthenia," "nervous shock," "shell shock," and "bomb shock," and now Dr. W. E. R. Mons (November 1, p. 625) gives us "air-raid shock." May I protest against this latest addition to a mischievous and medically meaningless series?—I am, etc.,

WILLIAM A. BREND.

Neurological Clinic, Ministry of Pensions, Nov. 3.

Obituary

W. A. WETHERLEY-MEIN, F.R.C.P.Ed., F.R.C.S.Ed.

By the death on October 29 of William Archibald Wetherley-Mein at the early age of 52 Bournemouth and district has lost a skilled professional colleague and a generous and most kindly friend.

He was born in India in 1889 and educated at George Heriot's School, Edinburgh, the Edinburgh Dental Hospital, and the Royal College of Surgeons, Edinburgh, gaining the qualifications L.D.S. in 1916, L.R.C.S., L.R.C.P.Ed. 1917, F.R.C.S.Ed. 1920, M.R.C.P.Ed. 1925, and being elected in 1931 F.R.C.P.Ed. After practising dentistry for a very short time he gave this up and devoted his life to the practice of surgery, in which he was actively engaged at the time of his death. During the 1914-18 war he was surgeon lieutenant R.N. until he was invalided out of the Service. Later he became temporary lieutenant, R.A.M.C., and remained in the corps until the end of the war. Subsequently he held appointments as R.S.O. at Ancoats Hospital, Manchester, orthopaedic surgeon at the Bangour Hospital, and honorary assistant surgeon at the Portsmouth Royal Hospital.

In 1920 he came to Bournemouth, where he became honorary surgeon to the Cornelia and East Dorset Hospital, and to the Victoria Cripples' Home at Westbourne. He was also consulting surgeon to the hospitals at Milford-on-Sea, Shaftesbury, and Blandford. He was surgical specialist to the National Union of Teachers, and surgical specialist to the Ministry of Pensions for the Bournemouth, Poole, and district area. His work brought him into contact with a wide circle of friends, who will mourn his passing and will remember him for his staunch character and the loyalty and generosity of his friendship.

Wetherley-Mein was a keen yachtsman and sportsman, in which capacity were seen both his determination and strength of character, as well as his attractive sense of humour. In his busy life he still sometimes found time for sport, and it was while shooting only a few weeks ago that he was first taken seriously ill. In Freemasonry he attained the rank of P.P.G. Superintendent of Works for the Province of Dorset, and well merited the esteem in which he was held by all who knew him. He had been a member of the British Medical Association for twenty-four years, and when the Association met at Bournemouth in 1934 he served as honorary secretary of the Section of Pediatrics. He published a number of papers, principally on thermomy and electrosurgery, in which he had for long been particularly interested. At the time of his death he was engaged in writing a book on this subject. He was also president of the Poole Medical Society.

The loss of Archie Mein (as we all knew him) will for long be keenly felt by his many friends, colleagues, and patients. For his widow and his son, also in the medical profession, sincere sympathy is felt by all of them.

J. A. W.

W. DOUGLAS MACFARLANE, M.B., Ch.B., F.R.C.S.Ed.

We regret to note the death of Mr. W. Douglas MacFarlane of Glasgow, which occurred in Aberdeen on October 15. Mr. MacFarlane had been taken suddenly ill while engaged in examinations of nurses, and was removed to a nursing home, where he died. He had resumed his work only in the last four months, after a long illness of about fourteen months. It was characteristic of him that he went energetically into his usual professional duties, perhaps against the advice of some of his friends, who did not think that his cardiac condition would permit him to carry on his full work, but he always maintained that he would much rather die in full harness than in only a part of his ordinary professional activities.

William Douglas MacFarlane was born in Glasgow, the son of a well-known general practitioner in the East End of that city. He was educated at Glasgow High School, and graduated M.B., Ch.B. of the University in 1922. In 1926 he was admitted to the Fellowship of the Royal Faculty of Physicians and Surgeons, Glasgow, and in 1934 he became a Fellow of the Royal College of Surgeons, Edinburgh. From the beginning of his professional career he was determined to devote himself to surgery, and he joined the out-patient staff of the Western Infirmary, and later was assistant surgeon to the Victoria Infirmary. He concentrated, however, on the surgery of children, and was appointed visiting surgeon to the Royal Hospital for Sick Children, Glasgow, and clinical lecturer on surgical diseases of children. He became recognized as an authority on the surgery of children, and was a very keen operator and worker in his hospital. At medical society meetings he frequently exhibited coloured films showing operations in progress. About 1935 he was appointed consulting surgeon to the Clackmannan County Hospital, Alloa, an institution where he had considerable opportunity of doing urgent surgery, as many road and mining accidents were admitted. He was an associate member of the British Orthopaedic Association and a Fellow of the Association of Surgeons.

Mr. MacFarlane interested himself in medical journalism in Glasgow, and for a considerable number of years was secretary to the Glasgow and West of Scotland Medical Association, which controls and owns the *Glasgow Medical Journal*. The committee of that journal very gladly recognized his enthusiastic work on its behalf. Mr. MacFarlane was only 45 years of age, and was unmarried. Much sympathy is felt with the members of his family, two of whom are on hospital staffs in Glasgow, and a third is serving as a dentist in the R.A.F.

F. C. MARTLEY, M.D., F.R.C.P.I.

Those who have attended almost any Annual Representative Meeting of the British Medical Association during the last twenty years will learn with regret of the death of Dr. Francis Charles Martley, which took place on November 2 at Farnham, in Surrey, where he had been living in retirement. Inevitably, at meeting after meeting from 1921 onwards, after the Treasurer had presented his budget, Dr. Martley would make his way to the platform, and the meeting would listen to an incisive commentary on the financial policy of the Association. It was always in a vein of friendly criticism, it never aroused rancour, but it revealed a close study of Association accounts and balance sheets such as probably few members give to them, and it was appreciated by successive Treasurers. To Martley matters like sinking funds, investments, transactions at banks and stock exchanges, leases, reserve accounts, were a kind of second nature. Had he not preferred a medical career he might well have been a leader among chartered accountants.

The same financial acumen and business ability he brought greatly to its advantage, to the affairs of the Medical Sciences Annuity and Life Assurance Society, of the board of which for many years he was chairman. The intricacies of insurance,

again, are not everybody's recreation ground, but Martley exulted in them; there was nothing too recondite for him in financial or actuarial calculations, and his day of triumph was the annual meeting of that body when he was able to announce some excellent "with-profit" bonus. One felt, listening to his speeches on those occasions, packed with big figures, how much he enjoyed it all. When this war came and the staffs of insurance offices were depleted, and especially after the offices of his insurance society were destroyed, Martley took on his shoulders still more work; work for his society was the hobby of his retirement. No financial detail ever bored him.

His expertness in accounts and financial transactions generally (on behalf of other people, he it said, for he was not the man to make anything of it for himself, content as he was with his modest director's fee) was so remarkable that many people almost forgot that he was a doctor. But in fact he was a man of considerable academic distinction. He entered Cambridge in the late 'eighties, took the B.A. with honours in the Natural Sciences Tripos in 1887, and the M.A. in 1891. After training at St. Mary's Hospital he qualified as M.R.C.S., L.R.C.P., and proceeded to the M.D. Cambridge in 1895. His early work took him to Dublin, where he was demonstrator in chemistry at the Royal College of Surgeons and anaesthetist to Dr. Steevens' Hospital, a large hospital associated with the medical school. During his work in Dublin he began to take an active part in the affairs of the British Medical Association, which he had joined in 1895. He was a member of the Annual Representative Meetings in 1905 and the two following years; he also served on the Public Health Committee at headquarters at this time, and he was honorary secretary of the Section of State Medicine in 1907 at Exeter. Meanwhile he had become a Fellow of the Royal College of Physicians of Ireland and had taken the D.P.H.

After the last war, when Martley appeared again in the central work of the Association, it was as representative for Kensington, of which Division he was honorary secretary from 1920 to 1922, chairman in 1925-6, and representative for the whole period, with the exception of two years, from 1921 to 1934. In London he returned to his old hospital, St. Mary's, and worked in the Inoculation Department, where his chief was another man of close Dublin associations, Sir Almroth Wright. One of Martley's interests was blood grouping, and he wrote several papers in the *Transactions* of the Medico-Legal Society, the *Analyst*, and other journals, on the use of blood-group reactions in forensic investigation.

The B.M.A. has lost a most able and well-liked member; he was a man of great integrity and loved his profession, to which he gave without stint of the unusual abilities with which Nature had endowed him.

Dr. STUART ALEXANDER TIDEY, who died at Winchester on October 29, was born at Reading in 1858, the son of Alfred Tidey, who was an artist. From the age of 8 or 9 onwards he lived with his parents in Jersey and subsequently in various parts of the Continent, attending schools in Corsica, Switzerland, and Biberich in Germany. On returning to England he put in for a competitive student interpretership, which he just missed, and spent the next two years studying engineering at the Crystal Palace. He then entered St. Mary's Hospital, taking the London M.B., B.S. in 1888 and the M.D. and M.R.C.P. in 1891. He had taken the L.S.A. in 1886 and the M.R.C.S. in 1887, and in 1889 secured the Swiss Federal diploma in medicine at Geneva University. Dr. Tidey held the posts of house-surgeon, assistant pathologist, and curator at St. Mary's Hospital. In 1890 he started practice in Montreux, and in 1892 moved to Florence, where he was a prominent member of the British colony. From 1901 to 1912 he again practised in Montreux, and in 1912 went to British Columbia, where he combined farming with medical work. He then joined John Antle's medical mission to loggers, and was in charge of hospitals on the coast and inland. In 1914 he joined the hospital ship *St. George*, which he helped to fit out, and in 1917 was placed on the staff of the County of Middlesex War Hospital at Napsbury, near St. Albans. In 1920 he joined the Elders and Fyffes Line as surgeon on banana and passenger

boats to Central America and the West Indies, doing the voyage eight times a year until 1931, when Elders and Fyffes were shortening staff. It was characteristic of him that he was deeply disappointed at giving up the work, though at the age of 73 he might reasonably have considered that a little leisure was indicated. Every aspect of medicine and surgery interested him, and though his body was weakened by paralysis agitans his mind was active to the last. Dr. Tidey was author of articles on treatment of compression in pulmonary lesions, on the treatment of empyema and of corpulency. He was a very English man, in spite of his many foreign sojournings, quiet in speech, and retiring in manner, while setting out the gist of any subject in a few words. He was intensely interested in music and natural history, and gardened until incapacitated by gradually advancing disease.

L. P.

R. T. writes: Dr. JOHN GILFILLAN RONALD, whose death was recorded in the *Journal* of November 8, first assisted and finally succeeded his father in the practice at Larbert, which father and son between them held with distinction for over one hundred years. There is small wonder that he was constantly referred to not only locally but in Glasgow and Edinburgh as "Ronald of Larbert," a "title" based on the best foundations of all—affection and esteem. His quiet sincerity of thought and earnestness of purpose endeared him at once to all who came into contact with him. He was devoted to his profession, and concerned not at all by material gain or worldly advancement. For forty-six years he was responsible for the first-aid and ambulance instruction in a district noted for its efficiency and advancement in this work. The British Red Cross Society had in him and in Mrs. Ronald its strongest local enthusiasts. For many years he was chief of the East Stirling-shire Infectious Diseases Hospital at Camelon. Above all, Ronald was a great family doctor, a true guide, philosopher, and friend, and of the type we associate with that generation. He took upon himself the burdens of many, and no one heard him grumble or complain. To his intimate friends the burdens seemed to be weighing a little more heavily lately, but the heart was stout to the end. His illness lasted only a few hours, so that he was taken, as he would have wished, "in harness."

The following well-known medical men have died abroad: Prof. KEN KURE, who held the chair of medicine at Tokyo, aged 57; Prof. AUGUSTE DUCREY of Rome, who discovered the streptobacillus of soft chancre in 1889; Prof. LOUIS SPILLMANN, director of the dermatological clinic and for many years dean of the medical faculty at Nancy; Dr. ERNEST DE MARGNAC, one of the founders of bacteriology in Geneva, aged 96; Prof. PAUL SCHROEDER, founder of the *Deutsche Gesellschaft für Kinderpsychiatrie und Heilpädagogik*, and formerly professor of psychiatry at Leipzig University, aged 67; Dr. PILADES O. DEZZO, professor of hygiene in Buenos Aires; Dr. ENRIQUE SUNER, president of the Spanish Red Cross and formerly professor of paediatrics at Valladolid, and founder of the National Child Welfare School in 1925; Dr. GUNN HOLMGREN, professor of oto-rhino-laryngology at the Carolinska Institute of Stockholm, co-editor of *Acta Oto-Laryngologica*, aged 65; Dr. SEVERIN ANDREAS HEYERDHL, professor of radiology at Oslo, aged 70; Dr. H. E. MENAGE of New Orleans, head of the department of dermatology of the Tulane University of the Louisiana School of Medicine; Dr. HENRY B. CHU, medical secretary of the Chinese Medical Association; Dr. HENRY KEITH SHAW, professor of paediatrics at Albany Medical College, 1906-30, and translator of Pfaunder and Schlossmann's *Diseases of Children*, aged 67; Dr. ANGEL C. SANHUEZA, professor of children's diseases in the medical faculty of Santiago de Chile for more than thirty years; Dr. SANTIAGO STRIAR Y BAILE, founder and director of *Habana Medica*, aged 80; Dr. CLAUDE THOMAS WOLFE, professor of ophthalmology at the Louisville University School of Medicine, aged 57; Dr. MAX ISSERLIN, professor of psychiatry at Munich; and Dr. HANS BERGER, professor of psychiatry and neurology at Jena, discoverer of the electrical waves of the human brain, aged 68.

Erratum

We very much regret that through some confusion of names an announcement appeared in the *Journal* of September 6 of the death of Dr. S. W. BECKER of the University of Chicago. We have expressed our apologies to Dr. Becker and now repeat them in public at the first opportunity.

The Services

HONORARY PHYSICIAN TO THE KING

Lieut.-Colonel (temporary Colonel) S. Smith, R.A.M.C., has been appointed Honorary Physician to the King in succession to Major-General R. C. Priest, C.B., late R.A.M.C., who has retired.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Surgeon Lieut. DERMOT HARRY TUTHILL DUGGAN, R.N.V.R. (H.M.S. *Ardent*), who was announced as "Missing" in the *Journal* of August 10, 1940 (p. 207), is now reported "Missing, Believed Killed in Action at Sea." He was the only surviving son of the late Captain G. G. Duggan, who was killed at Gallipoli in 1915, and Mrs. G. de Courcy Wheeler of Foxrock, Co. Dublin, and was educated at Trinity College, Dublin, graduating M.B., B.Ch., B.A.O. in 1935, proceeding M.D. four years later. He had been a member of the British Medical Association since 1936. On the outbreak of war he entered the R.N.V.R. as surgeon lieutenant.

ROYAL ARMY MEDICAL CORPS

Prisoner of War

War Substantive Captain Ian Rainy Ingram MacDonald.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Francis Peyton Rous, M.D., F.R.S., of the Rockefeller Institute for Medical Research, has been elected an honorary Fellow of Trinity Hall. Dr. Peyton Rous holds the honorary degree of Sc.D. of Cambridge and was Linacre lecturer at the University in 1929.

Names of candidates for the M.Chir. examination should be sent to the Registry by December 30; the examination begins on February 17.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The annual meeting of Fellows and Members will be held at the College in Lincoln's Inn Fields on Thursday, November 20, at 2.30 p.m., when a report from the Council will be laid before the meeting.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the Royal College of Physicians of Edinburgh, held on November 4, with the President, Dr. Charles McNeil, in the chair, Dr. B. Reid (Hellingley), Dr. J. L. Cowan (Penicuik), Dr. A. J. Rhodes (Edinburgh), Dr. A. D. Stewart (Edinburgh), Dr. A. Joe (Edinburgh), and Dr. J. B. Borthwick (Edinburgh) were elected Fellows of the College.

Hill Pattison-Struthers Bursaries in Clinical Medicine were awarded to Saul Jerome Blau and Louis Kaywin, and Wood Bursaries to Norman T. Speirs and John Alexander Loraine.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At the annual meeting of the Royal Faculty of Physicians and Surgeons of Glasgow the following officers were elected for the ensuing year: *President*, Mr. Roy F. Young; *Visitor*, Mr. James H. MacDonald; *Honorary Treasurer*, Mr. William Richard; *Honorary Librarian*, Dr. W. R. Snodgrass; *Representative on General Medical Council*, Mr. J. Scouler Buchanan.

According to *South Africa* of October 18, only 35 Europeans died of disease in East Africa in the first eight months after the outbreak of the war, and the incidence of ill-health during the East African campaign was not much higher than in corresponding age groups of the industrial population in tropical climates. No cases occurred of plague, louse-borne typhus, and sleeping sickness among the men serving under General Cunningham. Owing to the universal inoculation of the Forces only one case of typhoid fever was reported.

Medical News

Sir Farquhar Buzzard will deliver a lecture on "Hospital Regionalization" at the Weston Hotel, Bath, on Thursday, November 20, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

A Chadwick Public Lecture entitled "Advances in Dermatology during the Past Forty Years" will be given by Dr. S. Ernest Dore, at the Westminster Hospital Medical School, 17, Horseferry Road, Westminster, S.W.1, on Thursday, November 27, at 2.30 p.m.

A squadron leader of the Royal Air Force Medical Service has written to B.M.A. House about the kindly reception given to him and to other members of the medical profession serving in the Forces by the South African Medical Association in Capetown on their brief visit to that city. Every facility for recreation, amusement, and matters of professional interest was given by the secretary, Mr. C. L. Darley-Hartley; and the kindness and hospitality of the citizens of Capetown were deeply appreciated by the visitors. The writer also refers to the "splendid bureau" near the dock gates, which is organized and run by the ladies, who put medical officers of the Services in touch with members of the profession in Capetown. Other members have mentioned the warm welcome received on their arrival at South African ports, and there was a note offering hospitality in a recent number of the *South African Medical Journal*.

Under the auspices of the Board of Education a conference on Food Education was held on November 7 and 8 at Gas Industry House, Grosvenor Place, S.W. The chair was taken at the opening meeting by the President of the Board of Education, the Rt. Hon. R. A. Butler, M.P. There were four lectures on the first day: Dr. Edouard-Jean Bigwood discussed the problem of improving health by influencing diet; Dr. Margaret Wright, rationed foods as the basis of a sound diet; Dr. Barnett Stross, food and health; and Dr. May Smith, some problems in teaching a practical subject. The morning of November 8 was devoted to a series of discussions on practical problems of food education, introduced by various speakers.

With the October number Dr. J. Y. Dent has succeeded Dr. T. N. Kelynaek as editor of the *British Journal of Inebriety*.

The August issue of the *American Journal of Diseases of Children* contains a sympathetic obituary notice of Sir Frederic Still.

A severe outbreak of rabies has recently occurred in the East of Germany, according to the *Schweizerische Medizinische Wochenschrift*.

Emeritus Professor Ralph Stockman, M.D., has been elected a vice-president and Prof. E. W. H. Cruickshank, M.D., and Sir J. Donald Pollock, M.D., members of the council of the Royal Society of Edinburgh.

Mr. Robert John McConnell, M.Ch., honorary surgeon to the Ulster Hospital, Belfast, has been commended for brave conduct in civil defence.

The Pavlov laboratories in Leningrad are conducting research on the effect of various pharmaceutical substitutes on the higher nervous system. The work is going on regularly and systematically despite the proximity to the front.

The Canadian Red Cross Society is equipping a 25-bed emergency hospital for the Polish Army recruiting station at Windsor, Ontario. A 45-bed hospital will also be built for the Polish training centre at Owen Sound.

A typhus epidemic is reported to be raging in the ghetto of the Polish town of Miedzyzecz.

The manufacture of all drugs not vitally necessary, and of all cosmetics without exception, has been forbidden in Germany owing to the shortage of raw materials.

Owing to the lack of offers of "Aryan" blood for transfusion the Rumanian Red Cross has announced that Jewish blood will be accepted.

No. 43

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended October 25.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week of last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland. Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 176 great towns in England and Wales (including London), (b) London (administrative county), (c) the 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	88	5	38	1	7	149	6	23	2	3
Deaths	—	—	3	—	—	—	1	1	—	—
Diphtheria	1,017	51	277	56	33	1,312	46	452	33	44
Deaths	31	3	6	2	1	38	2	8	—	—
Dysentery	139	16	95	—	—	88	2	71	—	—
Deaths	—	—	—	—	—	—	—	1	—	—
Enteritis lethargica, acute	2	—	—	—	—	4	—	1	—	—
Deaths	—	1	—	—	—	—	1	—	—	—
Enteric (typhoid and paratyphoid) fever	—	—	—	—	—	38	1	3	6	3
Deaths	—	—	—	—	—	2	—	—	—	—
Erysipelas	—	—	52	8	2	28	71	9	4	—
Deaths	—	—	—	—	—	—	1	—	—	—
Infective enteritis or diarrhoea under 2 years	—	—	—	—	—	—	—	—	—	—
Deaths	56	3	16	25	4	34	—	14	3	2
Measles	745	52	23	50	3	1,347	184	446	—	9
Deaths	—	—	—	1	—	12	1	3	—	—
Ophthalmia neonatorum	77	5	20	—	1	69	5	18	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid	53	3	4	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza*	631	28	6	—	1	655	52	13	—	7
Deaths (from influenza)	15	22	2	—	6	23	7	4	—	—
Pneumonia, primary	—	—	160	9	—	—	49	171	16	9
Deaths	—	—	—	7	—	—	—	11	—	—
Polioccephalitis, acute	4	—	—	—	—	3	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	50	5	8	—	—	34	—	3	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	1	1	7	2	—	5	5	11	2	—
Deaths	—	—	—	—	—	1	—	—	—	—
Puerperal pyrexia	142	7	16	—	4	133	9	18	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	1	1	—	—	—	1	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,224	37	250	57	19	1,857	56	215	65	60
Deaths	2	—	—	—	—	2	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid†	23	3	3	7	9	—	—	—	—	—
Deaths	—	—	—	1	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	1,985	214	67	21	3	1,656	6	127	—	13
Deaths	16	2	2	—	—	10	—	2	—	1
Deaths (0-1 year)	259	27	63	41	21	259	23	57	14	13
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths)	3,867	530	520	177	99	5,905	1780	570	178	125
Annual death rate (per 1,000 persons living)	—	—	—	11.3	11.8	—	—	11.5	11.9	10.9
Live births	5,308	467	933	294	208	5,141	519	727	347	181
Annual rate per 1,000 persons living	—	—	—	19.0	19.5	—	—	14.7	23.2	15.9
Stillbirths	176	20	32	—	—	215	13	37	—	—
Rate per 1,000 total births (including stillbirth)	—	—	—	33	—	—	—	45	—	—

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

Between the week under review and the preceding week there were only small differences in the number of cases of infectious diseases notified in England and Wales. The largest numerical deviations were those for scarlet fever, an increase of 29 cases, and for measles, a decrease of 38 cases. The increase in scarlet fever was confined to the Midland and Northern counties, where 95 cases in excess of last week's were recorded, while in the southern sections of the country there was a decrease, notifications being 65 fewer. In Scotland there was a general tendency for notifications to rise, with the exception of diphtheria, of which 32 cases fewer than in the previous week were notified.

Dysentery

The notifications for dysentery in England and Wales fell from 143 to 139. Increases were reported in several counties, the largest of the new local outbreaks being in Essex (Epping U.D., 12). In Scotland the number and distribution of cases have undergone little change in the past three weeks. The largest totals are those of Lanark County (28), Edinburgh (19), and Dundee (14).

Poliomyelitis

No change occurred in the number of cases of poliomyelitis in England and Wales compared with the previous week's total, when the largest number of notifications since last September was recorded. The cases were widely distributed, and only six administrative areas reported more than 1 case. These areas were Dorsetshire (Bridport R.D., 3), Lancashire (Manchester C.B., 3), Cambridgeshire (Cambridge M.B., 2), Middlesex (Edmonton M.B., 2), Norfolk (Mifford and Launditch R.D., 2), Oxfordshire (Bullington R.D., 2). Counties which had a single case in more than one administrative area were Essex (3), Hertfordshire (4), London (5), and Surrey (5). In Scotland 8 cases, compared with 2 in the preceding week, were notified (Edinburgh 4, Glasgow 2, Dundee 1, Fife County 1). Two deaths have been reported from a small outbreak in Enniskillen, Northern Ireland.

Diphtheria in Scotland

Owing to the increasing proportion of the *gravis* type of bacillus occurring among cases of diphtheria, the medical authorities of Scotland have launched an intensive campaign for the increased immunization of children. As a result of publicity earlier in the year 56% of the parents had responded—that is, 600,000 of the child population of 1,120,000 have already been treated. The present effort is an attempt to immunize at least 85% of the children.

Reports of medical officers in England have suggested that the *gravis* type is occurring in a larger proportion of cases throughout the country. No comparisons can be made, since it is only in a few hospitals that *C. diphtheriae* is typed as a routine procedure, and it is unsafe to generalize from results obtained from relatively small areas.

Week Ending November 1

The returns of infectious diseases for the week included the following: scarlet fever, 1,204; whooping-cough, 1,955; diphtheria, 915; measles, 624; cerebrospinal fever, 102; poliomyelitis, 23; dysentery, 123; paratyphoid, 35; typhoid, 20.

A. A. Holbrook (*Arch. intern. Med.*, 1941, 68, 294) studied the blood picture in 56 chicken-pox patients and 15 controls, with the following result: A drop in the total white blood cell count to 5,000 per c.mm. or less, principally at the expense of the neutrophil polymorphonuclear cells, combined with the appearance of immature lymphocytes and plasma cells, is the significant feature in the blood picture of varicella. When this combination is found in the incubation period, the onset of the rash may be foretold with fair accuracy. When such findings are wrong, the cases may be examples of the non-eruptive form. Holbrook suggests that a strong lymphocytic reaction in varicella may be decisive in producing lymphatic leukaemia in susceptible persons.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS of their articles must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

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TELEPHONE No.—B.M.A. and B.M.J.: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aetiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Persistent Skin Condition after X Rays for Pruritus Ani

S. P. writes: I am wondering if a note in your "Queries" column would bring out any helpful suggestions in the following case. The patient, a woman aged 55, married, with one child aged 26, some eight years ago had pruritus ani (not seen by me), and was given x-ray therapy. There is little doubt that the dosage was excessive. Since then the skin of the perineum has been breaking down constantly, seldom remaining even reasonably healthy for more than two or three months at a time. The patient herself is of a highly strung and somewhat neurotic disposition, and has in the past suffered from attacks of dermatitis herpetiformis. She has been seen by half a dozen dermatologists, and psychotherapy has been tried. The remedies suggested have been almost legion: tannic acid, dyes, Unna's paste, thorium-x, most of the vaunted antipruritic powders and ointments, silver nitrate cautery, and so forth. About the only thing I can think of now is skin grafting, but I should imagine that the risk of failure would be considerable in view of the locality.

Stabbing Heel Pains in Rheumatoid Arthritis

W. R. S. writes: A woman with advanced rheumatoid arthritis suffers from stabbing pains in the heel, coming on mostly during the night and disturbing her rest. They are relieved if she puts her foot out of bed. Advice as to prevention or treatment would be much appreciated.

Treatment of Chilblains

Dr. P. BINNINGTON (Hull) writes: May I suggest that Dr. Frank Matthews and "Stasis" (October 18, p. 568) try Lugol's solution for the treatment of chilblains. I too have found the use of calcium preparations disappointing, and for some years I have prescribed Lugol's solution, 12 minims, to be taken in half a tumbler of water three times daily directly after meals, with good effect. It will clear up even severe ulcerated cases, and if started at the onset of the condition a few days' treatment suffices. Unfortunately Lugol's solution is not pleasant to take, but my experience is that it does give relief.

Income Tax

Allowances, 1941-2

"R.A.F.V.R." sends particulars of his assessment for 1941-2, and asks whether further allowances can be claimed.

** The personal allowance given (£140) is the amount applicable to a married man. The life assurance relief (£15 at 3s. 6d. in the £) may cover payments under the contract with the Medical Sickness Society; if not a supplementary claim should be made in respect of those payments. It is improbable that any allowance can be obtained for use of car, as it will probably be held that the car is not "necessarily" used "in the performance of the duties," and that any such necessity would presumably be met by R.A.F. transport.

Purchase of Goodwill by Instalments

R. C. inquires in what circumstances payments of instalments "can be put against income tax."

** Normally the purchase price of goodwill is either a definite amount or an amount unknown at the date of purchase to be deter-

mined by subsequent events. In such cases the amount to be paid is clearly "capital"—it is not taxable in the hands of the vendor whether he receives it in a lump sum or in instalments, and the purchaser cannot obtain any relief in respect of it. If, however, the purchase agreement is so worded as to amount to the sale of the goodwill in consideration for a fixed or fluctuating annuity, then the payer is entitled to deduct tax at standard rates from the gross amounts which he pays, and the vendor of course suffers tax accordingly. Such cases are presumably rare, as the effect is to place the income-tax burden on the recipient of what is in common sense, whether in law or not, a capital sum.

LETTERS, NOTES, ETC.

International Hospital Association: United Kingdom Council

It is thought by many that the war has rendered defunct all international associations. One at least—the International Hospital Association—is not dead, although it may be moribund. Signs of its revival are actually appearing, for a conference has been called to discuss the position of hospitals the world over after victory and the coming of peace. The United Kingdom Council of the I.H.A., of which Mr. W. McAdam Eccles, M.S., F.R.C.S., is chairman, is sponsoring this line of treatment for the patient. The meeting will be held in the Great Hall of the British Medical Association House, Tavistock Square, London, on Tuesday, November 25, from 2 to 5 p.m. A paper will be read by Prof. A. T. Jurasz, dean of the Polish Medical Faculty of the University of Edinburgh, on "The International Position of Hospitals after Victory and the Coming of Peace," and a second will be on "The Position of Hospitals in the English-speaking Countries after the Coming of Peace." Representatives, both Governmental and medical, from fifty-four countries have been asked to attend, and the Minister of Health, Mr. Ernest Brown, has signified his intention to honour the gathering by coming. Admission will be by ticket only. Any further information may be obtained from Mr. F. W. Adams; honorary secretary, 17, Bloomsbury Square, London, W.C.1.

"First Aid to the Injured"

Dr. E. A. WELSH (Fellon, Morpeth) writes: I would like to congratulate Dr. J. C. Hodgson on his letter regarding the teaching of first aid (October 25, p. 595). After two years of war we are still receiving from the St. John authorities the same examination papers that have been used for the past twenty years, and fully half the questions have no bearing whatever on wartime injuries. If the authorities are too slow to realize our needs it is to be hoped that lecturers will concentrate on the essentials which he mentions, and not waste time on so much irrelevant matter.

Abbreviated Treatment for Bilharziasts

Dr. F. GORDON CAWSTON (Durban, S.A.) writes: By injecting into the deltoid muscle from 3 to 3½ c.cm. of anthiomaline three or even four times in a week I seem to have effected a cure of *Schistosoma haematobium* infection in three weeks among out-patients continuing their work though reporting some generalized muscular pain. This would indicate that the eggs are disintegrated and the adult worms destroyed most readily by giving the drug sufficiently often to prevent their recovering from one dose before the next, and before much of the drug already administered has been eliminated. With *mansoni* infection escape of the eggs is too uncertain to be much of a guide as to when treatment may safely be discontinued, and 25 to 30 grains of tartar emetic is needed until such time as careful investigation has revealed the clinical equivalent of anthiomaline.

The Grenfell Association

Owing to the war the Grenfell Association is not offering new Christmas cards for sale this year. The purpose for which this sale was arranged—to get funds towards the association's welfare work among the people of Newfoundland and Labrador—is as urgent as ever, and the association is therefore selling instead new photograph postcards of Labrador (2d. each, postage extra) and attractive coloured postcards (packet of six 1s.). They may be obtained from the offices of the Grenfell Association, 66, Victoria Street, S.W.1.

Disclaimer

Mr. G. RIGBY-JONES, surgical registrar, National Temperance Hospital, writes: Incorrect reports and somewhat unfortunate publicity attached to a severe case of burns which I have treated by the Bunyan-Stannard method have resulted in a widespread belief that saline was used. This is not the case. The solution was electrolytically prepared hypochlorite.

COMBINED ACTIVE AND PASSIVE IMMUNIZATION AGAINST DIPHTHERIA

I. STUDIES OF ANTITOXIN RESPONSE IN NORMAL STUDENTS

BY

A. W. DOWNIE, M.D., D.Sc.

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AND

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(From the Emergency Public Health Laboratory, Cambridge; the Wellcome Physiological Research Laboratories, Beckenham; the Department of Bacteriology, Sheffield University; and the Emergency Public Health Laboratory, Oxford)

Though in veterinary medicine the prophylactic treatment by combined active and passive immunization of animals has been in vogue since the beginning of the century, it is only within recent years that the method has been applied to the prevention of human disease. The reason for this is not far to seek. In the treatment of animals risks can be taken that are seldom justifiable with man. In such diseases as anthrax, swine fever, swine erysipelas, rinderpest, and African horse-sickness the vaccinating agent used is the living organism. When given along with a suitable dose of protective serum it leads to the more or less permanent protection of the animal after the initial temporary protection by the injected serum has worn off. The essence of the method consists in stimulating an active, under cover of a passive, immunity. In human medicine there are few infective diseases in which a powerful antiserum is available, and in the two outstanding examples, diphtheria and tetanus, no one has dared to attempt active immunization by injection of the living organisms. It was not, therefore, till a safe non-living and non-toxic vaccinating agent was made available by the discovery of formol toxoid (Glenny and Südmersen, 1921; Glenny and Hopkins, 1923; Ramon, 1923, 1928) that the possibility of combining active and passive immunization in the prophylactic or therapeutic treatment of these two diseases became practicable.

Review of Previous Work

Ramon and Laffaille (1925) studied the production of tetanus antitoxin in guinea-pigs. The animals were divided into four lots. Lot A received 1 c.cm. of anatoxin (formol toxoid) alone. Lot B received 1 c.cm. of anatoxin mixed with antileptan serum containing 4,500 antitoxin units (A.U.). Lot C received 1 c.cm. of anatoxin and 4,500 A.U. of serum given simultaneously into different sites. Lot D received 4,500 A.U. of serum alone. Sixteen days later some of the animals in each lot were tested for their resistance to the injection of tetanus toxin. Lot A was found to withstand about 60 m.l.d., whereas none of the other lots withstood even 2 m.l.d. The conclusion was therefore drawn that the serum had interfered with the immunizing action of the anatoxin.

To see, however, whether it had also affected the sensitizing action of the anatoxin, the remaining animals in each lot were given 1 c.cm. of anatoxin 20 days after the first injection. Seven days later they were tested for their resistance to tetanus toxin. The animals of Lot A withstood several hundred m.l.d. The animals of Lot C withstood 10 to 50 m.l.d. The animals of Lots B and D proved almost as susceptible as non-immunized controls. This experiment showed that the simultaneous administration of serum to the animals of Lot C, though it had prevented their immediate antitoxin response, had not entirely destroyed the sensitizing effect of the anatoxin and the consequent ability of the animals to respond more rapidly to a second

dose. It also showed that the over-neutralized mixture given to the animals of Lot B was valueless in this respect. Not only did it fail to give rise to antitoxin production, but it likewise failed to sensitize the tissues and enable them to respond to a fresh injection of anatoxin. These experiments were repeated on rabbits with substantially the same results.

In 1928 Ramon described the general properties of anatoxin. Discussing combined active and passive immunization, he considered that the method should not be used except in cases of necessity, since it is less successful in producing active immunity than vaccination with anatoxin alone.

This conclusion was supported by observations on a small number of children described by Martin, Loiseau, and Laffaille (1928). In a school where diphtheria had broken out these workers inoculated 9 children with 0.5 c.cm. of anatoxin and 14 children with the same dose of anatoxin followed half an hour later by 1,000 units of diphtheria antitoxin. All received a second dose of 1 c.cm. of anatoxin 30 days later, and a third dose of 1 c.cm. after another fortnight. Three weeks after the last injection the children were Schick-tested. All the 9 children who were given anatoxin alone reacted negatively, whereas 2 of the 14 children who were given serum as well as anatoxin were Schick-positive.

In 1938 Ramon and his colleagues returned to the subject. Working this time with rabbits, they found that animals given 4 c.cm. of tetanus anatoxin and bled a fortnight later had an antitoxin titre of about 1/5 A.U. per c.cm., whereas those injected simultaneously but into different sites with 4 c.cm. of anatoxin and with serum containing 300 A.U. had a titre of less than 1/600 A.U. After a second dose of anatoxin, however, the titre of the first group was between 2 and 7.5 A.U., and of the second group between 7 and 8 A.U.

In another experiment animals receiving anatoxin alone had a titre 18 days later of 1 A.U. per c.cm., whereas those given both anatoxin and serum had a titre of less than 1/300 A.U.; but 14 days after a second injection of anatoxin the animals of both groups had a titre of about 7 A.U. It appears from these experiments, therefore, that serum delays or interferes with the primary response to anatoxin, but does not destroy the sensitizing power of the anatoxin and the consequent ability of the animal to respond rapidly to a second dose. This conclusion, however, was not drawn by Ramon and his colleagues.

In a later paper Ramon, Richou, and Maccollini (1939) made similar experiments on rabbits using diphtheria anatoxin and serum. Each lot contained 6 animals. Lot A received 3 inoculations, at five-day intervals, of 0.5, 1, and 2 c.cm. respectively of anatoxin. Lot B received in different sites on the same day 0.5 c.cm. of anatoxin and serum containing 3,250 A.U., followed at five-day intervals by injections of 1 and 2 c.cm. of anatoxin only. Lot C received both anatoxin and serum at each of the three injections, the anatoxin doses being the same as before, and the serum doses being each 325 A.U. The animals were bled 1, 4, 6, 8, and 12 weeks after injection, and then at intervals up to 15 months. The sera of the animals, in each lot were pooled and titrated for antitoxin. In all three groups the maximum titre of 3 to 4 units was recorded after a week; it then fell gradually till after 15 months it was 1/20 to 1/10 A.U. per c.cm. It was therefore concluded that the

simultaneous inoculation of serum does not interfere at all with the development of active immunity following the administration of anatoxin.

This conclusion, which is very much less cautious than that reached in 1925, is seriously open to question. The number of animals used in Ramon's last experiment was small, and the administration of a very large dose of serum to the animals of Lot B and of three successive doses of serum to the animals of Lot C makes it difficult to interpret the antitoxin titres during the first few weeks following the injections. It is conceivable that the serum may have interfered with the active immunity response in the early stages, but that this interference was masked by the presence of circulating antitoxin remaining from the serum injections.

Other papers have been published by Ramon (1938, 1940), based partly on observations made on actual cases of diphtheria treated by the combined method, which have led him to conclude that serum therapy does not interfere at all with the development of active immunity. Since in patients suffering from diphtheria the issue is apt to be confused by the presence of toxin formed by the infecting bacilli themselves, it is hardly worth-while abstracting these papers or those of his colleagues on the same lines.

Reviewing Ramon's work as a whole, it will be seen that his earlier experiments were better designed than his later ones to decide whether the administration of serum along with anatoxin interferes with the antibody response of the tissues. It is therefore understandable, though regrettable, that Ramon passed between 1925 and 1940 from an attitude of caution to one of dogmatic assertion.

The experience of other workers on combined active and passive immunization is conflicting. Glenny, Buttle, and Stevens (1931) found that if toxoid was inoculated subcutaneously into guinea-pigs most of the animals had a serum antitoxin content of between 1/100 and 1 A.U. per c.cm. 4 to 6 weeks later. But if antitoxin was given intravenously in an amount sufficient to neutralize all the toxoid injected, either at the time of inoculation of the toxoid or up to 3 days later, no antitoxin was formed. The longer the interval between the inoculation of toxoid and the inoculation of serum, the less was the degree of inhibition of antitoxin production. Even with a 21-day interval, however, antitoxin production was still not as good as in the controls that were given no antitoxin. It thus appears that neutralization of toxoid by antitoxin diminishes the antitoxin response, and that if combined active and passive immunization is to be successful an excess of toxoid must be present in the tissues.

Frey and Schmid (1939) injected 20 children with 1 c.cm. of alum-precipitated toxoid (A.P.T.) subcutaneously and 1,000 to 2,000 units of diphtheria antitoxin intramuscularly. The children were bled at intervals and the antitoxin content of their serum was titrated. All of them showed a fall in the initial value after injection, and none showed any development of fresh antitoxin. Most of the observations, however, were made within 4 weeks of the injection, and no second dose of A.P.T. was given. Since it is well known from the observations of Glenny and Südmersen (1921) and Glenny (1925, 1931) that the main rise in antitoxin does not occur till after the secondary stimulus has been given, the results obtained by Frey and Schmid are not surprising. Indeed, they would hardly be worth noticing were it not for the fact that they were made the basis of an editorial in the *Journal of the American Medical Association* (1939, 113, 1884), in which the following conclusion drawn from the work of Frey and Schmid and of Paschla (see later) was emphasized: "Combined active-passive immunization is not feasible in human medicine, the two types of immunization being incompatible with each other."

Much the same criticism applies to the observations, in Mexico, of Leon, Escarza, and Navarro (1939), who gave a single dose of 1 to 1.5 c.cm. of A.P.T. and 1,000 to 1,500 units of diphtheria antitoxin to 80 Schick-positive reactors. One month later, of 42 who were retested 6 were still Schick-positive. Two months later, of 38 who were retested 9 were Schick-positive. As in Frey and Schmid's work, only one dose of A.P.T. was given, and no comparison was made with a group of persons immunized by the active method alone.

Gundel and König (1938) made some very interesting observations on guinea-pigs. They injected them with various emulsified and alum-precipitated toxoids or with toxoid-antitoxin floccules (T.A.F.), together with a dose of anti-diphtheria serum, and tested their immunity at intervals to infection with living diphtheria bacilli of the gravis and mitis types. In brief they found that (a) animals given serum alone—500 A.U.—were protected for less than a fortnight; (b) formol toxoids or T.A.F. alone produced partial or complete immunity within

a fortnight; (c) A.P.T. produced within a fortnight an immunity that was more complete and lasted longer than that obtained by injection of formol toxoids or T.A.F.; (d) the combination of formol toxoid and serum protected guinea-pigs for a week, but left them susceptible again within a fortnight; (e) the combination of A.P.T. and serum protected them for a week, left them susceptible during the 2-4-weeks stage, and then protected them again later. In other words, the passive immunity conferred by the serum wore off in a week or two and left the animals susceptible until active immunity resulting from the A.P.T. began to develop 4 to 6 weeks after injection. It is clear from Gundel and König's work that serum does interfere with the response of the body to an active immunizing agent. Unfortunately these workers did not give a second injection of toxoid. They concluded, however, that if combined active and passive immunization is to be satisfactory a dose of A.P.T. must be given which is sufficiently large to leave enough unneutralized toxoid at the injection site to stimulate the development of antibody after the serum has disappeared from the circulation.

Whether this conclusion is correct or not it is difficult to say, but, provided two injections of toxoid are given, neither of the doses need be very large. Gierthmühlen and Voges (1939), for example, in a nursery home where diphtheria had broken out, inoculated children with 0.3 c.cm. of A.P.T. along with 1,000 units of antitoxin. Three weeks later they gave a second dose of A.P.T. of the same amount. All children were Schick-tested six months later, and all were Schick-negative. It is interesting to note that 3 out of 19 children who had received only their first dose of A.P.T. developed diphtheria, and that of 43 who had received both first and second doses of A.P.T. two developed diphtheria within 21 to 46 days after the first inoculation. The disease, however, was of an extremely mild type. These observations support those made by Gundel and König in showing that there is probably a period of relative susceptibility between the time when the passive immunity due to the serum has worn off and the time when the active immunity due to the A.P.T. has developed. They do show, however, in addition, that, provided a second dose of A.P.T. is given, satisfactory immunity is produced at any rate within six months.

The observations of Paschla (1939) do not bear out Gundel and König's results. Paschla found that of 39 children with an initial titre of less than 0.005 A.U. per c.cm. who were given a single dose of 0.2, 0.5, or 1 c.cm. of A.P.T., 20 formed no antitoxin within 6 weeks. 11 reached a titre of about 0.03 A.U., and 8 reached a titre of between 0.5 and 20 A.U. When, in another series of 22 children, he gave one dose of 0.2, 0.5, or 1 c.cm. of A.P.T. along with 1,000 units of antitoxin, 21 completely failed to respond. Paschla therefore concludes that in children with no initial antitoxin in their blood the administration of serum hinders the response to A.P.T. In children who had already been exposed to diphtheria and whose blood contained some antitoxin, the administration of serum had no inhibiting effect. On the other hand, from the point of view of treatment, it had no advantage, since these children responded very rapidly to an injection of A.P.T. alone.

Fjord-Nielsen (1940) made some interesting observations, complementary to those of Glenny, Buttle, and Stevens (1931), on the effect of serum in delaying antitoxin formation. Working with guinea-pigs, she found that when A.P.T. and serum were given simultaneously no antitoxin was formed within 4 weeks, though the animals became sensitized and responded more readily to a second dose of A.P.T. If the first dose of A.P.T. was given 3 days after the serum, and a second dose of A.P.T. 4 weeks later, the antitoxin titre of the guinea-pigs' serum was higher than when the A.P.T. and serum were injected simultaneously. If the interval between the serum and the first dose of A.P.T. was lengthened to 7 days, then the final titre was higher still. If it was lengthened to 14 days a result was obtained that was as good as if no serum at all had been given. From these experiments it would appear that the administration of serum interferes with antitoxin production but does not destroy, though it may weaken, the sensitizing effect of the first dose of A.P.T.

It is not surprising that the results of different workers whose experiments varied in so many important particulars should have been conflicting and at times apparently contradictory. Looking at them, however, as a whole it is difficult to avoid the conclusion that the simultaneous administration of serum with toxoid interferes with the primary response of the tissues, but does not destroy, though it may weaken, the sensitizing power of the toxoid.

which enables the tissues to respond to a second dose of toxoid by the rapid production of antitoxin. This is essentially the same conclusion as was reached, but subsequently abandoned, by Ramon and his colleagues.

Description of Experimental Observations

In view of the findings of previous workers it seemed important to choose (1) a dose of toxoid that was small enough to reveal any possible inhibitory action of the serum; (2) a dose of serum that was not so large as to conceal the active formation of antitoxin in the body as the result of the injection of toxoid; and (3) a toxoid in the form of the alum precipitate to ensure as little interference as possible by the action of the serum. The general plan of the experiments was therefore as follows.

Observations were made at Oxford, Cambridge, and Sheffield on third-year medical students, the majority of whom were between 20 and 22 years of age. In addition a small number of observations were made at Turner's Court Training Colony, near Oxford, on boys all but two of whom were between 14 and 19 years of age.

The subjects were first of all Schick-tested. About 6 to 8 c.cm. of blood was withdrawn from those giving a positive reaction, and sent to Mr. Glenny at the Wellcome Physiological Research Laboratories to be titrated for diphtheria antitoxin. The Schick-positive reactors were then divided into two groups, A and A+P. The subjects in Group A (active immunization) received 0.1 c.cm. (5 Lf) of Burroughs Wellcome's alum-precipitated toxoid (A.P.T.) into the left upper arm. Those in Group A+P (active plus passive immunization) received 0.1 c.cm. of A.P.T. into the left upper arm and 350 to 500 units of Burroughs Wellcome's refined diphtheria antitoxin (Pope, 1938, 1939) into the right upper arm. All injections were made into the deep subcutaneous tissue. Four weeks later the subjects were again bled, and were then given 0.3 c.cm. of A.P.T. into the right upper arm. Eight weeks after the second dose of A.P.T. the subjects were bled for the third time and were again Schick-tested. The results of the Schick test were read usually 3 to 5 days later, and any person who still reacted positively was given another dose of 0.3 c.cm. of A.P.T.

Though this was the general plan of the observations, departures were made from it at Cambridge and at Sheffield for various reasons. At Cambridge in one series of students the third bleeding was made 6 weeks instead of 8 weeks after the second dose of A.P.T. In another set of students only active immunization was given. In still further sets of students additional bleedings were made 12 to 23 weeks after the second dose of A.P.T. In these instances the final Schick test was not performed till after the last bleeding had been done. At Sheffield the intervals between the two immunizing doses, and between the second dose and the third bleeding, were rendered very irregular owing to enemy action.

The relevant facts relating to the different sets of observations are set out in Table I.

TABLE I.—Number and Type of Observations Made

Set	Place	Time	Original No. in Group		No. of Units of Antitoxin	Time Interval in Weeks between				
			A	A+P		1st and 2nd Bleeding	2nd and 3rd Bleeding	2nd and 4th Bleeding	2nd Bleeding and Schick Test	
TC	Turner's Court	Michaelmas, 1939	8	9	350	5	8	—	8	8
O1	Oxford	Hilary, 1940	10	10	400	4	8	—	8	8
C1	Cambridge	Lent, 1940	27	27	400	4	6	12	12	12
O2	Oxford	Michaelmas, 1940	8	8	500	4	8	—	8	8
C2	Cambridge	.. ..	72	52	500	4	8	12 or 23	12 or 23	12 or 23
S	Sheffield	.. ..	26	25	500	4-10	8-10	—	8-10	8-10
Total			148	131						

A=Active immunization. A+P=Combined active and passive immunization.

The total number of subjects recorded in the table is 279. In fact rather more took part in the trials, but in analysing our figures we have excluded all initially Schick-positive reactors whose serum contained 1/1,000 unit per c.cm. or more of antitoxin. The figures recorded in this paper refer exclusively to subjects whose serum at the time of the first immunizing injection contained less than 1/1,000 unit per c.cm. Unfortunately a history of immunization was obtained only from the O2 and C2 sets of students. Of these, 7 in the A group and 3 in the A+P group had been immunized or Schick-tested pre-

viously. Since none of them contained as much as 1/1,000 unit per c.cm. of antitoxin in their blood they have been included in our figures.

Results

COMPARISON BETWEEN THE ANTITOXIN PRODUCTION OF GROUPS A AND A+P

In recording the results it will be convenient first of all to deal with those series of observations in which the original plan of the experiments was strictly followed.

In Table II are included the observations on Sets O1, O2, C1, and C2 of Oxford and Cambridge students who were bled 4 weeks after the first immunizing dose of A.P.T. or of A.P.T. plus serum. In this and in subsequent tables it has been thought wise, owing to the relatively small number of sera examined and the wide variations in the amounts of antitoxin contained in them, to report the results in simple frequency tables rather than to work out arithmetic mean titres. Here and throughout the paper all antitoxin figures are expressed per c.cm. of serum.

TABLE II.—Oxford and Cambridge Students: Sets O1, O2, C1 and C2. Antitoxin Titres 4 Weeks after First Immunizing Dose

Antitoxin Units per c.cm. of Serum	A		A+P		Total
	No.	%	No.	%	
Good response: 1/50 or more	14	(17%)	3	(3%)	17
Fair response: 1/100 to 1/500	7	(8%)	57	(61%)	64
Poor or no response: 1/1,000 or less	95	(82%)	34	(36%)	129
Total	116	(100%)	94	(100%)	210

A=Active immunization with 0.1 c.cm. of A.P.T.

A+P=Ditto, plus 400 to 500 units of antitoxin.

* $\chi^2=7.527$, $P<0.00001$.

Note.—The term "response" is hardly justifiable in the A+P group, but its use is convenient.

It will be observed that the proportion of sera containing 1/500 unit or more of antitoxin was far higher in the A+P than in the A group—64% as opposed to 18%. In the small class of sera containing 1/50 unit or more, however, the relation was reversed. The difference in antitoxin distribution between the two groups is seen by the χ^2 test to be far greater than is likely to have arisen by chance alone.

These facts are best explained on the assumption: (a) that the antitoxin in the A+P group of sera was mainly residual antitoxin—i.e., the remains of the antitoxin that was injected four weeks previously; and (b) that a single dose of 0.1 c.cm. of A.P.T. gives rise to little or no antitoxin response within four weeks except in a very few persons who have had previous experience of the diphtheria bacillus; in these it acts like a secondary stimulus (Glenny, 1925, 1931; Glenny and Südmersen, 1921), and gives rise rapidly to a considerable amount of antitoxin. Evidence in support of assumption (a) will be afforded at a later stage of this paper. In support of assumption (b) are the observations

of Paschla (see above) and of Fraser (1940), who found that of 50 children who had been immunized 5 years previously and whose serum antitoxin content had fallen to below 1/50 unit per c.cm. all responded rapidly to the reinjection of a single dose of 0.1 c.cm. of toxoid, 80% within 5 weeks having more than 1/2 unit per c.cm. It is also supported by examination of the records of students in the O2 and C2 groups who gave a history of previous immunization or of Schick-testing. Of 7 such students in the A group all but one had 1/10 unit or over 4 weeks after injection, and of 3 such students in the

A+P group 2 had 1/10 unit or over. Unfortunately a record of the immunization histories of the O1 and C1 sets of students was not available.

The antitoxin titres in Sets O1, O2, and C2 of Oxford and Cambridge students 8 weeks after the second immunizing dose of A.P.T. are recorded in Table III.

TABLE III.—Oxford and Cambridge Students: Sets O1, O2, and C2. Antitoxin Titres 8 Weeks after Second Immunizing Dose

Antitoxin Units per c.cm. of Serum	A		Total
	No.	A+P	
Good response: 1/50 or more ..	57 (65%)	22 (33%)	79
Fair response: 1/100 to 1/500 ..	20 (23%)	25 (38%)	45
Poor or no response: 1/1,000 or less ..	11 (12%)	19 (29%)	30
Total	88 (100%)	66 (100%)	154

A = Active immunization with 0.1 c.cm. and 0.3 c.cm. of A.P.T. at 4 weeks' interval.

A+P = Ditto, plus 350 to 500 units of antitoxin at time of first injection.

$\chi^2 = 15.366$. $P = 0.00047$.

The results are seen to be very different from those in Table II. Of those in Group A 65% had responded well by producing 1/50 unit or more of antitoxin, as against only 33% in Group A+P. The χ^2 test shows that such a difference in distribution can hardly have been due to chance.

It may therefore be concluded that, although 4 weeks after the first immunizing dose the average antitoxin titre is considerably higher in the A+P than in the A group, 8 weeks after the second injection the situation is reversed. From this the inference can be drawn that the administration of serum along with the first dose of A.P.T. leads to a lower antitoxin response, as determined by observations made 8 weeks after the second injection of A.P.T., than that due to A.P.T. alone.

We may now examine the results on all the subjects, including those that were not treated in strict accordance with the original plan. Table IV records the antitoxin titres on Sets TC, O1, O2, C1, C2, and S of students at Turner's Court, Oxford, Cambridge, and Sheffield, at an average of about 4½ weeks after the first immunizing dose.

TABLE IV.—Turner's Court, Oxford, Cambridge, and Sheffield Students: Sets TC, O1, O2, C1, C2, and S. Antitoxin Titres 4 to 10 Weeks (average 4.4 Weeks) after First Immunizing Dose

Antitoxin Units per c.cm. of Serum	A		Total
	No.	A+P	
Good response: 1/50 or more ..	20 (14%)	7 (6%)	27
Fair response: 1/100 to 1/500 ..	11 (7%)	67 (52%)	78
Poor or no response: 1/1,000 or less ..	116 (79%)	54 (42%)	170
Total	147 (100%)	128 (100%)	275

A = Active immunization with 0.1 c.cm. of A.P.T.
A+P = Ditto, plus 350 to 500 units of antitoxin.
 $\chi^2 = 68.089$. $P < 0.000001$.

As in Table II, it is seen that the proportion of sera containing 1/500 unit or more of antitoxin was considerably higher in the A+P than in the A group—58% contrasted with 21%. And again as in Table II, more sera in the A group had a relatively higher antitoxin content than in the A+P group. The higher proportion, however, of sera in the A+P group containing antitoxin is shown to be significant by the χ^2 test.

In Table V are set out the antitoxin titres in Sets TC, O1, O2, C1, C2, and S at an average of 8½ weeks after the second dose of A.P.T. As in Table III, the proportion of sera in Group A containing 1/50 unit or more of antitoxin is higher than in Group A+P—65% as compared with 50%—but the difference is not so great, and the lower value of χ^2 renders this difference of far less significance.

Judged by the percentage values the difference between the two groups in Table IV is slightly less than in Table II; this may perhaps be due to the fact that the average time of bleeding of the students recorded in Table IV was later than that in Table II. This, in turn, might be expected (a) to lead to a

TABLE V.—Turner's Court, Oxford, Cambridge, and Sheffield Students: Sets TC, O1, O2, C1, C2, and S. Antitoxin Titres 8 to 12 Weeks (average 8.7 Weeks) after Second Immunizing Dose

Antitoxin Units per c.cm. of Serum	A		Total
	No.	A+P	
Good response: 1/50 or more ..	91 (65%)	59 (50%)	150
Fair response: 1/100 to 1/500 ..	36 (26%)	38 (32%)	74
Poor or no response: 1/1,000 or less ..	13 (9%)	21 (18%)	34
Total	140 (100%)	118 (100%)	258

A = Active immunization with 0.1 c.cm. and 0.3 c.cm. A.P.T. at 4 to 10 weeks' interval (average 4.4 weeks).

A+P = Ditto, plus 350 to 500 units of antitoxin at time of first injection.

$\chi^2 = 6.938$. $P = 0.031$.

greater excretion of the antitoxin inoculated into the A+P group, and (b), on the assumption that serum delays the antitoxin response, to reveal the beginning of antitoxin production resulting from the first dose of A.P.T. in Group A.

Again, the difference between the two groups in Table V is less than in Table III; this may be related to the greater length of time that elapsed between the second immunizing dose and the final bleeding of the students recorded in Table V. If it is assumed that the serum delayed but did not prevent the antitoxin response of subjects in the A+P group, this would have allowed time for the formation of antitoxin in an amount more nearly approaching that of subjects in Group A. These suggestions are admittedly hypothetical, but evidence will now be brought to show that they are not without foundation.

It may be noted that the results in Tables II to V are weighted to some extent in favour of the A group by the circumstance that 7 students in the A group are known to have been immunized previously, as against only 3 in the A+P group.

RATE OF DISAPPEARANCE OF INJECTED ANTITOXIN FROM THE CIRCULATION

At Cambridge 12 of the students in the A+P group, each of whom had received 0.1 c.cm. of A.P.T. and 500 units of antitoxin, and bled at weekly intervals for 4 weeks so as to determine the antitoxin content of their serum. The results are given in Table VI.

TABLE VI.—Fall in Antitoxin Content of Serum within 4 Weeks of Inoculation of 0.1 c.cm. of A.P.T. + 500 Units of Antidiphtheria Serum. Part of Set C2

Antitoxin Units per c.cm. of Serum	1 Week	2 Weeks	3 Weeks	4 Weeks
1/25 or greater	4	1	1	1
1/50	6	0	0	0
1/100	2	10	1	0
1/250	0	0	10	1
1/500	0	1	0	5
1/1,000	0	0	0	2
< 1/1,000	0	0	0	3
Total	12	12	12	12

It will be seen that, roughly speaking, after 1 week the commonest titre was about 1/50 unit, after 2 weeks about 1/100 unit, after three weeks about 1/250 unit, and after 4 weeks between 1/500 and 1/1,000 unit. Apart from one student who had been immunized three to four years previously and whose titre rose from 1/25 unit after 1 week to 1/5 unit after 2 weeks, it would appear that the antitoxin content of the serum fell progressively and that there was no obvious evidence of active formation of fresh antitoxin. At 4 weeks 75% still had 1/1,000 unit or more per c.cm. of serum.

These results may be usefully compared with those in Table II. After 4 weeks only 3 of the 94 subjects in the A+P group had an antitoxin titre of 1/50 unit or more, suggesting the formation of fresh antitoxin. The majority had a titre of between 1/100 and 1/1,000 unit, a total of 79%* having 1/1,000 unit or more. Since only 34%* of those in the A group had 1/1,000 unit or more, it is difficult to avoid the conclusion that the antitoxin present in the great majority of the A+P sera was residual antitoxin.

* These figures are obtained from the individual protocols.

This conclusion is further borne out by comparison of the results in Table VI with those of previous workers who have studied the rate of disappearance of injected antitoxin from the circulation. Most observations of this type appear to have been made on animals, but some, such as those by Ramon, Debré, and Bernard (1933) and E. Madsen (1936), were made on diphtheria patients who were injected with varying quantities of antitoxin for therapeutic purposes. Others, such as those by Frey and Schmid (1939), were carried out, like our own, on subjects who received active and passive immunization simultaneously. Smith (1907) seems to have been one of the few who made observations that were not complicated either by the presence of active disease in the subject or by simultaneous inoculation of an immunizing antigen; unfortunately his observations were limited to those on a single adult male.

Without discussing the results of these workers in detail, attention may be drawn to the work of T. Madsen (1902, 1923), who found that the rate of disappearance of antibody from the blood of passively immunized persons could be represented by an equation which was not unlike that of a monomolecular reaction. That is to say, a curve drawn by plotting the absolute values of antitoxin per c.c.m. of blood against time fell rapidly to start with and then flattened out till it was almost parallel with the axis of abscissae. The rate of disappearance, however, varied not only with the amount of antitoxin injected but with the individual person studied. This second variable made it impossible to predict from the behaviour of one person what the rate of disappearance of antitoxin would be in another person. These conclusions of T. Madsen's were borne out by the work of E. Madsen (1936), and there is no reason to doubt their general validity.

The possession of a constant by each individual makes it difficult to compare the results of different workers with each other and with our own. When, in addition to this, other factors may have influenced the result, such as previous immunization against diphtheria by natural or artificial means, as in some of the subjects studied by Ramon and his colleagues, it is clearly impossible within a short compass to make any statistical comparison between the recorded figures of different workers. A general review of these figures, however, shows that when horse serum containing antitoxin is injected into the body a large proportion of it is excreted within the first two or three weeks, but that a small proportion generally persists for at least four weeks.

Perhaps the nearest parallel to our own figures are those given by Frey and Schmid (1939), who inoculated healthy children with 1,000 to 2,000 units of antitoxin intramuscularly together with 1 c.c.m. of A.P.T. subcutaneously. All the children, it may be noted, had less than 0.0005 unit of antitoxin per c.c.m. in their blood serum at the time of injection. In every child inoculated with antitoxic horse serum the titre fell from a maximum of 0.45 to 1.8 units after 3 days to a figure varying from 0.007 to 0.03 unit after 28 days. In none of them was there any evidence of a rise in the titre suggestive of active antibody formation.

Our own figures, it will be remembered, showed the presence of about 0.002 unit per c.c.m. after 28 days. Considering that the amount of antitoxin inoculated into our students was only a half to a quarter of that used by Frey and Schmid, the rate of disappearance of antitoxin from the circulation appears to have been much the same in both groups. These figures are in general agreement with those obtained by Smith (1907) on a healthy adult, and by E. Madsen (1936) on diphtheria patients, whose curves were so regular as to exclude almost any possibility of active antitoxin formation within four weeks.

It may therefore be concluded that in healthy students having less than 1/1,000 unit of antitoxin per c.c.m. of serum and inoculated with 0.1 c.c.m. of A.P.T. and 500 units of antiphtheria serum, any antitoxin found in the blood during the succeeding four weeks is probably residual antitoxin. Occasional students who have had previous experience of the diphtheria bacillus, directly or indirectly, may respond rapidly by the formation of considerable amounts of antitoxin, but apart from these there is little evidence to suggest that when given along with 500 units of antitoxic serum 0.1 c.c.m. of A.P.T. is sufficient to stimulate the formation within four weeks of more than minimal quantities of antibody.

RATE OF FORMATION OF ANTITOXIN IN THE A AND A+P GROUPS

From the figures just recorded it is evident that, with the immunizing doses used, fresh antitoxin, except in minimal quantities, is unlikely to be detected within 4 weeks either in those given active immunization alone or in those given combined active and passive immunization. A study of Table III, however, shows that 8 weeks after the second immunizing dose most of the subjects had formed fresh antitoxin. Of those in the A group 88% and of those in the A+P group 71% had produced more than 1/1,000 unit of antitoxin per c.c.m. of serum. The question arises whether the poorer response of those in the A+P group was due to real inhibition of antitoxin formation as the result of the simultaneous injection of serum with the first dose of A.P.T., or merely to delay in its formation. To answer this question antitoxin titrations were made at Cambridge on the two groups of students at different times after the second dose of A.P.T.

In the first set of students, C1, the third bleeding was made 6 instead of 8 weeks after the second dose of A.P.T., and a fourth bleeding was made 12 weeks after the second dose of A.P.T. The summarized results are given in Table VII.

TABLE VII.—Change in Antitoxin Content of Serum between 6 Weeks and 12 Weeks after Second Immunizing Dose. Part of Set C1

Antitoxin Units per c.c.m. of Serum	A		A+P		Total Observations
	6 Weeks	12 Weeks	6 Weeks	12 Weeks	
1/2 to 2	2	2	1	0	5
1/5 to 1/25	4	4	2	6	16
1/50 to 1/250	6	8	11	10	35
1/500 to 1/1,000	1	1	3	4	10
< 1/1,000	1	0	3	0	4
Total	15	15	20	20	70
Rise		7		14	
Fall		3		2	
No change		5		4	

A = Active immunization with 0.1 c.c.m. and 0.3 c.c.m. A.P.T. at 4 weeks' interval.

A+P = Ditto, plus 400 units of antitoxin at time of first injection.

The figures in the last three rows are obtained from the individual protocols.

It will be noticed that in the A group there was a slight increase in the titre of antitoxin at 12 weeks, 7 sera showing a rise, 3 a fall, and 5 no change. In the A+P group, however, 14 showed a rise, only 2 a fall, and 4 no change. The suggestion is therefore very strong that the rate of formation of antitoxin is slower in the A+P than in the A group. It looks also as if in the A group the peak of antitoxin production is probably reached somewhere between 6 and 12 weeks.

In a second set of students, part of C2, antitoxin titrations were made 8 and 12 weeks after the second dose of A.P.T. The results are shown in Table VIII.

TABLE VIII.—Change in Antitoxin Content of Serum between 8 Weeks and 12 Weeks after Second Immunizing Dose. Part of Set C2

Antitoxin Units per c.c.m. of Serum	A		A+P		Total Observations
	8 Weeks	12 Weeks	8 Weeks	12 Weeks	
1/2 to 2	2	2	1	1	6
1/5 to 1/25	24	23	5	8	60
1/50 to 1/250	13	13	17	25	68
1/500 to 1/1,000	7	9	12	9	37
< 1/1,000	2	1	11	3	17
Total	48	48	46	46	188
Rise		8		28	
Fall		19		4	
No change		21		14	

A = Active immunization with 0.1 c.c.m. and 0.3 c.c.m. of A.P.T. at 4 weeks' interval.

A+P = Ditto, plus 500 units of antitoxin at time of first injection.

The figures in the last three rows are obtained from the individual protocols.

The difference between the two groups is even more striking than in Table VII; of the A group only 8 sera showed a rise, whereas 19 showed a fall and 21 no change. In the A+P group the corresponding figures were 28, 4, and 14. The two conclusions reached from a study of Table VII are therefore considerably strengthened.

FOUR CASES OF PNEUMOCOCCAL PERITONITIS

BY

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Acute pneumococcal peritonitis is an uncommon disease. The use of surgery with the administration of sulphapyridine illustrates an advance which has taken place in the treatment of this type of peritonitis during the last few years. Before the introduction of Felton's type antipneumococcal serum and sulphapyridine, pneumococcal peritonitis was an extremely fatal disease. Following the administration of the serum a certain number of these patients got well, and there is a distinct hope that the introduction of sulphapyridine will further reduce the mortality.

When I was house-surgeon to Mr. H. J. (now Sir Holburt) Waring I was able to collect, with Mr. A. L. Moreton, 6 cases of this disease that had been admitted to Mr. Waring's wards, all of which were fatal (Noon and Moreton, 1912). Similar results were recorded by other observers.

Rischbieth (1911) gives statistics of 57 cases of pneumococcal peritonitis. Of these, 45 were cases of acute general peritonitis, with a mortality of 100%.

Sir Dyce Duckworth and Mr. H. Marsh (1904) recorded a case successfully treated by operation and antipneumococcal serum. They refer to other cases, none of which, however, recovered. Up till 1932 further cases of acute pneumococcal peritonitis came under my care, but all proved fatal. Since 1932 I have had 4 cases, all of which have recovered. These seem to be of sufficient interest to justify publication. Three of them were treated by laparotomy with drainage of the pelvic cavity and intramuscular injections of antipneumococcal serum, Felton's type, and the fourth by laparotomy with drainage and the administration of sulphapyridine. While, however, the first three gave rise to considerable anxiety and recovered only after a long illness, the fourth caused no anxiety and made a rapid recovery.

Case I

Pneumococcal peritonitis. Laparotomy; protracted pyrexia. Recovery

A schoolgirl aged 8 was admitted to the Norfolk and Norwich Hospital on April 6, 1932, complaining of severe abdominal pain with vomiting. On the day before admission she was said to have received a severe blow in the abdomen when returning from school.

On admission she looked ill; her temperature was 101.5°, and the pulse rate 124. The abdomen was distended, rigid, and tender. A diagnosis of acute peritonitis was made. The abdomen was opened, revealing acutely inflamed intestine and a large collection of thick yellow pus in the pelvis. The appendix, which was not inflamed, was removed. The abdomen was closed, with drainage. Examination of pus showed a pure culture of pneumococcus, Type II.

She was treated by injections of antipneumococcal serum, Types I and II (Parke, Davis), 10,000 units being given daily from April 7 to 12. She made satisfactory progress, and was discharged from hospital in good health on June 4.

Case II

Acute pneumococcal peritonitis. Laparotomy; double empyema; right side of chest drained; left side aspirated. Complete recovery

A school teacher aged 23 was admitted to a nursing home on June 5, 1933, complaining of severe abdominal pain and

diarrhoea. Temperature 104°; pulse rate 120. She had been ill for four days.

On examination she looked ill and anxious; her temperature was 102.8° and pulse 140. The abdomen was distended, rigid, and tender. An abdominal operation scar showed that the appendix had been removed some years ago. A provisional diagnosis of acute pneumococcal peritonitis was made. The abdomen was opened and the peritoneal covers of the intestines were found to be red and inflamed. There were some flecks of lymph and some flocculent inodorous pus. The latter was mopped up and the abdomen closed with drainage. An intramuscular injection of 20,000 units of antipneumococcal serum was given, with a further 10,000 units on June 6 and 10. On July 3 the blood leucocyte count was 28,400 per c.mm. Signs at the base of the right lung continued to increase. On July 7 a right-sided empyema was drained by the resection of a piece of rib. Improvement followed this operation. About two weeks later signs began to develop at the base of the left lung, and purulent fluid was aspirated. Accumulation of fluid did not recur. The empyema wound on the right side of the chest continued to discharge. The patient left the nursing home on August 14, after a very severe illness lasting ten weeks. She gained weight, and finally recovered completely.

Case III

Acute pneumococcal peritonitis. Laparotomy; protracted pyrexia. Recovery

A schoolgirl aged 9 was admitted to the Norfolk and Norwich Hospital on March 12, 1937, complaining of acute abdominal pain and vomiting.

On examination she looked ill; her temperature was 102° and pulse rate 128. The abdomen was not distended, but was rigid and tender. A diagnosis of acute peritonitis was made. The abdomen was opened, and the small intestine was seen to be covered with flaky lymph. The appendix, which was not inflamed, was removed and the abdomen closed with drainage. Examination of pus revealed pneumococci. Blood culture following the operation grew pneumococci. The patient was given 10,000 units of antipneumococcal serum intramuscularly for three days following operation, and made gradual progress towards recovery, being discharged on May 29.

Case IV

Acute pneumococcal peritonitis. Laparotomy; post-operative treatment with sulphapyridine

A female laundry worker aged 18 was admitted to the Norfolk and Norwich Hospital on October 2, 1940, complaining of acute abdominal pain, vomiting, and diarrhoea. She had been ill for three days.

On examination she looked anxious; her face was flushed and the tongue rather red and dry. The temperature was 101° and the pulse 160. The abdomen was somewhat distended with marked tenderness below the navel and to the right of the midline. A diagnosis of general peritonitis, cause uncertain, was made. The abdomen was opened on the day of admission. The peritoneal surface of the intestines was red and inflamed. There were also some inflamed and enlarged mesenteric glands in the region of the caecum. The appendix was not inflamed but was removed. There was some inodorous yellowish-green pus in the pelvis; this was removed. The abdomen was closed, with pelvic drainage. Examination of the pus revealed pneumococci.

The pneumococcal infection was treated with sulphapyridine given partly by mouth and partly intravenously. Between October 2 and 6 36 grammes were administered as follows: First day, 4 grammes; second day, 10 grammes; third day, 10 grammes; fifth day, 12 grammes; sixth day, 2 grammes. The dosage was determined by the clinical signs of the severity of the infection. The wound continued to discharge until November 1, but by November 6 it was healed. The patient's local and general condition continued to be satisfactory, and she was able to leave hospital.

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CUTANEOUS ANTHRAX TREATED BY ARSENICALS AND SULPHAPYRIDINE

BY

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Cases of cutaneous anthrax are rare, and few have been recorded in which modern chemotherapy was used. The following case is therefore placed on record.

Case Report

The patient, a gardener aged 53, was admitted to hospital on January 25, 1941. Some years previously he had had a succession of small boils, but had been free of these for four years. A week before admission he noticed a small pimple on the back of his neck which at first looked and felt like the early stages of a boil. The evening before admission the pimple quickly extended and the surrounding area swelled rapidly. There was not the severe pain he had experienced with previous boils. During the next twenty-four hours the swelling extended to each

the second, fourth, and sixth days after admission were: 11,000, 16,800, and 9,200 per c.mm. respectively.

The condition of the lesion had not altered to any marked degree on the 27th (Fig. 2), but the temperature and the pulse rate were normal and remained so until the patient left hospital.

By the 30th the patient looked and felt much better, and there had been no toxic effects following the administration of sulphapyridine. The oedema had very largely subsided, the original lesion being a bluish-black scab, the edges of which were beginning to separate. Only with difficulty could the pathologist find material for the platinum loop. Below the original lesion there was a large flat blood-stained blister (Eurich, 1933) containing gelatinous sanious material (Fig. 3). Cultures taken from the scar and blister at this stage yielded abundant growths of *Staphylococcus aureus*, but both were negative for *Bacillus anthracis*. By February 2 the original lesion was still drier. The central eschar was further separated, and was surrounded by a pale slightly raised ring.

The patient was discharged on February 7. There was only slight residual induration from the occiput to the interscapular region behind, and the dry scab had almost completely separated, exposing a healed eschar. The blood blister had by this



FIG. 1.

FIG. 1.—Photograph taken two days after admission, showing the oedema described in the text.

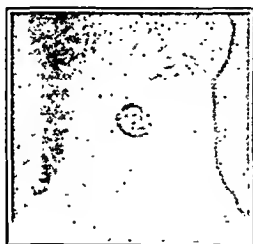


FIG. 2.

FIG. 2.—Photograph of the lesion two days after admission.



FIG. 3.

FIG. 3.—Photograph of the lesion on the sixth day after admission.

side of the neck, and he vomited on several occasions. His doctor suspected anthrax and referred him for institutional treatment.

On admission, late in the evening, the patient was found to have a blood-stained vesicular lesion about an inch in diameter on the back of his neck. The vesicle was not tense and the overlying cuticle was crenated. There was solid oedema of the surrounding parts, extending to the interscapular region, to the occiput, and to the lateral aspect of the neck in front of the sternomastoids, the swelling being very noticeable on viewing the patient from the front (Fig. 1). His temperature was 102.4° F. and the pulse rate 108. His tongue was moist but slightly furred. Despite the alarming appearance of the lesion the patient did not look markedly toxic or distressed. There was nothing of note in the mouth, heart, and lungs; the spleen was not enlarged, and there was no albumin in the urine.

Shortly after admission smears and cultures were made from the fluid beneath the crenated surface of the lesion, and an examination of the straight films showed Gram-positive cocci and Gram-negative bacilli in abundance and a few rod-shaped Gram-positive organisms. The culture after twelve hours showed the typical "dried cotton-wool" appearance of anthrax, and stained slides from culture were typical of the anthrax bacillus.

On the morning of January 26 a full course of sulphapyridine was started, with 2 grammes as an initial dose, followed by 1 gramme four-hourly for forty-eight hours, and then 1 gramme three times a day for thirty-six hours. Later he was given 0.5 gramme three times a day for four days, making a total dosage of 24.5 grammes. On the day after admission 10 c.cm. of Selavo's anti-anthrax serum was given subcutaneously into the abdominal wall. Arsenic was also given, intravenously, in the form of neokharsivan in doses of 0.6 gramme on the second, third, and sixth days after admission. Leucocyte counts on

time completely disappeared. When seen a month after discharge the patient was quite well; there was a healed area to mark the site of the original lesion, with some little induration, especially on the right side.

The diagnosis of anthrax was confirmed by inoculation of a guinea-pig, which died within forty-eight hours, the heart blood and spleen giving cultures positive for anthrax.

Commentary

The situation of the lesion and the occupation of the patient are interesting but not unique, as there was a report in the *Lancet* (1938, 1, 1417) of an inquest on June 4, 1938, on a market gardener aged 30 who died in the Manchester Royal Infirmary from anthrax septicaemia following a lesion on the back of the neck. The jury returned a verdict of death by misadventure, but added a rider that death had been caused by handling artificial manure.

Investigations so far have failed to reveal the source of anthrax in the case under consideration, but the supposition is that the patient's hands were infected by some article with which he had been working, and so had infected the small lesion on the neck direct or through the agency of the coat collar. Samples of vine and plant manure, bone meal, and bird food mixture containing dried meat and foreign flies, with which the patient had been working, were cultured direct on to media and subcultured, but nothing suggesting anthrax was discovered. Further cultures were made after subjecting samples to 3% caustic potash, and others to boiling, with the object of reducing ordinary micro-organisms, but without success. Farmyard manure with which he had also been working came from

a farm where there had been no case of anthrax among the animals.

The low incidence of anthrax is indicated by infectious diseases returns. According to the annual report of the Chief Inspector of Factories and Workshops only 30 cases were notified in 1936, and the average mortality in the cutaneous form over a period of thirty years has been from 3.3% to 24.3% (Legge, 1934), hence the importance of recording individual cases in order to assess the value of therapeutic measures.

The question of sulphanilamide therapy in anthrax has recently been brought to the forefront by the work of Cruickshank (1939), Bonnar (1940), and others, and it was intended at the outset to treat the case by sulphapyridine alone in order to attempt to support the contention that cases of cutaneous anthrax could be successfully treated by this means (Thrower, 1941). "As the conditions essential to clinical trial are almost impossible to fulfil," and one has to consider treatment primarily in the interests of the patient as his life is at stake; the line of treatment adopted included arsenicals, which the literature appears to indicate as being of distinct value, and also Sclavo's serum. The latter can probably be disregarded on account of the small quantity given, the available supply being limited.

Osgood, Joski, and Brownlee (1940) have shown that arsenic and sulphathiazole form the most effective combination against *Staph. aureus* in bone-marrow cultures, and this suggests that the combination of arsenic and sulphanilamide may be worthy of further clinical trial in the treatment of cutaneous anthrax.

My thanks are due to Mr. J. N. J. Hartley, under whose care this case was treated, for permission to publish this paper, and to Dr. J. Steven Faulds, who confirmed the diagnosis by film culture, and guinea-pig inoculation, and by whom the photographs were taken.

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DARK ADAPTATION AND MINERS' NYSTAGMUS

BY

IAN CAMPBELL, M.B., Ch.B.

The association between failure of dark adaptation, or night-blindness, and miners' nystagmus has long been recognized, and has been commented upon by many observers. C. Turner Thackrah (1831), writing of colliers, remarks: "Their eyes . . . are intolerant of full light." Court (1891) states: "A definition of the disease [i.e., miners' nystagmus] should include night-blindness, nystagmus . . . because these symptoms all occur together in miners working with the inferior light." The First Report of the Miners' Nystagmus Committee, 1922, states: "This failure of dark adaptation, or night-blindness, is undoubtedly one of the most characteristic symptoms of the disease"; whilst Roche (1931) states: "One of the first symptoms of nystagmus is deficient vision at twilight. All miners suffering from nystagmus complain of twilight blindness."

That hemeralopia is found in the "pre-nystagmus" stage is observed in the Departmental Committee's Report on the Workmen's Compensation Acts, 1938: ". . . there are some men who ultimately develop oscillations of such extent as to become cases of miners' nystagmus who have complained of earlier subjective symptoms such as mal-projection,

intolerance of light from lamps of other workers, difficulty of seeing on entering the mine workings or leaving them."

Weekers in 1910 even suggested that failure of dark adaptation was the cause of miners' nystagmus (First Report of Miners' Nystagmus Committee, 1922). Oglesby (1880) stated: "I was at first impressed with the idea that pigmentation of the retina lay at the root of the mischief," but discarded his theory on negative ophthalmoscopic findings. Ohm in 1916 considered that "disturbances of dark adaptation have proved factors which predispose to nystagmus" (First Report of Miners' Nystagmus Committee, 1922).

Though most observers have noted the occurrence of night-blindness in miners' nystagmus, few have suggested an explanation of it. Jcaffreson (1887) states: "The interference [i.e., obstruction of the blood flow through the vertebral arteries] with the nutrition of the visual centres may be one of the chief features in the production of hemeralopia, which is almost always present." Roche (1931) suggests that it is probably due to two causes: (1) "The stratum pigmentum produces visual purple. As a result of continuous over-production these cells become defective and nearly cease to secrete altogether, or they secrete a visual purple which is too diluted and ceases to stimulate the rods on exposure to light." Or: (2) "Normally, several rods have only one central nerve connexion, and continued use provokes fatigue, and consequently poor transmission of impulses." The Third Report of the Miners' Nystagmus Committee, 1932, on the other hand, considers the night-blindness of miners' nystagmus to be one of the psychoneurotic manifestations of this disease.

Association of Diet and Miners' Nystagmus

Recent work done on the association between deficiency of vitamin A and night-blindness leads me to consider the association of diet and miners' nystagmus. On this subject Martin (1920) believes that "exhaustion, due to want of food and prolonged physical strain, is the most important, most effective predisposing cause of the disease"; while Stephens (1932) considers the nature of the miners' food all-important. His views he expresses thus: "Since the introduction of tinned foods and preserved meats, the feeding of the collier is much below what it used to be. Formerly the Welsh collier used to live on good home-grown produce, with milk, eggs, and cheese . . . [italics mine]. To-day ill-feeding tinned foods are the chief features of the household board in a large number of homes, and it is from these homes that the army of nystagmus patients is recruited."

Investigations of the diet of miners in this area show that with the improvement in housing conditions, giving most miners a garden of their own, in which they are keenly interested and proficient, the supply of vitamin A (or its precursor) from green vegetables, carrots, etc., is in the summer months plentiful, but in the winter months, when this home-grown source is at a minimum, the intake of vitamin A is greatly reduced. It is just at this time also that the seasonal variation in the vitamin A value of dairy produce manifests itself. As stated in *The Vitamins* (Crookes Laboratories), "the vitamin A value of milk, butter, and eggs tends to be at its lowest in the early part of the year." Further, when the intake of vitamin A is at its lowest the demand for it, in the interest of vision, is at its highest, for the miner in the dark winter months has a greater need for dark adaptation apart from the time actually spent below ground.

It is interesting to note that many observers have found miners' nystagmus to be more prevalent in the dark winter months. The following table, from the First Report of the

Miners' Nystagmus Committee, supports this view. For the last entry I am indebted to Mr. W. E. Gillhespy. I have converted the numbers into percentages.

Cases Arranged according to the Quarter of the Year in which Failure Took Place

	No. of Cases	1st	2nd	3rd	4th
Dransart and Famechon ..	201	33.33%	17.91%	17.41%	31.34%
Olum ..	521	30.51%	26.29%	20.34%	22.64%
Llewellyn ..	1,649	34.26%	18.79%	22.61%	24.36%
Yorkshire Coal Owners' Indemnity Society (1930-9 inclusive)	1,647	30.44%	26.06%	22.19%	21.24%

These figures in each case show that more failures occur in the first quarter of the year.

Deficient Illumination the Essential Factor

It is now generally recognized that the chief factor in miners' nystagmus is deficient illumination, and that "during all the years when the miner is working at the coal face his macular vision is in more or less complete abeyance" (Departmental Committee's Report on the Workmen's Compensation Acts, 1938). This means that vision is mediated by the rod elements of the retinal periphery, calling for an adequate secretion of visual purple, which, in turn, demands an adequate blood supply of vitamin A.

The following experiment was carried out with the use of Crookes's dark-adaptation tester (for description of tester see *Trans. ophthalm. Soc.*, 1938, 58, 103). Three people living on an ordinary mixed diet were tested and an average curve taken. This was accepted as the normal for the instrument used. Ten miners, all working, were selected at random apart from being of a "nystagmus age." The average age for the group was 38, and the average number of years worked underground 23. An average curve was plotted for this group. Three were selected from this group, one of whom, it was noted, had oscillations in daylight, at the horizontal level, before exercises. These were put on intensive vitamin A treatment until each was able to see the arrow at the lowest finger-post position used. An average curve was then plotted for this group. (See Graph. At finger-post position 30 and 10, in Curve B, two and five

0.047, 0.028, 0.0093, 0.0047 millifoot candle respectively. The results are shown in the following table:

Table showing Results of Dark-adaptation Tests (Time in Minutes)

Case	Age	Occupation	Finger-post Position									
			Neutral Glass					Dark Glass				
			75	50	30	10	5	30	10	5		
3 Normals:												
A	38	Housewife	3.25	5.45	7.40	9.40	13.50	14.20	16.20	17.35		
B	16	Clerk	3.35	6	6.15	9.25	11.20	13.20	14.55	18.20		
C	31	School teacher	2.55	3.45	3.57	4.18	6.10	6.50	10.30	24.25		
10 Colliers:												
1	35	Collier	9.15	9.30	12.10	13.55	24.30	27.20	—	—		
2	36	"	7.55	9.05	9.30	12.40	35.10	36.30	—	—		
3	36	Onsetter	8.35	8.55	10.10	12.10	14.59	15.55	23.15	—		
4	43	Shot-firer	8.02	10.05	10.40	12.55	18.10	19.40	30.35	—		
5	30	Loader	5.55	7.30	8.35	9.35	17.29	—	—	—		
6	61	Packer	13.25	13.55	14.20	19.30	30.10	—	—	—		
7	36	Trammer	4.28	5.10	6.50	8.45	11.55	12.20	21.10	—		
8	42	Haulier	6.30	8	8.25	10.25	12.55	13.45	39.30	—		
9	29	Collier	5.45	6.55	8.35	10.55	15.25	16.30	34.55	—		
10	40	"	7.05	7.40	8.25	12.50	15.10	16.15	—	—		
3 Colliers after Treatment:												
1	35	Collier	3.70	5.02	5.32	7.10	15.10	16.10	20.20	27.10		
2	36	"	5.30	7.10	7.45	11.10	13.05	17.20	20.50	35.50		
9	29	"	3.15	4.10	5.30	9.20	11.50	12.25	15.30	33.10		
Average for 3 Normals			3.18	5.10	5.57	7.47	10.16	11.30	13.55	20.06		
" 10 Colliers			7.47	8.41	9.41	12.17	19.35	23.49	34.55	—		
" 3 Colliers after treatment			4.05	5.27	6.15	9.13	13.06	15.18	18.53	34.43		

The average results are shown in the graph.

Cases A and B each had for two days before the test 4 capsules vitamin A (oral) a day. Case C neither had, nor was taking, any vitamin preparation.

The times marked * signify that the arrow was not seen up to 40 minutes. To estimate an average time, the dark glass being used and the finger-post at 30 and 10, those failing to see the arrow after 40 minutes were counted as having seen it at 40 minutes. The last two average figures given should therefore be greater than shown.

Case 9 results were given after taking 6 capsules vitamin A (oral) Crookes a day for seven days. Case 2 results after 3 capsules a day for three days followed by 6 capsules a day for a further nine days. Case 1 readings were given after 6 capsules a day for 27 days. He was examined weekly, and, as mentioned, had the oscillations of miners' nystagmus in daylight, at the horizontal level, before exercises.

These observations show that in the group of miners selected a deficiency of vitamin A, as demonstrable by the dark-adaptation test, was present, and by the administration of vitamin A over a limited period the power of dark adaptation was considerably improved.

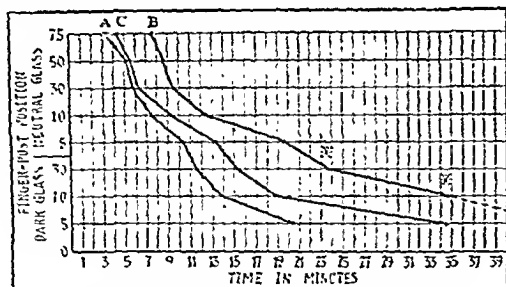
As the miner depends for his working vision, and safety, on his retina periphery, and must continually adapt to low illuminations and sudden changes in light intensity, it seems desirable that he should receive an optimum supply of vitamin A. This need is further enhanced, in my opinion, by the peculiar tendency of the collier to develop miners' nystagmus.

I am indebted to Dr. Edith Hatherley for her useful advice, and to Crookes Laboratories for the use of dark-adaptation tester.

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S. Wolff (*Ann. Pediatr.*, 1941, 4, 155) records an epidemic of streptococcal disease, apparently unparalleled in the literature, which occurred in the Children's Hospital at Eisenach. Of eight children affected two died. All the patients fell ill on the same day (September 26, 1935) and almost at the same hour. Seven started with a throat infection. The course was identical, especially as regards the temperature. Sulphanilamide was very effective except in the two fatal cases. The cause of the outbreak could not be discovered.



Graph showing results of dark-adaptation tests.

Curve A = Average 3 normals.

Curve B = Average 10 colliers.

Curve C = Average 3 colliers after additional vitamin A.

colliers respectively were unable to see the arrow after 40 minutes. To arrive at an average time for the ten, these were included as having seen the arrow at 40 minutes, so that, properly, this curve should go further to the right.)

The same technique was followed in each case: half an hour seated in the dark, four minutes "bleaching," and up to 40 minutes' examination. All the tests were done in January or February of this year, and between 8 and 10.30 p.m. The finger-post positions used were: light neutral glass, 75, 50, 30, 10, 5; dark glass, 30, 10, 5—corresponding to an intensity of illumination of 0.7, 0.47, 0.28, 0.093,

Medical Memoranda

Encephalomyelitis in a Case of Pink Disease

Although the symptoms and signs of pink disease are well known the cause is not yet established. Rocaz, however (*Pink Disease*, 1933, p. 129, supports the idea of an encephalitis due to a neurotropic virus. When it is considered that outbreaks of the disease take the form of individual cases scattered through any one area, the disease certainly does resemble poliomyelitis and polio-encephalitis in some respects. There is, however, little evidence of direct transmission from one child to another, and it is not usual for two members of a family to be affected. Another curious point to note is that the outbreaks are often limited to industrial areas, and occur among the children of the artisan class, although there is no observable relation to poverty. It is notable, too, that the disease only affects young children. The following case is interesting in that the necropsy supports the idea that an encephalomyelitic lesion was the cause of the symptoms and signs.

CASE REPORT

A child aged 1 year, one of a family of seven children, came from an industrial area; the father was a meter collector earning £2 18s. a week. The child had had infantile eczema for six months, and had been losing weight for the past fortnight. He had been breast-fed, but weaned on to cows' milk, gravy, potatoes, milk puddings, etc. Had been suffering from diarrhoea for two weeks, with green foul-smelling stools. Had a cough for a week; no vomiting. Also suffering from insomnia, and profuse sweating especially in the head region.

Condition on Admission.—The child was somewhat dehydrated, and showed great hypotonia of the muscles, with flaccidity and wasting. There was a rash, typical of pink disease, on the trunk, face, and legs. The child was irritable, scratching and rubbing the affected areas continually. The hands and feet were cold, pink, and shining. There was some desquamation. The general appearance suggested a case of pink disease of considerable severity and duration. Chest: poor resonance at both bases, with fine rales. Tongue furred. Abdomen retracted.

The illness ran through five weeks, with extreme asthenia and insomnia. Later the case gave a clinical picture of pink disease of a very severe type. Death took place from general debility and cardiac failure.

Post-mortem Examination.—Dr. William Susman reported as follows: Body extremely emaciated. Pericardium: complete absence of fat; is of a greyish colour due to toxins. Heart: myocardium, rather pale but firm; tricuspid valve, 1 finger; pulmonary valve, healthy; mitral valve, 1 finger, healthy; aortic valve, healthy. Right lung: posterior aspect of upper and lower lobe shows appreciable amount of haemorrhage. Left lung: posterior aspect of lower lobe has peripheral zone of haemorrhage about 2 cm. in depth which extends the whole length of the lobe. Microscopically a confluent bronchopneumonia. Air passages: some frothy mucus present. Alimentary passages: oesophagus, nothing abnormal; stomach, passive congestion; small intestine, nine agonal intussusceptions; large intestine, nothing abnormal. Liver, intense passive congestion. Gall-bladder healthy. Common bile duct patent. Pancreas congested. Spleen, nothing abnormal. Thyroid atrophied. Thymus very atrophic. Adrenals healthy. Right kidney and left kidney, fairly pronounced degree of passive congestion. Pia arachnoid acutely congested. Brain: grey matter throughout is acutely congested; in the basal nuclei the red appearance has a greyish mottled background; the grey matter of the pons and medulla is also acutely congested; the appearances are those of an acute encephalomyelitis.

The microscopical report was as follows: Abdominal sympathetic chains: there is some recent degeneration in the ganglion cells and in some nerves; surrounding muscle tissue that has been included in the section shows some scattered foci of subacute myositis. Cerebrum: there is a most intense and generalized acute congestion associated with a widely disseminated acute encephalomyelitis. The lesions are most pro-

nounced in the basal ganglia. The perivascular region of many arteries shows sclerosis and in some a pronounced degree of fibrosis. The cerebellum, pons, medulla, and spinal cord are similarly affected but to a lesser degree. Many nerves show parenchymatous degeneration.

COMMENT

The presence of a severe encephalomyelitis of a standing which corresponds to the duration of the illness due to pink disease is important as indicating the likelihood of a virus infection. The history of a gastro-intestinal infection is noteworthy, and in my experience is not uncommon.

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An Unusual Sequel to Blood Transfusion

The following case, in which attacks of insanity followed blood transfusions, may be considered worth recording.

CASE HISTORY

A married woman aged 41, in extremis with extensive carcinoma of the cervix, was admitted to hospital for radium treatment under Mr. Ellis, by whose permission the case is submitted. Her subsequent pulse rate varied between 90 and 125, respirations between 24 and 31, and temperature between 98° and 102°, remaining normal for the whole week before her death from massive collapse of the lungs. Pyuria was present throughout. Sulphanilamide and iron were administered intermittently. Blood examination on admission—Group O (IV)—showed 22% haemoglobin, 1,800,000 red cells, 16,000 white cells, colour index 0.61, with anisocytosis and poikilocytosis. The blood urea was 43 mg. per 100 c.cm. Three days after admission she received by drip two pints of citrated Group O blood (one day old), with about half a pint of saline, over six hours. Her condition afterwards was good and no rigor occurred. During the next week abdominal discomfort became more pronounced, and a kaolin poultice was applied. The haemoglobin four days after transfusion was 42%. A projected cervical diathermy was abandoned ten days after transfusion on account of her poor condition. Sixteen days after the transfusion radium was inserted into the growth under evipan and omnopon anaesthesia. During the next fortnight her haemoglobin fell from 30% to 18%; her condition was then very bad and vomiting was frequent. A second blood transfusion, similar to the first, though the blood was a few days older, was then given. There was no rigor and she had a good night. Next evening the nursing staff, who had found her a most quiet and reasonable patient, without any sign of mental derangement, noted "strangeness in her manner." She was in a confused and restless state for the next three days, talking nonsense, trying to get out of bed and, at one time, remaining in a sitting posture, with arms katatonically extended before her, for half an hour. Her temperature at this time lay between 99° and 100°. She became mentally normal again within a week of this second transfusion and remained so till a third transfusion of three pints of citrated blood was given a fortnight later. A sharp rigor followed this transfusion, and she showed slight jaundice later, but had a good night. Next day she was again insane, and continued in a noisy delusional state (alleging, for instance, that she had swallowed several sets of dentures) for four days, after which she became and remained mentally normal till her death one month later. Necropsy revealed no cerebral abnormality. An organizing fibrinous general peritonitis was present, the fibrin being particularly thick on the under surface of the diaphragm. The pelvic contents were bound into a solid mass of inflammatory and carcinomatous tissue. No metastases more distant than the glands at the aortic bifurcation were found. There was unilateral hydronephrosis due to a nodule of growth in the right ureter. The blood urea post mortem was 69 mg. per 100 c.cm.

The most likely explanation of the two sudden and temporary attacks of madness, following blood transfusions, appears to be in terms of delirium due to low-grade peritonitis. But the precipitating effect of the transfusions in a patient at all other times mentally normal was regarded as a (perhaps) previously unrecorded phenomenon.

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Reviews

HOSPITAL DEFICITS

The Hospitals Year-Book, 1941. Central Bureau of Hospital Information, 12, Grosvenor Crescent, S.W.1.

Hospitals, so prompt in doing their work, seem to be extraordinarily tardy in reporting on it. Thus the *Hospitals Year-Book, 1941*, which appears in September of that year, embodies the statistics of hospitals only up to the end of 1939, and even for that year they are incomplete. Of the 750 voluntary hospitals in England and Wales outside London only just over 600 have sent in returns in the form requested by the Central Bureau of Hospital Information, and of the 124 hospitals in Scotland only 75 have done so. In a number of cases the difficulty is explained by the fact that, in spite of repeated appeals, the hospitals have neglected to base their accounts on the calendar year. However it arises it is a great pity, because it leaves the picture of the service and of the financial position of the voluntary hospitals unfinished. In London the hospital secretaries are more co-operative, and of the 158 voluntary hospitals all but five have made the necessary returns. These show that the number of new in-patients in 1939 was 240,622, and of new out-patients just upon 1,700,000. The financial position in London is not, on the face of it, very satisfactory. The total receipts, lumping together capital and maintenance accounts, amounted to £5,366,462, but the expenditure was more than half a million more. In the Provinces the receipts and expenditure more nearly balanced, and in Scotland there was a surplus of over a quarter of a million. If capital costs be disregarded, however, the position is much better, with a small surplus on maintenance in London, as against a deficit the year before, and quite handsomely increased surpluses in the rest of Great Britain. There is a remarkable steadiness in the way in which hospitals are supported by voluntary gifts; but expenditure increases at a greater rate than income, and the recurring deficiency in the working of some of the metropolitan hospitals is becoming a serious problem, the more so when the heavy war taxation is contemplated, a factor which hardly makes itself felt in the figures for 1939. Of the London teaching hospitals nine showed surpluses in the year under review, but two others—the Royal Free and Westminster—had deficits of £22,000 and £21,000 respectively; the Royal Northern had a deficit of £23,000, and Queen Mary's of £10,000; while in the Provinces the Queen Elizabeth Hospital, Birmingham, had a deficit of £34,575, and the Royal Berkshire Hospital, Reading, one of £10,400. All these deficits were on maintenance account. Rather more than half of the hospitals of London show deficits, just over one-third of the hospitals in the Provinces, and one-fifth of the hospitals in Scotland.

Lord Plender, who writes the financial review this year in place of Sir Charles Harris, says that a partial remedy for this serious state of affairs may be found in regional controlling organizations, which in his view not only should be advisory but should have power in cases of proved need to exercise a measure of control over expenditure. He adds that this method might not be acceptable to many hospitals, in which case the local authorities should be requested to assist out of the rates. Even such measures might not prove adequate in the existing and post-war situation, and it may become necessary for the State to make grants in aid, as is clearly foreshadowed in the recent statement by the Minister of Health on Government post-war hospital policy. Lord Plender believes that the system of regional councils and a central council, now being promoted by the Nuffield Provincial Hospitals Trust on the recommendation of the

Sankey report, will help to solve the difficulties, and this is a view held in many responsible quarters.

The *Year-Book*, which contains the usual directory, is as useful as ever and more exciting than before, for it includes vivid illustrated accounts of the bombing of St. Thomas's Hospital and the Coventry and Warwickshire Hospital. Lord Horler contributes a short article on shelter hygiene, and Sir Alfred Webb-Johnson, P.R.C.S., one on the role of auxiliary hospitals and convalescent homes in wartime.

PRICE'S MEDICINE

A Textbook of the Practice of Medicine. By Various Authors Edited by Frederick W. Price, M.D., F.R.C.P. Sixth edition. Oxford Medical Publications. (Pp. 2,032. 35s. net.) London: Oxford University Press. 1941.

It is a great achievement, for which editor, contributors, and publishers must be congratulated, that *A Textbook of the Practice of Medicine*, by various authors and edited by Dr. F. W. Price, should have appeared in its sixth edition despite the trials and tempests of the past two years. Four new contributors have joined the team and three of the original writers of sections have died since the last edition. Much fresh matter has been introduced, and there are evidences of much rewriting of sections. A valuable innovation concerns a standard plan for the names of drugs (in which Mr. H. Davis, Ph.D., has collaborated). English names (*B.P.* 1932 or one of the Addenda, or the *B.P.C.*) have been used throughout, and on the first occasion on which the official name is mentioned in a section on the treatment of any particular disease this is followed by the name in the *U.S. Pharmacopoeia*, and then, in brackets, the names of the most widely known proprietary preparations of corresponding composition. There are twelve new illustrations, all concerned with electrocardiography, but the general size of the book remains the same. Monographs appearing for the first time include such subjects as pink disease, rupture of the intervertebral disk, and the heart in hypothyroidism. The haemorrhagic diseases have been reclassified, and there are other rearrangements and some new features in nomenclature. Altogether this is a worthy product of the London school of medicine—a most valuable textbook, and fully deserving of a wide sale.

UROLOGY

Office Urology. With a Section on Cystoscopy. By P. S. Pelouze, M.D., Assistant Professor of Urology, University of Pennsylvania. (Pp. 765; 424 figures; 1 plate. 50s. net.) Philadelphia and London: W. B. Saunders Company. 1940.

This is an excellent book on diagnostic and medical urology, especially suited to senior students, general practitioners, and such urologists as are too prone to think almost exclusively in terms of surgery. The illustrations and print are admirable, but the book is rather heavy to handle.

Professor Pelouze's pages are packed with sanity, humour, and tolerance for misplaced enthusiasm. Gentleness is persistently praised: "It is better to be a physician who does not cause shreds than one who tries to clear them up." Healthy scepticism is shown in saying that "the idea that one can tell safely from the size and shape of a shred just what part of the canal it came from is much like the old dream that one could tell from the microscopic study of urinary cells exactly in which section of mucous membrane they originated." Most diagnoses of necrospemia, we are told, are erroneous, and neglect the fact that "individuals who have not had an emission of semen for two weeks or longer commonly show no sperm motility." Among minor errors one may note "Pezzar" instead of *de Pezzar* (pp. 17 and 42-4), "Harry" instead of *Hurry Fenwick* (p. 155), "Thomas Walker" for *Thomson-Walker* (p. 175), and "diverticuli" for *diverticula* (p. 386). In Fig. 324 surely the prostatic lobe shown is the left, not the right.

The author is rather fond of "obtunded" for blunted. In Fig. 85, showing a smear from "non-gonococcal urethritis," we are told that the Gram-negative diplococci present (many of which are intracellular) are much larger than gonococci; but with such suspicious appearances one would presumably not exclude gonorrhoea merely by slight variation in size. One may not agree with the statements that the upper pole of the epididymis is the one most commonly affected by tuberculosis; that vesical papilloma rarely causes bleeding until the villi are long enough to be caught in the bladder sphincter; that in intravenous urography a compressing abdominal air cushion should be used; or that there are bladder stones too dense to be crushed.

Prostatectomists should remember that factors in increased frequency of micturition in the elderly may be loss of bladder elasticity, flabbiness of abdominal muscles, diminution of renal ability to concentrate urine, and also prostatophobia. Of rejuvenation methods the author says: "Drawing the line between what is true sex invigoration and what is psychologic sex stimulation in one who simply feels better is beyond the possibility of science." The part played by imagination in urethroscopy, and the ability of the instrument to produce many of the appearances seen, are emphasized. Finally, the reader is wisely advised not "to think of patients solely as urogenital systems around which God has draped a few other functioning structures." But it is impossible briefly to do justice to this challenging volume, which contains valuable chapters on the psychic factors of urogenital symptoms, on the sexual problem, and on cystoscopy and roentgenography, and which should be read by all interested in urology.

Notes on Books

A monograph by Dr. TORFINN DENSTAD on the Importance of Radiological Investigation in Cardiology, with Special Reference to the Significance of Cardiac Enlargement, is published as a supplement (No. XL) to *Acta Radiologica* (Stockholm, Sw. cr. 8). In this the author stresses the value of radiology in estimating the degree of cardiac enlargement in heart failure and, hence, as an aid to prognosis. Radiological investigation is of special importance in cases in which progressive cardiac enlargement is not accompanied by a corresponding deterioration in the clinical picture. In general, the author regards radiology as of more significance than electrocardiography, with the obvious exception of infarction. In hypertension, he says, the size of the heart and the symptoms are of more prognostic importance than the height of the blood pressure. Mitral defects, acute rheumatic carditis, chronic pericarditis, aortic aneurysm, thyrotoxicosis, and auricular fibrillation are among the other conditions which are dealt with from the radiological aspect.

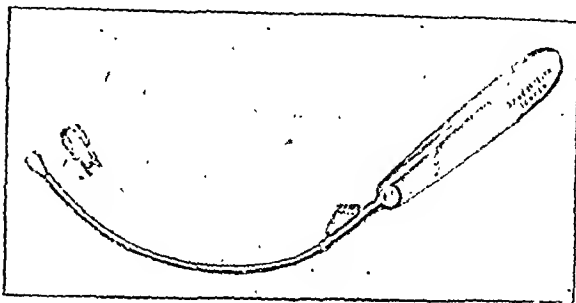
Sokol: The Czechoslovak National Gymnastic Organization, by F. A. TOUFAR, is published at 6d. by George Allen and Unwin. The wonderful Sokol movement was founded and grew during the years of national rebirth and development and became closely associated with modern Czechoslovak culture. Though a non-political organization, it had, because of its democratic and progressive activities, come to play an important part in the political life of the nation. It was a national movement which included men, women, and children, and its object was to harden them physically and to train them in self-control, voluntary discipline, and moral firmness. Largely due to Sokol, its splendid organization, its ideology, and its results, the Czechoslovak nation became known abroad under its own name. This booklet gives a concise and clear statement of the whole movement. The immensely improved standard of physical fitness in our Forces which has followed the introduction of physical training shows the potential benefits we could gain by a nation-wide adoption of Sokol. It stands for individual, local, and national happiness.

Preparations and Appliances

TWO-MINUTE SUPRAPUBIC CYSTOTOMY

Dr. GRAHAM HUMBY writes from the Hospital for Sick Children, Great Ormond Street:

The classic operation for suprapubic cystotomy seems rather elaborate for such a common procedure, and so a simple "grab" bougie has been designed to complete the operation in two minutes.

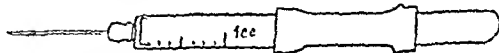


The bougie is passed into the bladder and pressed against the abdominal wall just above the pubis—there is no need to fill the bladder with water; the jaws are then opened and the tissues overlying the gap in the jaws are incised (1/2-in. incision). This allows the jaws to protrude through the abdominal wall: the de Pezzer is then clamped by the jaws and pulled back into the bladder: the jaws are loosened and the bougie withdrawn from the urethra. No stitches are necessary.

AN EASILY MADE VEIN-SEEKER

Captain W. NORMAN TAYLOR, M.B., B.S., D.A., R.A.M.C. writes:

In these days of prolonged intravenous work, drip transfusions, continuous hexobarbitone anaesthesia, and the like, the usefulness of a vein-seeker is becoming more and more apparent. One can easily be made from the following: (1) the barrel of a 1 c.cm. syringe, preferably all-glass to facilitate boiling; (2) a short length of soft rubber tubing of suitable size to fit over the syringe; and (3) a small serological test tube



about the same size as the syringe. The diagram shows the three parts fitted together, and with an intravenous needle attached.

Sterilization can be done by boiling or immersing the parts separately in an antiseptic solution, followed by a rinse in sterile saline. For use the apparatus is filled with sterile normal saline or citrate solution. The simplest method is to draw the saline from a rubber-capped bottle—for example, an old "novutox" bottle—which is held upside down, so that the needle of the vein-seeker points upwards. In this way air bubbles will not get into the apparatus.

When full of saline or citrate the central rubber portion of the apparatus is squeezed and the needle inserted under the skin over the vein. Then on releasing the rubber a negative pressure is created. The needle is then inserted into the vein: the blood automatically flowing back into the syringe. The needle should be pushed along the lumen of the vein for a short way to make sure it is well in. (This type of vein-seeker can be firmly fixed by strapping over the syringe and over the serological tube.) The injection or transfusion is then made into the rubber portion, which thus forms an artificial vein readily accessible. A fresh piece of rubber tubing should be used for each operation, otherwise it may leak through previous puncture holes.

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THE SPRUE SYNDROME

Many diseases (amoebiasis and undulant fever, for example) formerly thought to be confined to the Tropics are now found in Northern countries, and it seems probable that sprue, which for over half a century has been regarded as a typical product of the Tropics, may also have a much wider distribution. In its geographical range tropical sprue is mainly found in the Far East—India, China, Malaya, Ceylon—and to a lesser extent in South America and the southern States of the U.S.A., but is rare in Central Africa. Europeans, especially those long resident, are particularly liable to attack, without predilection for sex. Sprue begins mostly in the middle decades of life, small children being free from the disease. It is characterized by glossitis, stomatitis, steatorrhoea, meteorism, emaciation, and a steadily progressing anaemia of the pernicious type. Biochemical studies point to a general breakdown of digestion and assimilation; there is therefore failure to absorb fats, sugar, and calcium, while the hydrochloric acid and pepsin of the gastric juice are diminished and often, as in pernicious anaemia, absent altogether, and the intrinsic factor is missing (Castle and Townsend). There are two facts about sprue which especially confuse the issue of its aetiology. The first is its remarkable latency, for it may declare itself in a former denizen of an endemic area twenty-five years or even longer after return to a temperate zone; the second is its liability to relapse after many years of freedom from symptoms.

During the last fifty years theories as numerous as the remedies advocated have been advanced as to the origin of sprue, implicating diet, worms (*Strongyloides stercoralis*), yeast infection (*Monilia psilosis*), "dry rot" in houses (a very popular theory in Ceylon), and the faeces of termite ants (Jepson). As to the pathology of the disease, many of the changes in the epithelium of the small intestine formerly considered specific are ascribed to agonal and post-mortem changes so liable to occur in tropical countries. No readily ascertainable pathological changes* are demonstrable in the intestinal tract, but on microscopical examination there is usually evidence of chronic inflammation. The

essential lesion appears to reside in the ileum, which is generally much distended with gas, the walls being atrophic and diaphanous. The absence of a distinctive pathological picture brings sprue into line with idiopathic steatorrhoea, pernicious anaemia, and pellagra, with which it has many clinical features in common. But the sprue syndrome can be mimicked by other dissimilar processes involving the ileum and interfering with its normal functions: such are mesenteric tuberculosis, lymphadenoma, ulceration, malignant disease, gastro-jejuno-colic fistula, or a badly functioning gastro-jejunostomy. In fact, whenever a state of "chronic jejuno-ileal insufficiency" is brought about the clinical and biochemical features of tropical sprue are reproduced (Bennett and Hardwick). This applies not only to tropical sprue but to coeliac disease in children and idiopathic steatorrhoea in adults. Since 1932 the possibility of a disease identical with tropical sprue but distinct from idiopathic steatorrhoea (with bone changes and deficiency of vitamins D and K) has been discussed by Hess Thaysen⁷ in Denmark and in Northern Europe. He claimed that non-tropical and tropical sprue were identical as they had the same pathology and were amenable to the same lines of treatment. This conception is not hard to entertain if it is accepted that the sprue syndrome results from damage to the villi of the small intestine, and this has been confirmed by Markoff,⁸ who has reported the supervention of sprue in a patient in Switzerland from whom 1.5 metres of the ileum had been removed surgically.

Pellagra presents a medical conundrum which may be taken as an analogue of sprue. As is well known, this is a comparatively common disease of tropical and subtropical countries in rural inhabitants subsisting upon an unbalanced dietary deficient in protein, and it is curable by nicotinic acid. In many features pellagra resembles sprue in the association of glossitis and stomatitis, frequent diarrhoea with occasional steatorrhoea, achlorhydria, and sometimes with anaemia of the pernicious type. In its geographical distribution pellagra frequently overlaps sprue. Thus Wood⁹ showed that pellagra and sprue are closely associated in the southern States of the U.S.A., and other observers (Manning¹⁰) have described a mixture of sprue and pellagra in the West Indies—as *Psilosis pigmentosa*, while it is certain now that the pellagra syndrome (with characteristic dermatitis) may be grafted upon sprue as also upon coeliac disease and idiopathic steatorrhoea.¹¹ In pellagra mouth symptoms may long precede the fully developed disease, and these cases have been termed "larval pellagra" or "prepellagra." In a substantial number the fully developed picture of pellagra may never ensue, though equally amenable to nicotinic acid

* Amer. J. med. Sci., 1929, 178, 764.

¹ Arch. M'ed. nat., 1877, 27, 35.

² Amer. J. trop. Dis., 1913, 1, 146.

³ Ceylon J. Sci., 1931, Section D, 3, 3.

⁴ A Report on Researches on Sprue in Ceylon. By P. H. Bahr. Cambridge, 1915.

⁵ Ind. J. med. Res., 1929, 18, 799; Trans. roy. Soc. trop. Med. Hyg., 1934, 27, 340.

⁶ Trop. Dis. Bul., 1941, 38, 123.

⁷ Lancet, 1940, 2, 381.

⁸ Non-Tropical Sprue. By T. E. H. Thaysen. Copenhagen: Levin and Munksgaard, London, 1932.

⁹ Schweiz. med. Wschr., 1940, 70, 1137.

¹⁰ Amer. J. med. Sci., 1925, 169, 28.

¹¹ Trans. nat. Conf. Pellagra. S. Carolina Bd. H'th., Columbia, 1909.

¹² Dysenteric Disorders. By P. H. Manson-Bahr. Cassell and Co., 1939, p. 366.

already reported.⁴ In a further paper,⁵ however, on six patients with polycythaemia rubra vera, it is shown that the haemoglobin content and the red and white blood cell counts are brought nearly to normal levels after amounts of P^{32} varying from 12 to 50 mc. Very marked clinical and symptomatic improvement accompanied the haematological changes, and periods of remission up to a year are recorded. The retention of P^{32} in the red blood corpuscles is the same in the polycythaemic patients as in normal individuals, and it is its concentration in the bone marrow which produces the favourable clinical results. The increased amount of spongy bone in the patients would account for the finding that the quantity of P^{32} excreted by them in the urine and faeces is much less than in normal individuals; here the report⁶ of a case of polycythaemia in which marked thickening of the skull occurred over a period of six years is of interest. Since radiophosphorus has never produced nausea, vomiting, or any clinical ill effects after its administration, this form of therapy would seem to be the most acceptable for polycythaemic patients at the present time.

BOVINE TUBERCULOSIS IN AUSTRALIA

With the object of ascertaining the present frequency of tuberculosis of bovine origin in Australia, R. Webster¹ has typed tubercle bacilli cultivated from 370 miscellaneous specimens sent to the Commonwealth Health Laboratories in Melbourne for diagnosis. Although pulmonary tuberculosis may occasionally be due to the bovine type of tubercle bacillus, sputum was excluded from this investigation in order to concentrate it on those forms of the disease which are known to be more often of bovine origin. Among the 306 patients from whom the cultures were obtained 183 were adults, and in all of them, whatever the site of infection, the organism was of human type. Among 123 children there were only 11 with infections due to the bovine type: in one of these patients it was recovered from both a bronchial and a mesenteric gland; the remaining 10 were all examples of cervical adenitis. Tuberculous meningitis, of which there were 57 cases in children and 8 in adults, was invariably due to bacilli of the human type, as were tuberculosis of the urinary tract (17 cases in children and 117 in adults) and bone-and-joint tuberculosis (20 cases in children and 45 in adults). It is apparently a general belief in Australia, derived no doubt from the data of A. S. Griffith and others obtained in England and Scotland, that tuberculosis of bones and joints, especially in children, is not uncommonly due to the bovine type of bacillus. This is evidently untrue of Australia at the present day; indeed, in this large series there is not a single example of any form of tuberculosis other than glandular in which a bovine bacillus was found. Not only is bovine infection restricted to this form, but its frequency among all cases of tuberculosis in childhood has fallen from 25.9%—as determined by a similar survey made by Webster in 1932—to 8.9% in the present series. The reason for this happy state of affairs is not far to seek. In 1930-1 some 3,000 cattle in ninety herds supplying the Melbourne area were tuberculin-tested, and 7.4% reacted. Since then the number of cows so tested has steadily increased, and in 1939-40 the number was over 28,000 in 727 herds; among these the percentage of reactors was only 2.8. During the same time pasteurization has become more common and more efficient. Webster concludes that tuberculosis of bovine origin is susceptible of total eradication; if progress on recent lines is maintained in the State of Victoria, to which these data mainly

relate, this end should be achieved. There are unfortunately no reasons for supposing that any such rapid progress is being made in this country, but the time has perhaps come when a further survey on similar lines to Webster's is needed to reveal the true position. Our data of type distribution are largely those compiled by A. S. Griffith anything up to twenty years or more ago, and it would be interesting to know whether the proportion of bovine infections in different sites and at different ages is still about the same, or whether perhaps the frequency of bovine infection in meningitis and in tuberculosis in bones and joints is diminishing. Methods of cultivating tubercle bacilli have now been so vastly improved that their isolation, and differentiation by cultural characters when this is possible, are within the powers of many laboratories, and there seems to be no reason, except the present shortage of eggs for making the necessary media, why cultivation should not become a routine procedure.

ACUTE LARYNGITIS AND H. INFLUENZAE

So much has the influenza bacillus been overshadowed by viruses in the aetiology of epidemic influenza that it is sometimes forgotten that *Haemophilus influenzae*, or at least certain of its strains, really are pathogenic to man. Most of the strains of *H. influenzae* isolated from the nasopharynx possess no capsule, but in 1931 Pittman¹ was able to show that certain strains do have a capsule containing a soluble substance which reacts with the homologous immune serum. On the basis of this reaction six serological types of *H. influenzae* (A to F) have been described. Of the organisms recovered in cases of influenzal meningitis 92 to 95% are said to have been of Type B. Recovery of an organism of this type from sources other than the meninges has been somewhat unusual. Sinclair,² however, now describes the isolation of Type B organisms from a series of cases of acute laryngitis associated with bacteraemia. Altogether there were ten instances in which *H. influenzae* Type B was isolated in cultures of the blood taken from patients desperately ill with acute laryngitis. Special interest attaches to the fact that eight of the cases occurred within a period of fifteen months from January 1, 1940, whereas the other two cases were the only ones observed during the seven preceding years. In three of the cases *H. influenzae* Type B was also isolated from the nose or throat, while in six other patients influenza bacilli were isolated from the nose, but no attempt was made to type the organisms. Incidentally, Alexander and his colleagues³ have now introduced a method by which these organisms can be identified from the nasopharyngeal mucus within thirty minutes. Acute influenzal laryngitis in children is a very serious disease characterized by a history of severe sore throat, laryngitis, fever up to 104° F., and a leucocytosis in one case up to 44,300 cells per c.mm., the polymorphonuclear leucocytes being greatly increased. Three patients died within eighteen hours of the onset of severe symptoms and a fourth within forty-eight hours. The six cases that recovered all received sulphanilamide, sulphapyridine, or sulphathiazole, but the number was too small for any conclusion to be drawn regarding the relative efficacy of these compounds. The patients who recovered showed little change for forty-eight hours except for the relief of respiratory distress: then improvement was rapid and recovery complete within a week. No influenzal virus could be isolated from these patients. It would seem that this form of laryngitis has in the past been comparatively rare, though the same syndrome, associated with a bacteri-

¹ *Radiology*, 1940, 35, 51.

² *Ann. Intern. Med.*, 1941, 15, 276.

³ *Amer. J. Dis. Child.*, 1941, 62, 907.

Med. J. Austral., July 19, 1941, p. 42.

¹ *J. exp. Med.*, 1931, 53, 471.

² *J. Amer. med. Ass.*, 1941, 117, 170.

³ *J. Pediat.*, 1941, 18, 31.

aemia due to *H. influenzae*, was described in France in 1936 by Le Meirre, Meyer, and Laplane.⁴ Now that attention has been drawn to it acute influenzal laryngitis may prove to be more common than was supposed.

HEPARIN IN CAVERNOUS SINUS THROMBOSIS

Cases of thrombosis of the cavernous sinus may be divided into two groups—a posterior otogenic group in which the thrombosis extends into the cavernous sinus from the petrosal sinuses, infection thus reaching its posterior end; and an anterior group in which the primary focus is situated in the accessory sinuses, the eye, or the skin of the face, the infection reaching the cavernous sinus at its anterior extremity. In the first group the infection is almost invariably streptococcal; in the second it may be streptococcal, but if it arises in a furuncle on the nose or lip it is likely to be caused by the *Staphylococcus aureus*. Although there are reports of a few recoveries, in which it may be assumed that the clot in the cavernous sinus itself remained aseptic, in general the prognosis is almost hopeless. Surgical treatment has proved of little avail, whether the cavernous sinus be approached from behind by the temporal route for reaching the Gasserian ganglion in the aural cases, or by the orbit in the anterior group.⁵ Eagleton⁶ planned to put the cavernous sinus at rest by ligation of the internal carotid, but he soon abandoned this as no good came of it, and until the introduction of the sulphonamide drugs no further progress was made. The posterior otogenic type, which sometimes progresses with fulminating rapidity, is rare. It is in the less uncommon anterior type originating in a staphylococcal infection of the skin that two helpful observations have now been reported by Champ Lyons.⁷ It is necessary not only to control the blood infection by chemotherapy, for which sulphathiazole is required as these infections are staphylococcal, but also to prevent extension of the thrombosis, for which purpose heparin is now available. By using these two remedies Hoople and Blaisdell⁸ have been able to report a case of recovery in a woman of 22, a previous case in a boy of 14 treated only by sulphathiazole having ended fatally in nine days. Le Roy Schall⁹ also records details of three staphylococcal cases (of which two were those in the care of Champ Lyons) which recovered on this plan of treatment.

Bacteriological examination is essential in order that the appropriate drug may be used with certainty, and the heparin is administered by a continuous intravenous saline drip. To each 100 c.c.m. of saline solution 1,000 units of heparin—i.e., 10 mg.—is added. This solution is allowed to run into the vein at such a rate that the clotting time of the blood is maintained at about ninety minutes. Should it be necessary to resort to some surgical intervention to evacuate an abscess, the heparin would have to be stopped. The coagulation time of the blood returns to normal in about four hours, so that the indications for stopping or continuing the administration of heparin in relation to operation are fairly evident. In one of the reported cases the heparin was administered for seventeen days, and in another for nine days. The total dosage may amount to 225,000 units. The heparin cannot be expected to exercise any influence upon a clot already formed, but it appears to be capable of preventing any further extension, and the results are certainly encouraging in the commoner type of cavernous sinus thrombosis.

BRADYCARDIA IN JUVENILE RHEUMATISM

It is commonly accepted that tachycardia is the usual indication of cardiac involvement in juvenile rheumatism, but according to A. J. Glazebrook and S. Thomson¹ slowing of the pulse rate is a common feature of the first attack of rheumatic infection in adolescents and young men. They record observations on the pulse rate in a hundred consecutive cases of acute rheumatism in boys and youths aged from 15 to 20 years. These cases fall into three groups. In one the pulse rate was commensurate with the temperature—that is, an increase of 10 beats a minute for every degree Fahrenheit. In the second group there was some increase in the pulse rate but not to a degree commensurate with the rise in temperature, and in the third there was no quickening but a slowing of the pulse rate, which fell below the normal rate for the individual irrespective of any pyrexia. There were thirty-eight cases in the first group, thirty-two in the second, and thirty in the third. Histories showed that bradycardia was more common in those suffering from their first attack of rheumatism, and of the thirty cases in the third group the bradycardia occurred early in the illness, usually within the first four days. (The cases were observed in a large institution, and it is probable that the records of the pulse rate were kept at an earlier stage of the disease than would happen in ordinary hospital practice.) In some cases the slowing of the pulse was transient, lasting only two days in one instance. Treatment did not appear to affect the appearance of bradycardia. Salicylates in moderate and in massive doses, antistreptococcal serum, and special immune serum were among the methods used; bradycardia occurred in patients treated by any one of these methods and was also seen in control cases given no specific treatment. Saturation with vitamin C and with vitamin B was also employed in some cases, but there was still bradycardia. A slow pulse was found in every degree of severity of the disease, but in the early stages of rheumatic infection such slowing seemed to be of serious prognostic significance as regards permanent cardiac damage. Half of the patients with bradycardia developed permanent damage of the heart compared with 30% of the rest of the patients observed. Electrocardiography gave evidence of heart-block in three patients only. In the majority of the group examined there was a simple sinus bradycardia, with some prolongation of the P-R interval. An exaggerated degree of sinus arrhythmia was often found. It is held that these findings suggest the existence of vagal over-stimulation, brought about by the action of the rheumatic toxins on vagal nerve terminations. Hence Glazebrook and Thomson have come to regard slowing of the pulse in juvenile rheumatism as an index of the severity of the toxæmia, believing that it is essentially due to the action of streptococcal endotoxins.

The King has approved the award of a Royal Medal of the Royal Society to Prof. E. L. Kennaway, M.D., F.R.S., director of the Chester Beatty Research Institute of the Royal Cancer Hospital, for investigations on the production of cancer by synthetic substances. The President and Council of the Royal Society have awarded the Copley Medal to Sir Thomas Lewis, M.D., F.R.S., for his experimental researches on the heart and the circulation and their disorders; and the Davy Medal to Dr. H. D. Dakin, F.R.S., for his pioneer work in biochemical research, and especially for fundamental contributions to the study of intermediate metabolism.

¹ *Edinb. med. J.*, 1941, 43, 619.

⁴ *Ann. Med.*, 1936, 39, 97.

⁵ *British Medical Journal*, 1922, 2, 460.

⁶ *Cavernous Sinus Thrombophlebitis*. By W. P. Eagleton. New York: Macmillan, 1926, p. 127.

⁷ *Ann. Surg.*, 1941, 113, 113.

⁸ *Ann. Otol.*, 1941, 50, 503.

⁹ *J. Amer. med. Ass.*, 1941, 117, 551.

NETWORK PLAN FOR DEALING WITH INVASION CASUALTIES

BY

GORDON WARD, M.D.

This simple plan depends upon a few facts which can hardly be disputed. First, we cannot know until air and sea invasion starts what parts of the country will be most severely engaged with the enemy. Secondly, in most of these parts collection of the wounded by means of ambulances will be impossible for a period which high authority estimates as from one to seven days. Thirdly, even if the collection of wounded is possible it may often be undesirable because the nearest hospital is threatened or already destroyed. Fourthly, in these isolated areas, cut off from other means of medical assistance, casualties will have to be retained and treated near to where they occur, and with such facilities as may be there available.

These new facts almost compel the adoption of a scheme by which the country shall be covered with a network of aid-posts, which should be approximately one mile apart. In many moorland and forest areas the mesh will obviously be wider. In towns it may be considerably closer because town communications are so easy to obstruct. The exact size of the mesh does not matter at the moment. It will vary. But the one-mile mesh is chosen as ideal because the wounded will have to be carried in on stretchers, and even half a mile is a very long way to carry a heavy man or woman.

Those whom the Plan will Benefit

Before considering the nature of this network plan let us say something about the people for whose benefit it is designed. It is clear enough that local residents will benefit from the posts near to them. But they are not the only ones to be thought of. Everyone knows that our coast towns are nearly empty, and that they have not enough inhabitants to deal with hundreds of fires in empty houses. If the enemy sees fit, these towns will burn, and the remaining inhabitants will spread out into adjacent countryside. What else can they do? The network plan will ensure that these people are not left without medical help. Then again, there are thousands of troops who will be carried towards the enemy in motor vehicles. They cannot escape air attack and wounding. What is to happen to these casualties? Shall the tank stop to look for a doctor? The plainly marked posts of the network plan will go far to solve this difficulty. We dare not leave our wounded to die by the roadside or to lie forgotten in a cottage while it is in our power to arrange something better.

Composition of the Network

Now we can turn to the composition of the network. Much of it is already in place, some of it recognized, some still unrealized. In the towns there are hospitals, aid-posts with large trained staffs, and many excellent first-aid units connected with factories and works, railways, and so forth. It remains only to see that each has its place and is plainly indicated to the passer-by by a uniform sign. Then we must add any more that seem necessary. It must always be remembered that street fighting and the destruction of the larger aid-posts may wreck the town organization if reliance is placed on too few centres for medical aid. In the country things are not so good. There are only a few aid-posts and a very few up-graded first-aid points which could keep casualties for seven days. To these we should add certain units whose usefulness is often overlooked. In time of invasion the empty wards and idle staff of isolation hospitals must not be wasted. All asylums can deal with wounded, and most public assistance institutions and any sick-bays used for evacuees: these must all be roped in. There are also thousands of military aid-posts which will be available. All of these must be carefully entered upon a map in every county or rural district. Then the Home Guard casualty collecting posts, those of them which can keep casualties for seven days, must be added. Only then will it be possible to see what new posts must be provided to make the

network complete. I think the best people to set up these posts may be the members of those local invasion committees which are making such a success of all-in co-operation in East Anglia.

Supplementary Posts

Now as to the nature of these posts—that is, of the additional posts still required to make the network complete. They must be able to retain the wounded up to seven days; that is essential. They won't be able to provide major surgery or anything like that, at least in most cases. Very few will have a resident doctor. Even if all services combined, which they are not doing at present, it would not be possible to provide a doctor at every post, but by careful organization beforehand it should be possible to arrange that every five or six posts will come under the care of one doctor, who will attend where and when he is needed. He will probably have to walk and visit at night, but night visits are nothing new. In every post it should be easy to provide someone with first-aid and nursing experience. It will also be possible to provide those extremely important things—rest, warmth, and food, dressings, and morphine. These are not little things; they are far more important to the wounded than the services of a surgeon. In any case, if we do not provide them many of our wounded will have nothing at all except such things as may be found in a house chosen at hazard and utterly unprepared. We must have either ambulances or the network plan, and if the ambulances are not possible, as will happen in isolated cases, we must have the network completed as soon as possible.

Policy of Dispersal

Lastly, let us discuss one or two objections which have been raised. The first of these is the suggestion that this plan is something which a self-important individual (myself) has set up to compete with the A.R.P. services. Surely only wilful prejudice or insufficient knowledge of the network plan could prompt this view. The plan is a normal and logical extension of the A.R.P. services. The second objection sounds at first more plausible. It is that the network plan will dissipate both staff and medical supplies urgently needed at town centres. The obvious answer is that if invasion is going to dissipate and disperse casualties, and keep them dispersed, then we must disperse whatever is needed to deal with them. In isolated areas the policy of dispersal will be fully justified. In other areas both stores and personnel can be recalled if needed; but since our hospitals all carry upwards of one whole year's supply of dressings in reserve, the policy of the network plan does not really threaten them very seriously. And there is another point. These big hospital stores are all in places which are exceedingly vulnerable. The Nazi airmen cannot destroy every house in the country, but they could very easily destroy these big stores in the towns. Food and ammunition are dispersed; it is high time that medical stores were also dispersed, even if only for safety.

One last point: Army and civilian morale depend very largely upon the belief that casualties will be dealt with wherever they occur. At the moment this belief is a delusion. It is helping Hitler if we leave the wounded to die by the roadside, or throw them into the nearest house to be attended by anyone who chances to be there. That is what will happen if we do not take steps in time. It is quite easy to do better, and we ought to do it. I sincerely believe that the network plan is an anti-invasion measure of the very greatest importance for the maintenance of morale as well as for the assistance of soldiers and civilians.

F. A. H. Simmonds (*Tubercle*, 1941, 22, 183), who records his observations on 250 cases, states that effusions in artificial pneumothorax are less common if the lung is adequately freed by sections of adhesions. When effusions occur they are most common within three months of the operation. When valvular pneumothorax occurs the valve is in the bronchus connected with the cavity, where a more or less localized caseous bronchitis is present. Effusion is commonly preceded by signs of spontaneous pneumothorax.

SHAMMING NIGHT-BLINDNESS

BY

N. BISHOP HARMAN, M.B., F.R.C.S.

Eye tests are of two orders: objective and subjective. We can examine the eye in all its parts with our ophthalmoscopes and other instruments and watch certain reactions to light which are uncontrollable by the mind of the subject. But what the detailed vision of that eye may be we cannot find out except by the voluntary response of the subject. There are occasions when the objective findings and the subjective responses seem to clash. The eyes of a subject on examination may appear quite good in every detail, yet the visual response may be poor. The possibility of checking the visual response by special tests is a problem of interest and present-day importance; it is particularly so as regards seeing in a minimum of light—night vision.

The publication (*Journal*, September 6, p. 349) of the results of the examination of 700 subjects for night-vision reactions with the disk-spotting test has brought inquiries as to the possibility of using the test to distinguish between a real defect of night vision and a suspected shamming. To-day there are many branches of national service that require the citizen, whether a civilian or a member of the Services, to do work that entails ability to see in the dark. Inability to do so means not only danger to the subject but also danger to the community if that subject be truly night-blind or partly so. Is this inability always real or may it be sometimes false? How are we eye men to find out?

Shamming Bad Day Vision

Something of the same problem arose on occasions during the last war in the examination of men called up for military service. The eyes of a subject under detailed examination were found to be good, but the visual reaction was poor. Then I devised a test which enabled the examiner to check the visual reaction in some measure. This test has since been of much value in examining patients claiming workmen's compensation for eye injury whose visual reaction was much worse than the state of the eye seemed to warrant. The test is as follows:

Two Snellen's test types are fixed one on each surface of the same board. On one side the regular range from 6/60 to 6/6 is fitted. On the other side the types range from 6/36 to 6/5, but the arrangement of these slightly smaller types matches in pattern and in general appearance the normal set of types. The patient is shown No. 1 test type; say he reads three lines: $V=6/24$. Now No. 2 test type is exposed; if he again reads three lines his vision is really 6/18, and he is convicted of inconsistency and suspected of shamming deficiency. The test is easy to apply and has proved to be very useful.

Shamming Bad Night Vision

Checking suspected shamming of bad night vision is a much more difficult problem. If there is fault in the eyes of the subject density or opacity of the media, or very small pupils that do not dilate, or defect of the fundus oculi, then the deficiency is likely to be genuine. High errors of refraction and the need for thick lenses will also make it genuine. But in some cases there is good daylight vision, no discernible sign of defect on the objective examination of the eyes, and no general defect of health or nourishment to explain the poor night vision reaction. There may be as complete an absence of any ocular evidence in confirmation of the night vision defect as there is of anomalies or lack of colour vision.

By applying the experience with the daylight test described above it is possible so to vary the use of the disk-spotting test as to make it a check upon the reaction of the subject. This can be done in two ways: (1) varying the light; (2) altering the size of the disks on the test.

1. *Varying the Light.*—The candle-box enclosing the standard candle has a projection tube through which the light passes to the white disks on the test board. A cap, like a pill-box lid, can be made with its flat surface of semi-transparent

grease-proof paper; the density of this film can be chosen so that it cuts off half the candle-light. Or the light may be increased instead of diminished: if a hand torch with a sliding or adjustable reflector be held alongside the candle-box the adjustment can be made so that the torch light reinforces the candle-light and increases it three or four times.

2. *Altered Disk Sizes.*—The size of the disks in the test board can be changed. The normal-pattern disks are 1/2 inch in diameter and 1/8 inch in separation from each other. In the test board (as made by Théodore Hamblin, Ltd.) there is space enough on the velvet surface of the base board between disk-groups 4 and 5 to allow to be pasted to it another set of disks, four in number, each of 3/4 inch in diameter, and separated by 1/4 inch. Thus the size and distinction of the disks in the candle-light can be suddenly altered by turning the test cover during the examination.

There are then three ways in which the test may be made more difficult or more easy. If the subject with bad night vision is genuine in his disability he will show this in his response to the variation of the test. When the light is less his vision will be worse; when the light is brighter he will see much better and at a greater distance. So also will he see somewhat better when he is shown the larger disks. For example, a subject whose response to the regular test was only 2.5 metres was tested this way. (The average response of normal subjects is at 5 metres.) After a full dark adaptation the varied tests were made. He could only count the disks in the reduced light at 1 metre; he could count them easily at 6 metres with the added light; he could count the larger disks in the usual fractional candle-light at 3.25 metres. There was thus reasonable consistency in the reactions of this subject to light variations, so the night-vision defect was considered to be real. In making these variations of the test in suspected cases it is desirable to have an assistant to help the examiner manipulate the test. The examiner should stand with the subject. Between each grade or alteration of the test the eyes of the subject should be covered, so that there will be no actual observation of the changing of the conditions of the test.

Conclusion

Applying tests to check subjective vision reactions requires much nous on the part of the examiner. It is a trial of wit against wit. The "cutest" one of the pair, examiner and examinee, will win the trial, but that is the normal reaction of a medical practitioner: he is always faced with problems in diagnosis and the interpretation of symptoms that demand acuteness of judgment.

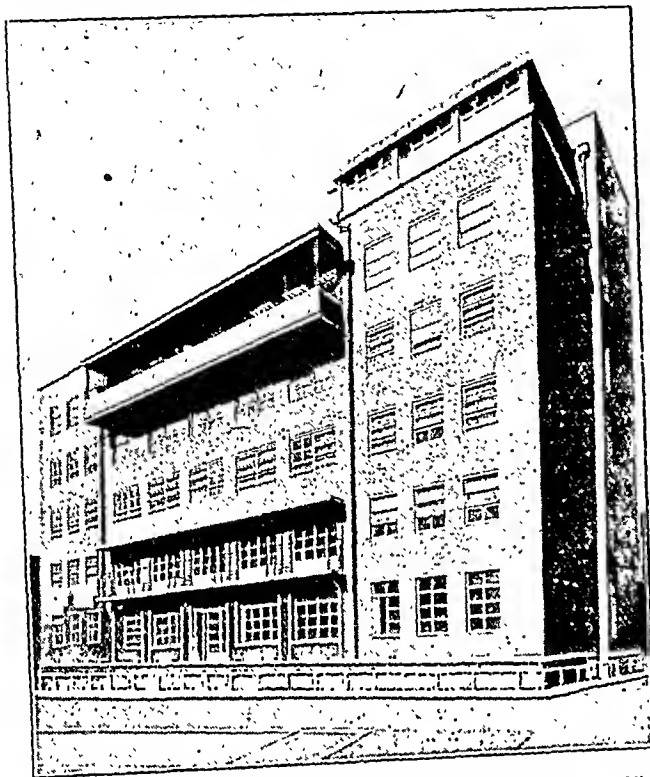
THE YORK CLINIC AT GUY'S HOSPITAL

The building has recently been completed at Guy's Hospital of the York Clinic—the first psychiatric clinic to be erected in this country as part of a general teaching hospital. Its opening will have to be deferred until the end of the war, but its completion at this time is symbolic of a determination that when the conflict is over social and scientific progress will go forward hand in hand at an increased speed.

For fifty years Guy's Hospital has had a lecturer in psychological medicine, and more than 200 years ago its founder provided in his will for the care of forty chronically insane patients in a ward which stood in the hospital precincts. Later the Governors obtained the permission of the Charity Commissioners to transfer the funds available for this purpose to Bethlem Hospital. In accord with the developments of medical, and especially of psychiatric, science that have taken place since these old days the new clinic is intended to fulfil a very different purpose. "Functional" disorders, or psychoneuroses, have been found to result from disturbed minds, and the general need for early treatment of mental disorders has been stressed. The York Clinic has been constructed for the treatment both of psychoneuroses severe enough to require in-patient treatment and of psychoses. The purpose of having it within the precincts of a general hospital is twofold: first, to encourage the early treatment of all such conditions as can be admitted with no other formality than attends the admission of any other type

of case to a general hospital; secondly, to facilitate and intensify the teaching of psychological medicine in all its aspects, both as a social and as a medical science.

The building contains forty-two beds and has five floors, the ground floor being devoted to public rooms and offices, the basement to a laboratory, gymnasium, dining-room, etc., and the roof to recreation space. Those who planned the clinic have aimed to make it, within the limits available, a place where the patients can live without being confined to bed. For this reason there is the maximum amount of day space that it was possible to provide. The corridors are especially wide and can be used as lounges, and besides the public rooms already



mentioned there are occupation rooms on each floor. The majority of the accommodation is in single rooms, but there are some three-bed dormitories. The building is quiet and modern in appearance. The architects are Messrs. Thompson and Walford and Messrs. Stanley, Hall, Easton and Robertson, two firms with considerable experience of hospital requirements. The Board of Control also generously put the experience of its own architect at the disposal of the planners of the clinic.

Those who provided the money to build the clinic have allowed sufficient funds for a capital sum, with part of which it is hoped to provide some free beds; but for some time to come it will be necessary for the majority of patients to be charged fees which will meet a variety of needs.

For teaching purposes the clinic will work in close association with the out-patient department and with the existing half-dozen psychiatric beds provided by the Governors during the last decade. The increased contacts between the staff of other departments and the department for psychological medicine should have the desirable effect of bringing psychiatry still closer both to general medicine and to the other specialized branches.

MEDICAL WAR RELIEF FUND

THE FIRST YEAR'S WORK

The following report on the work of the Medical War Relief Fund during the first year of its existence has been approved for publication by the Committee of the Fund

In September, 1940, the Medical War Relief Fund was inaugurated to provide temporary assistance for British medical practitioners and their dependants who find themselves in financial straits as a direct result of war conditions. At the end of that month the first appeal for subscriptions was published in the medical press. The response, from both individual practitioners and medical organizations, has been most encouraging, and by the end of September, 1941, the contributions to the Fund had reached the total of approximately £34,000. To all who have subscribed so generously the Committee of the Fund wishes to express sincere thanks. It will not be considered invidious to refer in particular to the splendid help received from medical practitioners over-seas who have not forgotten the needs of their colleagues in the Home Country. A cable has recently been received from the British Medical Association in Australia intimating a donation of £4,500 (Australian) contributed by members in that country. This is additional to the total of £34,000 already received. The Malaya Branch of the B.M.A. has contributed more than £300, and a first contribution from the Canadian Medical Association, consisting entirely of subscriptions collected from doctors in British Columbia, amounts to nearly £350. Other generous donations have been received from organizations in Australia, Canada, Hong Kong, and Uganda, as well as from individual practitioners in various parts of the Empire.

Classification of Applicants

The first awards were made by the Distribution Subcommittee on November 13, 1940, and between this date and September 30, 1941, forty-four applicants received assistance, the approximate average being one a week. These forty-four cases do not readily lend themselves to any simple method of classification, for the financial difficulty which led to the application was frequently due to more than one cause. In five cases the beneficiaries are dependants of doctors killed on active service with the Forces, and an equal number of awards have been made in cases of doctors killed—or, in one case, disabled—by enemy action while engaged in civil defence duties or ordinary civil practice. The largest group, numbering sixteen, is made up of doctors whose difficulties were primarily attributable to the bombing of their homes or consulting rooms, with destruction of or damage to their cars, furniture, instruments, or other possessions. Assistance was given in seven cases to men who were temporarily in difficulty owing to loss of patients through evacuation, and in eight cases to medical officers and ex-officers who were in financial straits owing to reduction of income as a result of joining the Services, or required help in re-establishing themselves in their practices after relinquishing their commissions on the ground of ill-health. There remain three miscellaneous awards, one of which was made to the wife of a doctor who continued his work in one of the Channel Islands at the time of the German occupation and is therefore temporarily unable to support his family in England.

Form and Amount of Assistance

Some of the applicants responded to the invitation to state the amount of the gift or loan which they found it necessary to request; others preferred to leave the form and extent of the assistance needed to the judgment of the Distribution Subcommittee. When definite requests have been made the full sum asked for has not always been given. On the other hand, there have been cases in which the amount awarded has been in excess of the evidently too modest demand. The aim has been to provide, so far as possible, a real solution of the immediate problem and to remove the attendant anxiety by giving promptly such assistance as medical practitioners would wish to see rendered to their stricken professional colleagues. Care has been taken to avoid not only parsimony but also too lavish generosity; for the Subcommittee has been mindful of the future

B. G. Hoo (*Acta paediatr.*, 1941, 28, 293) records a fatal case of congenital malaria with congenital heart disease in a child. The mother had her first attack of malaria one day after the child's birth. Malarial plasmodia were found in the child's blood on the twentieth day of life. During the period when parasites were found in its blood the child had no fever and there was no enlargement of the spleen. Only later was there a slight rise of temperature.

and the probability that many more applications will be received before the war is over. As is stated above, only five applications have hitherto been received from dependants of doctors killed on service with the Forces, but as our armies become more actively engaged more casualties must be expected, with a consequent rise in the number of dependants left in difficult circumstances. It must also be assumed that as men are released from the Services many of them will need temporary financial help in the difficult task of resuming their practices. But apart from such cases as these, there can be little doubt that as the war goes on and economic difficulties become greater the number of applications for assistance will steadily increase.

Grants to widows and other dependants have inevitably taken the form of gifts, and in a considerable number of other cases this appeared to be the only appropriate method of help. Applicants whose financial problems seemed likely to be merely temporary requested and received loans, but in some of these cases it was thought desirable to give part of the sum required as a gift, particularly when it was essential to replace professional equipment and other possessions at a cost in excess of the amount of war damage compensation likely to be paid. Twenty-eight applicants have received gifts amounting to £3,420; seven have received loans totalling £1,690; and nine have received both gifts (£1,375) and loans (£1,350) amounting in the aggregate to £2,725. The total of the gifts is £4,795 and of the loans £3,040, the grand total up to September 30, 1941, being £7,835. One loan of £200 has already been repaid in full, and another is being repaid in regular monthly instalments.

Co-operation with Other Bodies

The Distribution Subcommittee has worked in the closest co-operation with the Royal Medical Benevolent Fund, which is strongly represented on the Subcommittee. In two ways the assistance of this organization has proved of particular value. First, there have been cases in which widows with young children have been voted considerable sums towards educational and other expenses over a period of years. In such cases the R.M.B.F. has been good enough to accept the responsibility of administering the awards, and has been given discretion to vary the instalments according to the needs of the families concerned from time to time. This fortunate arrangement ensures for these families the maintenance of a friendly interest in their welfare throughout the difficult years immediately ahead, and the continued availability of advice and assistance should such be required in the more distant future. Secondly, the experience of the R.M.B.F. has been of great assistance in obtaining supplementary grants from other organizations, and especially in securing pensions for widows whose need of regular help may well continue beyond the time when the Medical War Relief Fund will cease to exist. Of the forty-four applicants who received awards from the Fund, no fewer than eleven have been introduced with successful results to various benevolent societies, including the R.M.B.F. itself.

The Committee deeply appreciates the hospitality shown by the British Medical Association in providing accommodation for its meetings and those of the Subcommittee, and the assistance voluntarily given by the secretarial, accountancy, and clerical staff of the Association in connexion with various aspects of the work of the Fund. The Committee wishes to acknowledge also the help received from the secretary of the Subcommittee, Mr. E. C. Pennefather. His wide experience with the Royal Medical Benevolent Fund and his knowledge of other charitable institutions have been of great value. Thanks to the generous co-operation given by the B.M.A. and the R.M.B.F. the administrative expenses during the first year, including the cost of printing, stationery, application forms, etc., and the cost of postages in connexion with appeals and the acknowledgment of subscriptions, amount only to approximately £150—2% of the amount expended in awards and less than 0.5% of the total amount contributed.

The address of the Honorary Treasurer and the Honorary Secretary of the Fund is B.M.A. House, Tavistock Square, London, W.C.1. A statement explaining the constitution of the Fund and containing brief accounts of six typical cases was published in the *Journal* of April 12 last (p. 566). Additional cases are summarized below.

Illustrative Cases

Dr. G., a senior general practitioner, lost his life in a raid in which his house was completely destroyed. His only child was killed at the same time. The widow lost her clothing and other possessions, and although the doctor's estate would eventually furnish her with a modest income she was temporarily without means. She was awarded a suitable sum as a gift to provide for her immediate needs.

Dr. H., another general practitioner, had invested his savings in a small practice, which he purchased in the early part of 1940. A year later he was killed by enemy action. There was little left for the widow, who was also a casualty, but it seemed that she would be capable of earning her livelihood when she had recovered from her injuries. She was awarded a grant which she has gratefully described as a "magnificent gift." She has now found suitable employment.

Dr. I. is one of the many specialists whose incomes have been seriously affected by certain restrictions imposed by emergency legislation. In addition, Dr. I. has been "bombed out" repeatedly, and has had the misfortune to see the company in which his savings were invested become bankrupt as a result of war conditions. Despite economies, both domestic and educational, and a tendency to improvement in his greatly reduced practice, he found himself unable to meet a number of pressing debts. The amount required was provided by the Fund, one half of the sum being awarded as a gift and the other half as a loan. Dr. I. has expressed his profound gratitude and his intention to repay the loan as soon as possible. "With any reasonable luck," he writes, "I should now be able to hold out here until the war is over."

Dr. K. is an elderly consultant. His consulting rooms were bombed and completely destroyed with the furniture, instruments, and books which they contained. The income from his practice had diminished considerably owing to the war, and although he had no debts of any magnitude, neither had he the means to acquire new premises and equipment while awaiting the payment of war damage compensation. He was awarded a substantial sum for this purpose—the greater part as a loan and the remainder as a gift. He writes: "It just feels as if I had emerged from the black-out into brilliant sunshine. The feeling of relief is intense. Will you please express my great gratitude to the Committee for the chance of a fresh start." my great gratitude to the Committee for the chance of a fresh start.

Dr. L. was a comparatively young man who combined general practice with a part-time public health appointment. He had had little time or opportunity to save, and when he died of wounds on active service with the R.A.M.C. his indebtedness to an insurance company was greater than the amount that could be realized by the sale of his practice. Mrs. L., who has young children, will receive a small pension from the Army, and she hopes to place the children in boarding schools in order that she may be free to take up remunerative employment. To assist in the education of the children the Fund has awarded her a gift which will be administered over a period of years by the Royal Medical Benevolent Fund; and Mrs. L. has been introduced to another society, which has promised an additional grant for educational purposes.

Dr. M., a specialist serving in the R.A.M.C., was killed on active service, leaving a widow and child. Mrs. M. has been awarded a gift (to be administered by the Royal Medical Benevolent Fund) which will suitably supplement her small income during the child's remaining years at school. As Dr. M.'s elderly mother had been partially dependent on him a similar arrangement has been made in her case; and Mrs. M. senior has been introduced to two other benevolent societies, one of which has awarded her a small grant, while the other has given more permanent assistance in the form of a small pension.

The Federation of American Societies for Experimental Biology announces that in March, 1942, it will issue the first number of a quarterly publication to be named the *Federation Proceedings*. This will be published by an editorial board representing the five constituent societies of the Federation: the American Physiological Society, the American Society of Biological Chemists, the American Society for Pharmacology and Experimental Therapeutics, the American Society for Experimental Pathology, and the American Institute of Nutrition. Four numbers of the new periodical will appear each year. Abstracts of the papers will be grouped under the societies to which they are communicated and will be indexed according to subjects and authors. The subscription price to non-members is \$4.00 (\$4.50 foreign), payable in advance, on application to Dr. D. R. Hooker, managing editor, 19, West Chase Street, Baltimore, Maryland, U.S.A.

difference might have something to do with the different character of spread during the six-months period. All the wound cases in the ward had been fairly generously sprinkled with sulphanilamide powder.

Major H. W. RODGERS said that he had been working in a military hospital where an endeavour had been made to reduce the smell of wounds treated by the closed-plaster technique. They had encased the greater part of the plaster with some absorbent material soaked in antiseptic solution, and then had put another plaster on the top of that, so that there was a kind of chamber between the plasters. This reduced the smell considerably. Would it also reduce the risk of cross-infection?

Prof. PATERSON ROSS still thought that for the control of infection it would be a pity to introduce into the hospital another officer. The better thing would be a closer liaison between the bacteriologist and the surgeon.

THE OTO-LARYNGOLOGIST ON WAR SERVICE

At the meeting of the Section of Laryngology of the Royal Society of Medicine on November 7, the problems of the oto-laryngologist in the war were the subject of discussion.

Mr. E. D. D. DAVIS, president of the Section, who introduced the subject, said that on the outbreak of the war the work of the specialist, hospital and private, almost disappeared. In the E.M.S. each sector was left to make its own arrangements, and while some sectors rose to the occasion, in others the organization was half-hearted. He hoped that oto-laryngologists would insist upon sufficient staff, accommodation, and equipment within the framework of the E.M.S. to enable efficient service to be given to those who required it, and that in the R.A.M.C. oto-laryngology would soon be no longer the Cinderella of the specialties, without proper representation in the central councils. Only relatively few oto-laryngologists could be adequately employed in their own specialty in the Army, and the question was how to occupy such officers fully. But the successful practice of oto-laryngology required a sound knowledge of medicine, and particularly of surgery: the oto-laryngologist must not confine his attention to the ear, nose, and throat. Thus it followed that he could be trained within a short time as a war surgeon. He suggested that ear, nose, and throat work should be concentrated in one well-equipped unit in each E.M.S. sector, Naval base, Army command, and R.A.F. hospital, each unit to have a minimum staff of two surgeons and assistants.

The Royal Navy

Surgeon Rear-Admiral C. P. G. WAKELEY described the position in the Navy, where the ear, nose, and throat surgeon also served as a general surgeon. In many instances there would not be enough work for him to do if he were limited to his specialty. As a rule it was junior medical officers who were selected for ear, nose, and throat surgery. They were given practical courses and afterwards were sent usually to one of the large base hospitals to take over a department under a senior medical officer who was a surgical specialist and in his younger days had himself probably been an ear, nose, and throat surgeon. After experience at the base hospital for two or three years the young surgeon went to sea and probably became the specialist of the squadron to which he was posted, visiting acute cases in the ships of the squadron, and accompanying a case to the naval hospital or hospital ship and performing or assisting at operation. During all this time he was still doing general surgery. After several years, when he had attained the rank of surgeon commander, he might become a senior surgical specialist, with a younger officer under him as ear, nose, and throat surgeon, while he himself was responsible for general surgery. The Navy also employed civilian consultants, who were asked to see special cases at base hospitals and occasionally in hospital ships.

Specialism in the Army

Major DOUGLAS GUTHRIE said that the military practice of the specialty inevitably differed considerably from the civil in its outlook upon prognosis and treatment. Radical operations

requiring long after-treatment had little place in the Service. The object was to return the man to his unit as fit and as quickly as possible. During the past two years in a clinic which numbered 3,000 new patients a year he had performed only one radical mastoid operation and not a single frontal sinus operation. Cases in the Army came under three categories: (1) routine cases, such as tonsillitis, deviated septum, and various forms of sinusitis; (2) chronic otitis, still extremely common in the Army and largely the result of long neglect; (3) headache persisting after correction of refractive errors and calling for attention from the ear, nose, and throat department. In Scotland there was good liaison between military and civil hospitals. The E.M.S. hospitals absorbed the overflow in busy times, and the convalescent hospitals took cases a day or two after operation, so that it was possible to admit and discharge cases and to operate three times a week, thus avoiding any waiting list, which in the Army would lead to hopeless muddle. He agreed that the ear, nose, and throat surgeon should be familiar with general surgery, particularly that he should be a potential traumatic surgeon, but not that he should be supposed to remove appendices or perform operations for hernia.

The Emergency Medical Service

Mr. V. E. NEGUS recounted some of the points in his paper published in the *Journal* of October 11 (p. 519). In his experience the oto-laryngologist in the E.M.S. was well and fully employed in dealing with injury and disease. In his sector (IX) there were out-patient clinics for Service cases at six hospitals, civilian sick came from three hospitals in London, and in-patients were dealt with mainly at one large hospital where 200 out of a total of 2,000 beds were available for this special department. The volume of complaints such as acute and chronic otitis media, sinusitis, and tonsillitis, together with nasal and Eustachian-tube obstruction, required the services of a considerable number of specialists. Nearly half of all injuries of the head and neck affected parts other than the cranium, and in dealing with such cases the specialist with expert knowledge of the surgery of the ear, nose, and throat was indispensable. The role of the oto-laryngologist was to treat in his own ward cases of disease within his province, and when casualties arrived to serve as an active member of the department dealing with injuries of the head and neck, in direct collaboration with the neurosurgeon, ophthalmologist, dental surgeon, plastic surgeon, and others.

The Royal Air Force

Squadron-Leader DALZIEL DICKSON described the steps taken on the outbreak of war to establish ear, nose, and throat centres in the existing and projected R.A.F. hospitals. Almost all were staffed by specialists, most of whom had joined the medical branch of the R.A.F. They were in two categories: (1) those who had held specialist hospital appointments or had been in charge of departments in civil hospitals, and (2) those whose experience had been as assistants or house-surgeons. The former acted as regional specialists and the latter were allocated to aviation medical boards. All arrangements for the provision of officers in both groups came under the R.A.F. consultants department. The regional specialist supervised all researches in so far as they concerned his specialty, and he or his deputy visited each hospital and centre about every six weeks and was available for emergency work wherever required. Treatment was conservative, operation being resorted to only where this was specially indicated. The equipment of ear, nose, and throat departments had been standardized. Most of the departments were self-contained and had adequate bed accommodation and spare consulting and treatment rooms. Unusual cases were transferred to the larger hospitals. Cases of chronic suppurative otitis media which had found their way into the Service as a result of a superficial examination by the recruiting board accounted for a high proportion of such ear, nose, and throat morbidity as was found. Research problems formed a large part of the work of the consultant. He indicated some of these such as an investigation into the relative merits of means of ear protection during flight, the aetiology of air-sickness, and the standardization of hearing tests.

General Discussion

Major SCOTT STEVENSON said that otology in the R.A.F. was a career in itself, but in other Services this was not so. In the

Local News

SCOTLAND

Future Organization of Hospital Services

Mr. Thomas Johnston, M.P., Secretary of State for Scotland, together with Mr. W. R. Fraser, secretary of the Department of Health, recently attended a meeting in Edinburgh of the Scottish Branch of the British Hospitals Association to discuss post-war policy. Mr. Johnston pointed out that to overcome any local inadequacy of hospital accommodation it was first necessary to place on a more satisfactory footing the present loose partnership between local authority hospitals, voluntary hospitals, and the E.M.S. hospitals under State control. It was proposed, he said, as a first step to lay upon county councils and the councils of the larger burghs the duty of securing, in co-operation with voluntary agencies in the same field, that adequate hospital services were available, to all who needed them. To avoid wastage and to ensure the best use of resources, such services must be designed with a view to areas wider than those of individual local authorities, and the more highly specialist services would be afforded at teaching hospitals and other specially selected centres, while between the hospitals as a whole within the region there would be an appropriate division of functions. After discussion the co-operation of the British Hospitals Association was offered to the Secretary of State in any investigation of post-war problems that he may decide to undertake.

On the following day in Edinburgh an address was given by Lieut.-Colonel A. D. Stewart, superintendent of the Royal Infirmary, who also spoke of the need for a wider organization of hospital services. He declared that hospital organization had lagged far behind medical science and discovery. Voluntary hospitals had suffered from their individualism and isolation, and in many there was a financial crisis. They appeared, said Colonel Stewart, to be nearing the limit of their capacity. Either new sources of income must be found or expansion curtailed, in which case the initiative of hospital development would pass into other hands. Hospital waiting lists are a difficult problem in Scotland as elsewhere. Colonel Stewart explained that the more emergency work a hospital did the larger would be its waiting list. Edinburgh Royal Infirmary was carrying out emergency work, both surgical and medical, for Edinburgh and the whole south-eastern area of Scotland. In a progressive hospital waiting lists could never be completely overtaken, for advances in knowledge and the supply of new services would create fresh demands for beds.

In view of this rather troubled picture it is reassuring to have the word of the Secretary of State that: "When account is taken of the hospital accommodation provided in Scotland to meet wartime needs, it is obvious that there is now sufficient accommodation to form the foundation of a hospital system capable of providing for the needs of every person who requires hospital treatment."

Research on War Wounds

A subcommittee of the War Wounds Committee of the Medical Research Council, comprising representatives of Scottish hospital centres and teaching schools, has been set up to foster and co-ordinate research in war wounds and related problems in the field of casualty work. The membership of the subcommittee is Prof. J. R. Learmonth of Edinburgh (chairman); Prof. J. S. Young of Aberdeen University; Profs. R. C. Alexander and D. F. Cappell of Dundee; Profs. C. F. W. Illingworth and C. H. Browning and Dr. D. P. Cuthbertson of Glasgow; and Profs. Sir John Fraser and T. J. Mackie and Dr. C. P. Stewart of Edinburgh. Dr. J. M. Johnston will represent the Department of Health for Scotland. The secretary of the subcommittee is Dr. A. B. Wallace of the Department of Surgery, the University, Edinburgh.

ENGLAND AND WALES

York's New Municipal Hospital

The first half of York City's new Municipal General Hospital was opened recently by Alderman William Wright, who has served for twenty-nine years on the Health Committee, holding office as vice-chairman for seventeen years and chairman for four years. The new hospital, built on the most modern lines at a cost of nearly £100,000, was originally intended to accommodate 360 patients, but only half of the scheme could be put into operation under war conditions. Sir George Martin, chairman of the Leeds Health Committee and of the Yorkshire Regional Hospital Committee, said that the new institution would be very valuable in the regionalization of the hospital services of the county. Making the point that the one thing of real consequence in hospital administration was the patient, Sir George invited the York City Council to get rid of their distrust of the voluntary system and endeavour to make the best of both worlds; and, on the other hand, the voluntary hospital authorities should get out of their rather patronizing manner of speaking of municipal effort when praising the voluntary system. The country, he said, must have a proper working system, with complete co-operation between the two. Sir Francis Terry, chairman of the York County Hospital, who congratulated the City Council on building the new hospital, said that no one welcomed this addition more than the governors of the County Hospital.

London Chest Hospital

Some day, it is to be hoped, the story of the London hospitals under air attack will be told in a suitable volume. Meanwhile an interesting contribution to the literature of London's ordeal is forthcoming in the shape of a booklet on the London Chest Hospital (Victoria Park, E.2), which has been described by Ministry of Health officials as London's worst-bombed hospital in one night's attack. The hospital was founded ninety-three years ago in the City, but within a few years was moved out to Bethnal Green, where the foundation stone was laid by the Prince Consort in the year of the Great Exhibition. It became one of the leading centres for the treatment of chest diseases in Great Britain, with nearly 200 beds and a large out-patient department. The bombing, the results of which are illustrated in the booklet, took place on one night of last spring. It laid the north wing of the hospital practically in ruins, wrecked a part of the nurses' home, and completely demolished, among other buildings, the pathological department (which, incidentally, was started more than eighty years ago by the hospital's founder, Thomas Peacock, who worked here on congenital diseases of the heart and on the fatal disease of the lung known as "grinder's rot"). Although the patients on the night of the raid had elected to remain upstairs not one was killed; all were brought safely into the basement, and next day were transferred to their homes or to other hospitals. An examination of the building showed that in addition to the total destruction of certain parts, the roof had collapsed, and every window frame, door, and ceiling had been shattered. The brave story was continued in the work of reconstruction, for the out-patient department and attached clinics were quickly reorganized, and on the ninth day patients were again being treated. Despite further damage in another raid the wards were in use within four months. But a house at Camberley, which had been used as a sanatorium, has been secured, with accommodation for 30 to 35 patients, and this has relieved pressure on bed accommodation at the hospital and afforded a welcome change of environment for the nursing staff.

According to a correspondent of the *Journal of the American Medical Association*, psittacosis has recently appeared in the Paris area and has become a notifiable disease. There has also been an epidemic of scabies in Paris which has shown three periods of exacerbation, the first among the mobilized, the second at the time of massive evacuation, and the third at the return of the evacuated. Fats have become so scarce in France that ointments will soon become no longer obtainable.

Correspondence

Haemoglobinometry

SIR,—Martindale in the *Extra Pharmacopoeia* remarks, "Although the determination of the amount of haemoglobin is one of the most important of all the chemical tests of the blood, yet as a rule it is one which is determined with less care and by methods more inaccurate than those in use for any other constituents of the body." Most people, I imagine, will agree with this statement.

The two common methods in general use are the Tallqvist scale and Sahli's instrument. The Tallqvist scale is useful in giving an approximate idea of the degree of anaemia and in following the progress of a case under treatment. Few, however, I imagine, would use it for calculating the colour index or (what is perhaps more definite) in distinguishing between macrocytic and microcytic anaemias, the calculation of the mean corpuscular volume and the mean corpuscular haemoglobin content. Outside the laboratory the Sahli instrument is more commonly used for this. The Sahli instrument, of course, depends on the alteration of the haemoglobin to acid haematin. The change of colour here is continuous. About 95% of the change is attained in 10 minutes and it is finally complete in about 40 minutes. And here it seems to me that we get into difficulties.

For some time now, in estimating the colour index or the mean haemoglobin corpuscular content, I have wondered if my results were just what they ought to be. Sahli, in his original description of his instrument in *Diagnostic Methods* (1907), advises: "as soon as the mixture approaches a dark brown colour water is added." The Standing Committee on Laboratory Methods of Glasgow University advises in italics "exactly one minute." The makers of my instrument (Leitz) advise "shaking the tube for one minute and setting aside for 1 to 2 minutes before diluting." Whitby and Britton, in *Disorders of the Blood* (1939), advise a wait of 30 to 40 minutes before diluting. The graduation of my instrument in regard to the quantity of haemoglobin in grammes per 100 c.cm. of blood is the same as that shown diagrammatically in their book. I have made a few estimates with different patients, using first a 2-minute interval before diluting and repeating the experiment after waiting 40 minutes. The average reading after 2 minutes was 76% and for 40 minutes 94%, an average difference of 18%. In view of the above the Sahli method seems to me somewhat unsatisfactory. I have been using a Lovibond comparator with colour disks to compare with undiluted blood in a thin film in a special blood cell. This is graduated according to the Haldane scale, and in its lower ranges should give a closer approximation than the Tallqvist scale. This is a very handy instrument, but I find it difficult to get a close approximation, due possibly to the comparison between a clear glass and a suspension. Tintometer, Ltd., also make colour disks for the Haldane method and the acid haematin method. Incidentally, in the latter they allow 40 minutes for the final change of colour. These may be better than the undiluted blood method, but I have not tried them.

The main desideratum in the estimation of haemoglobin by colorimetric methods is that the change of colour should be rapid and complete. This might be accomplished by nitrites or other reagent giving a change to methaemoglobin, but I think the best solution is the Haldane method. I notice that Cecil Price-Jones in his book *Blood Pictures* mentions Haldane's method alone. To-day, of course, the difficulty with the Haldane method is in obtaining the necessary supply of coal gas. This difficulty, I think, could be overcome by the "sparklet" method. The quantity of carbon monoxide required is not large, so the sparklets could be small. The apparatus for releasing the gas could also be made small enough to go in a case without making it unduly bulky. With this and two standards, one for daylight use and one for artificial light, I think one would have a haemoglobinometer much more satisfactory in its results than the Sahli instrument.

These remarks are made from the viewpoint of the general practitioner and take no account of the more accurate methods used in laboratory technique.—I am, etc.,

KIRKMUIR, Nov. 5.

ROBT. D. CAMPBELL, M.B., Ch.B.

Fate of the Blood Lymphocyte

SIR,—In his review of *Lymphatics, Lymph, and Tissue Fluid*, by Drinker and myself (November 8, p. 653), your reviewer does me the honour of quoting verbatim some of my views on the defence function of the lymphatic apparatus, but has misrepresented somewhat my views on the fate of the blood lymphocytes. He states: "Yoffey thinks they go to the bone marrow to be the precursors of the red cells and granular leucocytes, but his arguments are not altogether convincing." Actually, while I believe that, on balance, the admittedly conflicting evidence at present available inclines to this view, it is far from proven. It certainly has not been proved to my own satisfaction, as indicated by several passages in the book, of which perhaps I might instance the following (p. 274): "The most careful histological studies of bone marrow have yielded inconclusive results, and the problem will probably not be solved to the satisfaction of everyone until new experimental lines of attack have been devised. If, for example, one could mark the lymphocytes by means of a vital stain, it might be feasible to collect a large number of lymphocytes in thoracic duct lymph, stain them, and reinject them into the blood. Examination of the bone marrow some hours later would show whether any of these marked lymphocytes had reached it. Possibly the statistical study of lymphocyte development used by Kindred (1940) may be further utilized."—I am, etc.,

Department of Anatomy, University of Bristol, Nov. 11. J. M. YOFFEY.

Dark-adaptation Tests and Vitamin A Deficiency

SIR,—Since many workers are using studies of dark adaptation as a means of detecting deficiency of vitamin A, it seems undesirable to allow the conclusions of Dr. E. Wittkower and his collaborators (October 25, p. 571, and November 1, p. 607) to pass unchallenged. In a group of admittedly psychopathic soldiers who complained of night-blindness they found only about one-third with subnormal dark adaptation. Arguing that the diet of these men must have been adequate in vitamin A, they conclude that "the value of dark-adaptation tests for the discovery of night-blind patients and as an indicator of vitamin A deficiency appears doubtful." This statement is clearly open to several important criticisms, which may be summarized as follows:

1. There is no doubt at all that poor dark adaptation is in fact associated with vitamin A deficiency. (a) Experimental diets deficient in vitamin A result in defective dark adaptation, which is reversed when the vitamin is taken. (b) Poor dark adaptation is commoner among individuals from the lower-income classes. (c) In almost all instances such poor dark adaptation is improved by the administration of vitamin A. To state, as do Dr. Wittkower and his colleagues, that the diet of their subjects was adequate in vitamin A is surely begging the question. It has been shown by numerous investigators that apparently normal diets are frequently not adequate in this vitamin, and that many individuals consuming them show poor dark adaptation which is cured by the administration of vitamin A.

2. A more serious criticism, however, is that the conclusions of Dr. Wittkower and collaborators are based on a *non sequitur*. They find that subjects suffering from severe psychological disturbance may complain of night-blindness, and that this may or may not be accompanied with demonstrably defective dark adaptation. Thus, they argue, the test cannot be used for the detection of deficiency of vitamin A. In other words, psychopathic individuals may show diminished powers of dark adaptation, and hence the measurement of this would probably detect mental instability rather than vitamin A deficiency. An analogy might perhaps best demonstrate the invalidity of this argument. A hysterical patient complains of defective vision or hearing. She finds it impossible to see the test type or to hear the ticking of a watch. Are we then to conclude that such visual or auditory tests cannot be used for the detection of organic blindness or deafness?

Subjective tests such as those for dark adaptation are, of course, dependent to a large extent on the co-operation and mental state of the individual being tested, and no one would deny the importance of bearing this in mind. The paper by

Dr. Wittkower and his co-workers serves a useful purpose in drawing attention to the psychological aspects of tests for night-blindness. In so far, however, as it attempts unwarrantably to minimize the usefulness of such tests for the nutritional worker, it is to be deplored.—I am, etc.,

Dunn Nutritional Laboratory, Cambridge, Nov. 7. JOHN YUDKIN.

Blood Transfusion and Syphilis

SIR,—The number of persons now receiving blood transfusion is increasing due both to war conditions and also to a natural extension of the practice. The transmissions of syphilis by this means are, as at present recorded, relatively very few, but there may be more cases not reported for obvious reasons. Further, it would seem that war conditions have increased the number of persons suffering from syphilis.

The risks would lie in two classes of blood transfusion: (1) that of whole blood immediately used, and (2) perhaps in stored whole blood used early. The Wassermann, or any other serological safeguard, cannot entirely eliminate the risks of transmission. There might be, for instance, cases (a) where the person tested is incubating the disease. (b) where a chancre is present but the case is in an early sero-negative stage, and (c) where a person has acquired the disease after being tested and prior to being called upon to give his blood. The expense and time consumed in serological tests are considerable. The administration of whole blood practically immediately after withdrawal from the donor would be, in an infected donor, a very grave matter, especially in the early stages of syphilis referred to above, and in which the serological tests might be negative during the septicaemic stage.

In regard to stored blood it is a fact that *Treponema pallidum* is stated to be able to survive for considerable periods in various materials from infected persons and animals. Reference to Volume 8 of the *System of Bacteriology* will give some data on this matter. We do not know of any work which has been conducted on the survival of *Treponema pallidum* under refrigerator storage conditions.

From the above considerations it appears to us that the work of Kast, Peterson, and Kolmer,¹ and especially a recent publication by Eichenlaub *et al.*,² are of premier importance. The latter group of workers used mapharsen to rid infected citrated blood of *Treponema pallidum*. They found that 0.01 gramme per 500 c.cm. of citrated blood was amply sufficient for the purpose, and based this finding largely on work on rabbits which were exposed to infected material without the addition of the arsenical mapharsen. Mapharsen is of relatively low toxicity, and, in the amount suggested, the dose is so small as to be most unlikely to affect even a very seriously ill person. Further, the drug is directly antitreponemal and does not require chemical action to form arsenoxide. Contraindications might arise in cases where the recipient was suffering from (1) haemorrhagic purpura, (2) exfoliative dermatitis, (3) hepatic disorders, and (4) renal disease. The cost of sterilizing against *Treponema pallidum* in 500 c.cm. of citrated whole blood would be relatively small.

While in no way claiming to possess any expert knowledge in regard to blood transfusion, the method advocated by Eichenlaub and his collaborators would appear to us to add yet another safeguard to the recipient of a blood transfusion. We venture cordially to congratulate the above workers, and also to suggest that the value of the method shall be considered by those more qualified than ourselves to judge of its practicability and utility.—We are, etc.,

H. A. COOKSON, M.B., F.R.C.P.Ed.
W. GILLIES ANNAN, M.D., F.R.C.S.Ed.

November 10.

Possibility of Malaria in Britain

SIR.—Dr. I. F. Mackenzie's letter (November 8, p. 668) is a timely reminder to general practitioners and those temporary Service medical officers who have little or no experience of malaria. As a result of the technique of investigation, treatment, and control evolved since the last war, I think it would

be fair to say that there is less risk of oversight on the part of regular medical officers of all Services.

Malaria is a potential danger wherever "carriers" and anopheline mosquitoes coexist, but certain areas were especially dangerous in the last war. Cases of indigenous malaria have occurred in certain areas after every war in which troops have been exposed to infection over-seas, and the present war will probably be no exception. Thanks to the knowledge with which we are now armed, and given early diagnosis and efficient treatment of indigenous cases, there is little danger of the latter ever reaching serious proportions.

The following table is taken from *Observations on Malaria* (H.M.S.O., 1919):

Carriers of Malaria under Treatment during May to September, 1918

1918	Sheppey.		Lydd		Sandwich	
	In Hospital	Not in Hospital	In Hospital	Not in Hospital	In Hospital	Not in Hospital
May	—	491	—	74	13	7
June	—	552	12	84	14	11
July	—	550	Nil	24	10	47
August ..	—	349	1	23	8	17
September ..	—	46	1	33	6	32

The above figures relate to men from over-seas. During 1918 sixty-one cases of indigenous malaria in serving soldiers were reported. Each case was carefully investigated; none had a previous malarial history and most of them had never been out of this country. The indigenous character of the infection was established in every instance. Forty-two cases occurred in the Sheppey, Isle of Grain, Sandwich, and Lydd areas, and the remaining nineteen were distributed between Aldershot (4), Suffolk (6), Norfolk (2), Essex (2), Sussex (1), Leicester (1), Nottingham (1), Lincs (1), and Herts (1). Twenty-nine foci of infection were located.

References to "ague" in the literature of the sixteenth century make it clear that malaria was endemic in England at that time. It is now practically, if not quite, extinct, not because of any sanitary measures specifically designed for its eradication, but as a fortuitous result of the improvement in the general sanitary condition of the country.

Introduction of a natural reservoir of infection in the form of malaria patients from over-seas certainly supplies what Dr Maekenzie calls "the missing link"; but Service authorities are fully alive to the risk to the civil population thereby entailed, and every care is taken to render patients parasite-free before they are "turned loose" on the uninfected anopheline. It must not be forgotten that even in peacetime there is a continual traffic of infected civilians on leave from over-seas, who are usually far less carefully supervised.

It is doubtful whether medical officers of health do all they might to discover and eradicate anopheline breeding-places. I have in mind certain stagnant pools and miles of derelict canals which I have myself dipped and proved to be prolific nurseries of anopheline larvae.—I am, etc.,

Brookwood, Nov. 9.

H. M. STANLEY TURNER

"Euglamide" in Treatment of Burns

SIR.—In the *Journal* of March 29 (p. 469) we reported the results obtained in burns treated with a glycerin sulphamide paste termed "euglamide." Briefly these results appeared to indicate that the use of the paste led to prompt healing and that it might be of value in the treatment of third degree burns and in burns of the hands and face. Work on this subject has been continued, and we have made several alterations in the dispensing, though the principle of using a water-soluble sulphamide in glycerin has been retained.

(1) Work which one of us (J. M. R.) has carried out in collaboration with Major G. I. Scott has shown that a solution of sodium sulphacetamide (supplied in a 30% solution by E. Schering Ltd.) exhibits a much higher chemotherapeutic activity than a similar solution made by dissolving the solid material (supplied by the same firm) in water. For this reason we now use the 30% solution in making up the euglamide.

(2) By making up the paste with "eucerin" (a proprietary ointment base made from the oxycholesterin of wool fat and

¹ *Amer. J. Syph. Gon. ven. Dis.*, 1939, 23, 150.

² *Arch. Derm. Syph.*, 1941, 44, 441.

paraffin, supplied by Herts Pharmaceuticals, London) instead of kaolin and cod-liver-oil, a material is obtained which penetrates more readily all parts of the injured area and shows no tendency to dry or cake.

(3) Higher concentrations of the sulphonamide have been employed and the paste at present favoured is one which contains 10% of the sulphonamide in its liquid phase. The formula of this material is:

30% solution of sodium sulphacetamide (alkaloid soluble)	135 c.c.m.
Disulphated water	65 c.c.m.
Glycerin	200 c.c.m.
Eucerin	400-450 grammes

The liquid constituents are mixed together in a mortar or other suitable receptacle and the eucerin is then gradually added and mixed until a suitable paste forms.

The results so far obtained with this "euglamide" have been satisfactory, though sufficient data have not yet been gathered to justify a communication on the subject. At the same time we thought it worth while to report briefly our progress in this investigation.—We are, etc.,

Departments of Pharmacology and Surgery,
University of Edinburgh, Nov. 12.

J. M. ROBSON.
A. B. WALLACE.

Operation for Reduction of Fractures of the Os Calcis

SIR,—Surgeon Lieut.-Commander W. G. Campbell (November 8, p. 651) has not described a new method of treatment for certain types of fracture of the os calcis. The method was first described to me by Böhler in 1935, and he learnt it from, I think, Kirschner. Further, the method is described and illustrated in Watson Jones's most excellent book (first edition, p. 625, Figs. 951 and 952). It would be interesting to know its true originator.

From an extensive experience of manipulative reduction of fractures of the os calcis by a pin placed in the axial plane of the posterior fragment I can say this: (1) it is a suitable method for comminuted fractures of the os calcis with a large posterior fragment associated with depression of the posterior articular facet of the os calcis; (2) after manipulation, if too much force has not been used, the radiograph in the lateral view shows an exact anatomical reduction; (3) this exact reduction is frequently not confirmed in the axial (plantar-dorsal) radiograph of the os calcis, because manipulation by the axial pin does not correct the displacements associated with fractures of the sustentaculum tali and the buckling of the outer wall of the os calcis. When an exact reduction has been confirmed by two-plane radiography it is wise to incorporate the pin in the plaster for a period of six weeks, otherwise with such a comminuted fracture the reduction will be lost. I have experimented with various designs of pin and methods of manipulation, and from that experience I can assure Commander Campbell that the method is not simple and that it does require more than a minimum of surgical skill.—I am, etc.,

Birmingham, Nov. 10.

WILLIAM GISSANE, F.R.C.S.

SIR,—I read with interest the description by Surgeon Lieut.-Commander W. Gordon Campbell of a simple reduction of certain fractures of the os calcis. I can agree whole-heartedly with him as to the simplicity and efficacy of this manoeuvre with regard to the overcoming of the pull of the tendo Achillis in most of these os calcis fractures. I have been accustomed to using this simple spiking of the posterior fragment associated with lateral compression and fixation in plaster during the past four years, and regard it as being one of the most satisfactory ways of regaining the normal shape of the foot. I have never known any harmful sequelae, and not one patient has complained of the small scar which was left at the back of the heel.

My experience has been similar to that of most people, that while there are many methods of re-establishing the shape of the foot, these methods have little effect in restoring the movements of the subtalar joint. This simple operation can be carried out to give a good shape to the foot after a great majority of compression fractures of the os calcis.

After restoring the depth of the heel and accentuating the normal arch of the foot, I believe that the most important next

step is that the patient should be fitted with a moulded arch support in order to relieve the ligamentous strain which is inevitable when he starts walking again.—I am, etc.,

Nottingham, Nov. 11.

A. N. BIRKETT.

Endoscopic Resection of the Prostate

SIR,—I was much interested in Mr. H. T. Cox's note on endoscopic resection of the prostate (October 25, p. 583). It would be a pity if the idea gained ground that by fitting a check to the resectoscope the external sphincter could, therefore, be certainly protected. I do not believe this on the following grounds. (1) In the course of a resection frequent reference must be made to the verumontanum as a guide to the sphincter. It is manifestly impossible to retain the resectoscope in a fixed position if an efficient operation is to be carried out. (2) It appears to me to be bad practice to cut if haemorrhage obscures the view. (3) In my experience of some hundreds of cases, using both the McCarthy resectoscope and the Gershom Thompson punch, intra-urethral (and intravesical) projection of the prostate form the majority. Consequently the prostatic urethra varies in length from one side to the other, and where a middle lobe exists measurement by any gadget must be entirely misleading. Moreover, when a prostate has been incised it tends to shrink, so that any measurement taken at a first resection is unlikely to be of any value in a repeat performance.

It is difficult to follow Mr. Cox's reasoning in his recommendation "to leave the most prominent part of the prostatic ledge at the internal meatus." Surely the first task is to expose the fibres of the internal sphincter all round the bladder neck. These fibres are easily identifiable, and such exposure permits prostatic tissue to prolapse more easily into the urethra.

No, Sir, the great trouble with the loop resectoscope is the difficulty of using it. The visual field is often poor, and structures are not seen in their natural size or position. The instrument is delicate and temperamental, and the smallest piece of clot adhering to the distal end means complete obscurity of the field of operation. May I suggest to Mr. Cox that he transfer his affections to the Gershom Thompson direct-vision punch, when his fears of "black-outs" will vanish. After all, the world's best work in the field of this problem has been done by Gershom Thompson, Emmet, and their colleagues.—I am, etc.,

Newcastle-upon-Tyne, Nov. 10.

W. E. M. WARDLLE.

Sulphonamides for Ophthalmia Neonatorum

SIR,—The treatment of ophthalmia neonatorum has been greatly simplified in the past few years by the introduction of sulphapyridine and sulphathiazole. The usefulness of these drugs in this dangerous disease is not widely enough known, and even recent textbooks do not stress sufficiently their use in this connexion.

Either sulphapyridine or sulphathiazole can be used; the dose recommended is 0.125 gramme (1/4 tablet) three-hourly for the first twenty-four hours, then four-hourly for the next twenty-four hours, and, finally, six-hourly for four days in all. The drug is given crushed in sweetened water and is well tolerated, but should be stopped if it causes vomiting or should a diffuse rash appear. The response is invariably prompt and satisfactory; in twenty-four hours the oedema of the lids will be much less, and in forty-eight hours the discharge will have almost ceased and the eyes are open. I have treated many cases in the last three years with most satisfactory results, the infants being detained in hospital not more than seven days.

The advent of the sulphonamide compounds has rendered local treatment of the infected eyes unnecessary. The simple instillation of medicinal paraffin to prevent the lids sticking is all that is required. The special nurse and frequent irrigation are no longer necessary. Recent experiences would seem to point to the fact that some practitioners still rely solely on local treatment to the eyes. This is no longer justifiable, and it is of the utmost importance that either of the compounds mentioned be administered as soon as the signs of ophthalmia appear, and thus any permanent damage to the eyes will be prevented.—I am, etc.,

City General Hospital, Sheffield, Nov. 7.

WILLIAM J. CLANCY,
Obstetric Officer.

blanket is arranged to hang down on either side of the stretcher to confine the heat. With reasonable care this method is free from danger and economizes space. It is important to bear in mind that blankets between the patient and the stretcher during transport are just as important as those placed over them.—I am, etc.,

Leeds, Nov. 12.

H. COLLINSON.

SIR,—Dr. R. L. Kitching (November 8, p. 668) suggests that as a rule such cases should be sent to a first-aid post. There are several objections to this: (1) On the spot the first-aid party man may not have discovered either the shock or the condition causing it. (2) In most cities and towns the hospital should be as near as a first-aid post for early treatment. (3) For the proper treatment of cases of shock there should be a resuscitation room with a constant heated temperature of not less than 70° F.; this does not exist at any first-aid post that I am aware of (some hospitals probably also have not got this constant temperature). (4) To carry out the excellent suggestions he makes would require a special trained staff of nurses (not auxiliaries); of what use would the auxiliary nurse be who passes an examination on the signs, symptoms, and treatment of greenstick fracture, fainting, varicose veins, and types of slings, and *truly nothing more*? (5) If the case is one of internal haemorrhage or other condition demanding immediate operation there would be the added danger of delay against a possible recovery.

Since the first thing a shocked patient requires is heat (unless the shock is from haemorrhage or pain) then this is where a mobile unit is of greatest value: it can do all that is necessary. I am not sure that the present policy of keeping them at posts is altogether right, as one would require certain information from hospitals—whether a given number of cases of shock if they had had the required treatment on the spot of the injury would have recovered. I certainly am of the opinion that a mobile unit should go out at all major "incidents" as a routine. There is a tendency to rely too much on first-aid parties, whereas more mobile units with their doctors, trained nurses, and full equipment are likely to secure more successful results with all types of injuries. The idea, mooted in another quarter, to put the casualty treatment in the hands of a particular association would be calamitous. The suggestion of keeping blankets warm at first-aid posts is excellent, and this should be done; but what is required is to bring these blankets warm to the sites of injuries, and this can be done in a mobile post with a double-lined tin box with hot water between the two linings.—I am, etc.,

Nov. 10.

A. G. N.

Mobile Units

SIR,—Of your many correspondents on this subject some appear to have waited patiently for the ideal conditions to set up a mobile aid-post as originally planned, and in their disappointment have condemned the units as a useless extravagance; most of the others (I exclude the writers from rural areas whose elaborate coaches are designed for a different need) appear to have seen no alternative but to go out with one or two nurses in their own cars and send back for the full unit if circumstances demanded.

In this borough we hit on a compromise which seems to me to combine many of the advantages of both the full mobile and the light car and which is worth recording. My colleague, Dr. L. J. Soutter, and I, who were in September, 1940, responsible for the borough's two mobile units, were very quickly convinced that to await the conditions for which we, in common with other mobile unit doctors, had trained ourselves and our teams would mean an indefinite waste of trained and eager personnel; we therefore obtained permission, while keeping one van with its team always ready to function as a full unit, to convert the other into what was christened the "incident squad." The heavier equipment was removed, only that likely to be required for strictly first-aid purposes being retained, and the van (a 30-cwt. Morris) was staffed by a doctor, a sister, and three auxiliary nurses, each one being provided with a haversack, over the stocking and packing of which great care was taken; the haversacks were packed exactly alike so that each nurse knew just what her haversack contained and could find anything in it in the dark. The "incident squad" was out between twenty and thirty times last winter, and did some very useful work.

The scheme has all the advantages of the light car method while having behind it a variety of equipment which a car cannot carry; it also allows for a larger number of nurses than a car can carry and for the keeping of records. No two "incidents" are exactly alike, and it is wise to keep an open mind as to how to act on arrival, but we have been able to deal satisfactorily with trapped casualties, to attend a certain number of the cases at major incidents without delaying the quick evacuation of the remainder by stretcher-bearers, and finally, when the serious cases have all been evacuated, to make a canvass of the neighbouring houses, which very often discloses a number of minor casualties who would otherwise receive no attention until the following morning at the earliest. If no further orders have been received from Control, a stop is made on the return journey at any rest centre which has been opened; in addition to finding minor casualties here, we have twice found epileptics whose supply of luminal has been destroyed, and three times we have found diabetics who have lost their insulin; both these drugs are now carried in the vans.

The two units undertake "incident squad" work alternately for a week at a time, and the girls are encouraged to use their initiative and, when necessary, work on their own. Nothing has been more gratifying than to see how the raw recruits of two years ago are acting to-day as cool and confident individualists.—I am, etc.,

Hornsey, Nov. 13.

G. F. RIDGEN.

Practical Results of Diphtheria Immunization

SIR,—I have read the letter from Dr. Ralph Weaver, M.O.H. for Brisbane (November 8, p. 669), in which he claims to have achieved striking results in the reduction of diphtheria incidence in Brisbane following a three-and-a-half-years immunization campaign. He bases his claim (a) upon the figures for nineteen months (1940 and part of 1941), and (b) after having immunized 22,912 children out of a population of over 320,000.

I would suggest that these data are far too small to justify Dr. Weaver's optimism. It would be easy to cite cities where immunization has been carried out quite as thoroughly as and over a longer period than in Brisbane, but where, so far from a reduction, an actual increase in diphtheria has occurred. Yet it would be quite unjustifiable to assert that this was the result of the immunization campaign. Both the incidence and mortality from diphtheria fluctuate notoriously from year to year, and it will only injure the cause of immunization if claims to have achieved results are put forward too hastily. I would suggest to Dr. Weaver that he would be well advised to warn his local authority that diphtheria incidence in Brisbane may again go up in spite of his immunization campaign, and that mortality may increase if the type of the disease changes, rather than talk at this early stage about "a diphtheria-free Brisbane being not far distant."

For myself, I have during the past twelve months personally immunized nearly 5,000 children in a population of only 40,000, a much higher proportion and in a shorter time than Dr. Weaver has accomplished in Brisbane, but I am not so sanguine as he is about abolishing diphtheria.—I am, etc.,

Leicester, Nov. 7.

C. KILLICK MILLARD.

Vaccinia as a Complication of Vaccination

SIR,—According to official statistics for the five years July 1, 1932, to June 30, 1937, public vaccinators in England and Wales reported 1,026,588 vaccinations. In the same period there were recorded fifteen definite cases of vaccinia and eleven doubtful cases, with one death. If the doubtful cases are included this gives an incidence of 1 in 39,484 vaccinations and a death rate of one in over a million vaccinations. In view of the rarity of this complication it would seem worth while to put on record a recent case, which unfortunately had a fatal termination.

On October 2, 1941, at the request of the parents, I vaccinated a boy aged 34 and his baby sister aged 7 weeks. I usually prefer to vaccinate babies when three to five months old, but this baby seemed to be perfectly healthy and there was no reason to anticipate any abnormal reaction. The result in the case of the boy was absolutely normal and satisfactory with no complications whatever.

A week after vaccination I found that the baby had developed at the site of vaccination on the lateral aspect of the left thigh one

any specific effect other than diuresis. The diluting the urine, will reduce the percentage of urine the removal of oedema may so improve the general and tissue circulation that the diabetic metabolism is elaborated thereby. Without knowing all the details or a full appreciation of his case, we suggest that the factors, and especially the latter, explain the improvement.—We are, etc.,

ic Department,
College Hospital, S.E.5, Nov. 10.

R. D. LAWRENCE.
W. G. OAKLEY.

reply to Dr. Tadeusz Markowicz's letter (November in which he reports an improvement in a patient om diabetes mellitus and chronic nephritis following stration of mersalyl, I feel that one simple explanation consideration—namely, that the improvement was diuresis. The disappearance of the ascites and ould surely help the patient to feel "a new woman." es for the urinary output for the twenty-four hours he first and second injections are given as 58 and respectively, and the urine is stated to have given an our on boiling with Benedict's solution after the first hile after the second one the colour produced was s suggests that the apparent reduction in the amount the urine was due to the dilution of the urine follow- resis produced by the mersalyl, as after the second e total urinary output for the twenty-four hours was e that following the first injection, and, other things oximately equal, one would expect to find a lower of sugar in the second specimen, and consequently ee of reduction of Benedict's solution.

ther points upon which further information is neces- any conclusions as to the influence of mersalyl upon of diabetes could be drawn are: (1) the nature of et during the forty-eight hours during which the sugar-free without the administration of insulin; ther the "improvement in the patient's general con- luded the passing of urine which gave a green re- nedict's solution, or whether the percentage of sugar rose again during the nine days after the second n the absence of definite information along these l suggest that the improvement was caused by the mersalyl of the oedema due to the chronic nephritis to any specific effect upon the diabetes.—I am, etc.,

sex, Nov. 5.

R. H. TRINICK.

of Burns and Wounds by Envelope Method

last! The papers on the subject of the treatment d wounds (July 5 and 12) and your leader of the hresent a complete review of this problem, which I ith great interest. At last there is emerging a better on of all the difficulties and of a principle upon may be overcome. This principle includes adequate cleansing and disinfection, prevention of secondary and the provision of drainage—in other words, Active movement of the injured part, even if it be advised, in spite of the opinion of others that such apt to light up infection. What are we to think? do not admit this danger. Fixation or movement econdary in importance if secondary infection be We can do just what the case dictates with this

manner in which the principle is to be applied no limitations when he said: "For sure I am that, ch the means of carrying out the antiseptic prin- come to vary from those which we now use, the elf will certainly be ultimately recognized as the ant of all those that shall guide the practice of d the sooner our profession is aware of this, the be for suffering humanity." For the benefit of

body cells and fluids. With regard to the dressing of the wound he said: "After the first dressing, the object which I always aimed at is to have the material in contact with the exposed tissues approximate as close as possible to the perfectly bland and neutral character of the healthy tissues." So in a devious, tortuous, and difficult way we come "back to Lister."

However promising the results may appear which follow the closed contact plaster method and that of the envelope, I predict their passing in favour of a complete and secure application of the antiseptic principle, contending that neither of those in use complies with its requirements and both smack too much of the same old trial-and-error ways which have been our expedients through the ages. I cannot refrain from protesting that any method introduced to the profession which makes it obligatory in its adoption to use but one reagent, proprietary or not, is invidious. Yesterday it was "dettol," to-day it is "milton"; both are valuable preparations, but I do not feel dependent on either of them. Any reliable antiseptic will serve, and this is as it should be; all of them or any one will suffice in applying the antiseptic principle, "and the sooner our profession is aware of this, the better will it be for suffering humanity."—I am, etc.,

A. C. F. HALFORD, M.D., F.R.A.C.S.
Brisbane, Queensland, Sept. 18.

Treatment of Wound Shock in First-aid Posts

SIR.—In your issue of November 8 Dr. R. L. Kitching makes some suggestions with regard to the equipment of first-aid posts for the purpose of warming up seriously injured patients.

In the first place I should like to join issue with him when he expresses the view that cases should not be sent direct to hospital, but should be treated for shock in a first-aid post "until they are fit for operation." Experience in Spain, in London, and some of our larger cities has shown that the sooner the patient reaches hospital the better, and that in serious cases the patient is usually sent direct from the incident without going to a first-aid post. Elaborate first aid is undesirable and is, in fact, impossible under the conditions existing; it is usually dark and the patient covered with dirt, soot, and brick dust; all that can be done is to splint or control a fractured limb, apply, but very rarely, a tourniquet, and cover the stretcher and the patient with blankets. It is a question whether even dressings over the wound are of any particular advantage unless for the purpose of controlling haemorrhage, and the application consumes valuable time. In many hospitals where large numbers of cases had to be dealt with few dressings were applied in the receiving room, but the patients were rapidly classified according to the severity of the injury and sent to the appropriate wards. Fitness for operation can only be decided by an experienced surgeon or physician at the casualty hospital, and resuscitation carried out at a first-aid post may be negated by a subsequent journey in an ambulance.

The foregoing applies, of course, to casualties occurring in a city where a hospital is comparatively close, and I agree with Dr. Kitching that where, as in his case, the first-aid post is separated from the hospitals by eight or twelve miles, the post can play an important part in combating shock in the interval between reception of the cases and the arrival of the ambulances. Judgment will be needed in deciding whether a case will receive more benefit by being kept for a short time in the post or by being sent as quickly as possible to hospital.

There is no question that warmth, posture, and the giving of fluids are of prime importance in combating shock, but I think that the method of heating described by Dr. Kitching is unnecessarily elaborate. A good supply of warm blankets and hot bottles is essential, but I would suggest that the method of warming patients adopted in the last war by regimental first posts and field ambulances is much simpler and equally effective. The stretcher is supported on trestles, and on the floor beneath a primus stove is placed with a sheet of metal on top. A

lanket is arranged to hang down on either side of the stretcher to confine the heat. With reasonable care this method is free from danger and economizes space. It is important to bear in mind that blankets between the patient and the stretcher during transport are just as important as those placed over them.—am, etc.,

Leeds, Nov. 12.

H. COLLINSON.

SIR,—Dr. R. L. Kitching (November 8, p. 668) suggests that as a rule such cases should be sent to a first-aid post. There are several objections to this: (1) On the spot the first-aid party van may not have discovered either the shock or the condition causing it. (2) In most cities and towns the hospital should be as near as a first-aid post for early treatment. (3) For the proper treatment of cases of shock there should be a resuscitation room with a constant heated temperature of not less than 70° F.; this does not exist at any first-aid post that I am aware of (some hospitals probably also have not got this constant temperature). (4) To carry out the excellent suggestions he makes would require a special trained staff of nurses (not auxiliaries); if what use would the auxiliary nurse be who passes an examination on the signs, symptoms, and treatment of greenstick fracture, fainting, varicose veins, and types of slings, and *truly nothing more?* (5) If the case is one of internal haemorrhage or other condition demanding immediate operation there would be the added danger of delay against a possible recovery.

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On October 2, 1941, at the request of the parents, I vaccinated a boy aged 3½ and his baby sister aged 7 weeks. I usually prefer to vaccinate babies when three to five months old, but this baby seemed to be perfectly healthy and there was no reason to anticipate any abnormal reaction. The result in the case of the boy was absolutely normal and satisfactory with no complications whatever.

A week after vaccination I found that the baby had developed at the site of vaccination on the lateral aspect of the left thigh one

typical vesicle. Two days later there appeared a vesicle on the front of the left ankle, and this was the precursor of a succession of vesicles occurring mainly on the limbs, with a few on the face and very few on the trunk. The distribution was identical with that of variola, and the stages of the eruption also corresponded. The baby's general condition remained good for five days after the appearance of the vesicle on the ankle. By this time most of the rash was in the pustular condition, and the evening temperature became elevated to the region of 101° F. About this time two vesicles appeared on the tongue. Small doses of sulphamamide (a quarter of a tablet every four hours) with bicarbonate of soda were given, but after twenty-four hours this had to be stopped because of diminution in the renal output.

By the morning of October 18, owing largely to the lingual involvement, there was difficulty in swallowing, and rectal injections of glucose solution were begun. The baby and mother were admitted to hospital for a continuation of the rectal injections, to which were added two or three minims of coramine. It was hoped that by tiding the baby over the dysphagic phase she might in the course of a day or two be able to resume swallowing and so maintain her body fluids. The prognosis, however, became less favourable by the appearance of haemorrhage into some of the spots. In hospital she became gradually weaker, and died in the early morning of October 19.

The guaranteed calf lymph employed was obtained in two small capillary tubes and was quite fresh. As the boy was not at all adversely affected it is to be assumed that no fault can be attached to the lymph and that the occurrence of vaccinia and the subsequent death were traceable to hypersusceptibility on the part of the baby. It is a matter for speculation whether, in the absence of vaccination, this hypersusceptibility might have appeared later in life in the presence of any other infection.—I am, etc.,

Corbridge, Nov. 12.

J. N. TURNBULL, M.B., F.R.C.S.Ed.

Treatment of Scabies

SIR,—I have read with interest the correspondence in the *Journal* on the prevention and treatment of scabies.

Most general practitioners are, I think, agreed that treatment with benzyl benzoate is the method of choice. Unfortunately, in an area like my own, where cases are numerous, this preparation is not always obtainable. I have regularly applied the treatment described by Dr. E. W. Prosser Thomas (November 1, p. 631) with satisfactory results. Each patient is supplied with the necessary amount of 10% sulphur ointment, and instructed to return after three days of intensive treatment, bringing with him, in order to minimize the risk of a sulphur dermatitis, any unused ointment. The patient is also given typed instructions as to procedure, similar to those issued by Dr. Prosser Thomas.

I am quite sure that without proper disinfecting of garments and bedding recurrence of the condition and further infection of contacts take place not infrequently. My experience in this respect has been interesting. In the area of my practice there are two adjoining authorities in whose area the majority of these cases occur. One authority, on the morning of the fourth day after treatment has commenced, sends for and removes all clothing and bedding, returning them to the house of the patient on the same evening after thorough disinfecting. In the case of the other authority no facilities exist for this purpose. The majority of my cases have occurred in the area of the former authority and a recurrence has been rare. In the case of the authority where no assistance is given, and the unfortunate household have to do their best to disinfect bedding and clothing, reinfection is a common occurrence.

Until notification of this disease is compulsory and the prevalence of the condition is brought home to those in authority, there would appear to be little chance of stamping out this unpleasant condition.—I am, etc.,

Warkworth, Northumberland, Nov. 6.

R. E. MOYES.

Post-war Medicine

SIR,—The correspondence on State Medical Service shows neither sign of termination nor of contribution to progress. I presume (although perhaps I am unduly optimistic) that the supporters of a State Medical Service, like the supporters of private practice more or less in its present form, are persons who desire to attain the best possible service to the community with reasonable security and remuneration for

the doctor. Surely, then, it is necessary to determine what is wrong with the present state of affairs, because to propose a doctrinaire solution of all difficulties is no part of medicine, even if it is characteristic of much that passes as politics. We get no further by vituperation, even when it is in the mild form of an accusation that we doctors have a "vested interest in disease." One becomes inured to the sloppy mode of expression that characterizes most of the writing on State Medical Service, but let us never become reconciled to it.

It is alleged that the practice of medicine is "sick"; let those who say so indicate the nature and aetiology of the maladies that afflict it. If they can do so it will then be time enough to discuss the cure; but let it be remembered that there is a very limited pharmacopoeia (according to the supporters of State Medical Service): either leave things in what is alleged to be their present horrid state or turn the medical world inside out. The fact that there are those among us who prefer whole-time appointments (and do their best work in them) while others prefer "piece-work" does not prevent these gentry from advocating a Procrustean bed into which the second group must be forced.

Mr. Wilfred Shaw's fourth point (*Journal*, November 8, p. 665) that we should plan a medical Utopia and then work towards it is admirable, but we can only work with the material that is available. In the name of all that is sensible let us, as doctors, avoid the stupid view that we should dislike any Utopia (and indeed deny that it is a Utopia) unless it is attained by the means that our preconceptions have led us to believe are the only decent methods.

The stupidities into which the scholastic philosophers were led by their adherence to the deductive method should surely be a warning to us to stick to the experimental route that has led our profession so successfully to its present state. No general principle can have greater strength than the observations on which it is based (unless the supporters of a State Medical Service regard their first principle as being divinely inspired); and we are therefore not bound to accept any one view to the exclusion of all others.

The questions are, What is wrong with medicine to-day? and, What shall we do about it? This is very different from the doctrinaire statement that what is wrong with medicine is private practice, and that all that is needed is to do away with that.

In conclusion I should like to inquire what remarkable changes we are to expect if a State Medical Service comes into being. Is there to be less disease; is research to progress more rapidly and more successfully; or is all we shall gain but the status of civil servants?—I am, etc.,

London, N.W.1, Nov. 8.

A. PENLY.

SIR,—Mr. Wilfred Shaw's letter (November 8, p. 665) is provocative, as no doubt he meant it to be, and I hope that the implications of paragraph 1 will not pass unnoticed.

Far-reaching political changes are inevitable after this war, but whatever political party is in power will most certainly regard the future health of the people as a political issue of the first magnitude, and to ignore this fact is criminal folly on our part. Further, it must not be supposed that the public is disinterested in this matter. It has become health-conscious in spite of, and not because of, us; nevertheless it will seek our help in the future as never before in the attainment of a greater degree of good health for all. The public will play an important part, both in and out of Parliament, in determining the future medical services available to it, and will naturally look to us for guidance, but it will look in vain unless and until we are prepared to take a far wider view than we have done hitherto.

We are in the midst of a world war, and in this country political parties have sunk their party differences to form a coalition the more energetically to pursue the war to a victorious conclusion and to speak to the world with a united voice. Can we not, in our own small way, do the same? Is it Utopian to suggest that a British Medical Corporation should be formed by an amalgamation of all existing representative medical bodies? Is it hopeless to expect such organizations to sink their differences? Is it impossible to speak with one voice? Are we, as a profession, so far lacking in public spirit, that

prise, and wisdom that we are prepared to witness the unedifying spectacle of the various organizations to which we belong drifting farther and farther apart without raising our voices in protest? Are we to continue on this slippery path to perdition? Will we gain by it, will the public, or will they be the losers as well as ourselves?

I venture to suggest, Sir, that the formation of a British Medical Corporation would be received by Parliament and public alike as an earnest of our intention to put our own house in order. If the suggestion I put forward could be accomplished, we would be in an unassailable position, as a united, authoritative body, to discuss the future medical welfare of the country with the Government. There are difficulties inherent in this suggestion, but are they insoluble? I am not concerned in this letter with actual plans for the future of medicine; I plead for union in the profession under one organization as an absolute necessity.—I am, etc.,

London, S.W.1, Nov. 13.

R. PROSPER LISTON, M.B., Cb.B.

SIR.—There is considerable disquiet among the profession at statements in the Press and in Parliament as to various schemes for altering the terms of both hospital and domiciliary practice without reference to those most intimately concerned with such changes—namely, the medical profession and the public. At a moment when, in the words of the chairman of the B.M.A. Medical Planning Commission, they are "simply exploring the whole field of medical practice" before even attempting to put forward concrete suggestions to the whole profession (which must surely precede consideration by the Government), it would seem necessary to insist that all such unofficial schemes, including those made, for example, by the Nuffield Trust, are not only provisional but indeed premature. It would indeed be fatal if the impression should gain ground that any such suggestions are the considered opinion either of the profession or of the public when neither have been consulted in the matter. That this impression is growing is shown by reports of discussions in Parliament and in the lay press.

One hears from some provincial towns that representatives of the workers have stated that if any attempt is made to regiment them into any State or local government scheme of which they do not approve they will endeavour with the collaboration of the profession to run a voluntary hospital and domiciliary scheme on their own: an interesting commentary on the query of Sir Frederick Menzies as to the essential differences between State and voluntary hospitals as judged by the public.

Another fact which is in danger of being forgotten is that a large number of the younger members of the profession are on Service; and neither the Government nor we who are at home have any right to legislate for them until after the war when they will have returned and can express their views. One hears again that few of them are anxious to see any violent upheaval in the terms of practice, be it hospital or private.

At any rate one would feel reassured to learn that those of our profession in touch with Government circles are making it clear that, while we are interested in any suggestions for post-war medical planning, all schemes adopted and alterations made at the moment must be considered as being purely war measures, which may or may not, as judged by the profession as a whole, remain as part of our peacetime organization.—I am, etc.,

London, N.6, Nov. 13.

W. LEES TEMPLETON.

Medical Education

SIR.—I should like to comment, from the point of view of a schoolmaster who trains about twenty medical students a year, on recent articles on medical education. I fully agree with the view that a physician should have a wide general culture and with the opinion that he is too often without it, but I do not think that "paper changes," such as postponing the study of pre-medical subjects to the age of 17, or taking the First M.B. only from the medical schools, would really attack the problem. The difficulty which the schools have in educating the future medical student is that the universities will mostly accept men to read medicine whom they would reject from most of their honours schools. We cannot refuse to teach these boys, and the result is that the biological sixth, while it usually contains some very good pupils, also has many who are far

below the normal sixth-form level, both intellectually and culturally. Few schools are large enough to separate the two classes, and the teaching of the good boys is dragged down to the level of the others. In this school a partial separation is possible, and most of the better pupils stay for a third year in the sixth; to them we give a good general education; for the others we do the best we can.

I would suggest three remedies, all linked together, of which the universities could put two into practice almost at once. First, a raising of the standard of entrance to the medical schools to approximately that demanded of the honours student. Second, the provision of more scholarships to make up for the loss in numbers caused by the first. Third, the rapid recognition of the schools as the proper place for the pre-medical subjects and the acceptance of a pass in appropriate subjects in the Higher School Certificate in place of the First M.B. The special examination for the latter might in time cease.—I am, etc.,

Manchester Grammar School, Nov. 10.

BRUNSDON YAPP.

Science and World Order

SIR.—I do not think that Mr. O. J. R. Howarth (November 8, p. 671) is justified in saying that the conference of the British Association was the first attempt at international understanding among scientists made in this country. Since the beginning of the war many British scientific bodies, including the Royal Society of Medicine, have turned their activities in this direction, and although less advertised these have been no less successful. I do not deny in my letter that certain foreign representatives had been given a prominent part in the conference, but these were the distinguished Ambassadors of the United States, Russia, and China. This may give a political but hardly a scientific stamp to the conference. Further, the fact that smaller nations were not treated so bountifully has aroused a certain amount of ill feeling which goes against international understanding, for at scientific conferences representatives should not be treated according to the surface area of their countries. I apologize, however, for having said that out of sixty speakers only one dealt with the principal international problem of to-day—European starvation and threat of epidemics—and I accept Mr. Howarth's assertion that "no less" than four speakers referred to the subject. Even so, the proportion is tragically inadequate.

The object of my letter was not criticism of the British Association conference but a constructive proposal for a really international and strictly scientific conference for examination of actual scientific problems. For convocation of this conference the principal British scientific bodies should come to an understanding, for despite its greatness the British Association is not the exclusive representative of British science. Next, contact with the foreign scientific organizations should be made and the plan of the conference should be arranged by British and foreign representatives jointly. An international conference is not built up by a restricted group of scientists belonging to one nation who direct the activities of all the others as they see fit. This is a method of "new order" which is doomed to failure.—I am, etc.,

London, W.1, Nov. 10.

A. P. CAWADIAS.

"Perfect Sight without Glasses"

SIR.—I have noted your annotation "Perfect Sight without Glasses" (September 13, p. 383) and the letter from Dr. J. Parness (p. 389). The work of the late W. H. Bates, M.D., is carried on by his widow, Emily A. Bates, who classifies herself as a "teacher of eye, education, Bates method." Just over seven years ago a friend of mine became so interested in this method that he arranged for Mrs. Bates to visit this city and hold classes. He and scores of his friends, after two weeks' educational course, decided to give up their glasses. I discussed this method with those who were taking the course. They were very enthusiastic, and were quite convinced that they could get along without their glasses. They were able to do so for varying periods, but, in general, only until the enthusiasm subsided. Within a matter of a few months they were all wearing their glasses again, and have continued to do so.—I am, etc.,

—S. J. STREIGHT, M.D.,

Toronto, Oct. 9.

Medical Director, Canada Life Assurance Company.

Obituary

WILLIAM FORDYCE, M.D., F.R.C.P.Ed., F.R.C.O.G.

Consulting Gynaecologist, Edinburgh Royal Infirmary

Dr. William Fordyce, who died in retirement at Tillicoultry, Clackmannan, on November 6, was for many years one of the leading obstetricians and gynaecologists in Edinburgh. His death removes the last survivor of a famous group of contemporaries who maintained and enhanced the reputation of the Edinburgh Medical School in that branch of practice and teaching. They included Sir Alexander Simpson (nephew of Sir James Young Simpson), Sir J. Halliday Croom, Dr. Freeland Barbour, Dr. D. Berry Hart, Dr. Milne Murray, Dr. J. W. Ballantyne, Dr. J. Haig Ferguson, Dr. F. W. N. Haullain, and Dr. Lamond Lackie.

Dr. Fordyce was born in 1863 at Liverpool, but both his parents were Fife people, and he was sent to school at Anstruther in Fife and read for an Arts degree at St. Andrews University. He went on to study medicine at Edinburgh University, graduating M.B., C.M. with first-class honours in 1888, and proceeding to the M.D. degree in 1893 after postgraduate work at Leipzig and Berlin. He took the M.R.C.P.Ed. diploma in 1896 and was elected F.R.C.P.Ed. in 1898. Personal friendship with Sir Alexander Simpson drew Fordyce towards midwifery and gynaecology, and he assisted Simpson for several years in the work of his university chair at Edinburgh. Later he was appointed lecturer in the Extra-Mural School of the Royal Colleges and was elected to the visiting staff of the Royal Maternity and Simpson Memorial Hospital as assistant obstetric physician; some time afterwards he was appointed to the obstetrical and gynaecological staff of the Edinburgh Royal Infirmary. He was also for many years gynaecologist to the Leith Hospital and to the Hospital for Women in Archibald Place.

Dr. Fordyce was noted for his diagnostic powers and operative skill. He was a regular attendant at meetings of the Edinburgh Obstetrical Society and often contributed to its proceedings; he became President of that society in 1919 and devoted his presidential address to a historical survey of the development of gynaecology. He had been a member of the British Medical Association for forty-five years, and at the Annual Meeting in Edinburgh in 1927 was vice-president of the Section of Obstetrics and Gynaecology. In 1929 he was one of the Foundation Fellows of the Royal College of Obstetricians and Gynaecologists. He retired from active practice about ten years ago.

Outside his profession Dr. Fordyce had many interests. He was a keen fisherman and golfer, and enjoyed curling. His turn for the writing of light verse was well known to a wide circle of friends, and he often sang or recited his own compositions at medical and other dinners. Of these he was persuaded to publish privately a selection in a small volume entitled *The Old Sport and Other Verses*. He had been for many years a member of the Scottish Arts Club.

H. MORELAND MCCREA, O.B.E., M.D.

Dr. Hugh Moreland McCrea, who died on November 8, was born in Belfast in 1877 and came of medical stock; both his father, John McCrea, and his grandfather, Prof. Dill, were well-known physicians in Belfast. He was educated at the Royal Academical Institute, Belfast, and left as head of the school to enter Queen's University as science scholar. He was naturally attracted to the medical side of the university, and in a distinguished career obtained in succession the only two medical scholarships then existing in Belfast University.

After two years' residence in hospital he came to England, and for a few years practised at Wargrave, where he soon made a reputation as a consultant physician. In 1907 his practice as a

consultant had so far increased that he decided to come to London. He married the daughter of Charles Hadden of the Chinese Customs. In 1915 he was appointed physician to the City of London Military Hospital, and there acted as senior physician for five years. He was anxious to serve abroad, and in 1916 was actually appointed O.C. of a hospital fitted out for Salonika, but two days before the unit sailed a medical board refused to pass him as fit for duty over-seas, to his great disappointment. At the end of the war, and while still carrying out his duties at the military hospital, he was appointed chairman of the second final Medical Appeal Board of England and Wales. In addition to this he took a large share in organizing the Emergency Medical Corps under the auspices of the Royal Society of Medicine. The corps was a very active body, and actually answered no fewer than 68 air-raid calls. He was awarded the O.B.E. for his distinguished service.

But Dr. McCrea's most enduring contribution to medicine in London is the London Clinic, which owed its origin to his inspiration and its realization to his energy. He was chairman of the Medical Advisory Board, and for years it was the chief centre of his ambition, and only those who worked with him can realize the almost insuperable difficulties with which he had to contend.

Those who worked with Dr. McCrea will feel his loss as a physician of wide human sympathies, whom they could always call upon in cases of difficulty and whom they were sure would spare no exertion to help his patient. But they will miss him most as a real colleague and a very dear friend.

H. S. SOUTAR.

Sir G. LENTHAL CHEATLE writes:

The death of my friend Dr. Hugh Moreland McCrea terminates the activities of an alert, wise, and busy mind. On the public side of his life he founded the present London Clinic and Nursing Home. Its chief objects were to supply private patients with all the privileges and advantages of a first-class public hospital. Its reach for some insurmountable reason was premature and beyond the grasp of those who supported him; but it did result in building the only institution of its kind in this country that contains within its walls a pathological laboratory and x-ray department, each separate and under the control of men of the highest reputation. The ideals that gave rise to its birth would have supplied all the requirements in the treatment of private patients, and may yet be realized. In the conduct of his private practice Dr. McCrea achieved these ambitions. At his own expense he established a laboratory and an assistant for the proper examination, control, and treatment of his patients. His kindness and competence will be for ever missed by those who were fortunate enough to come under his skilful care. Dr. McCrea's life was an example to all those who practise medicine.

MR. VICTOR BONNEY writes:

By the death of Hugh Moreland McCrea a very remarkable man is lost to our profession. The qualities in the aggregate required to make a great clinical physician are much more rare than those needed to make a great surgeon, for the problems presented to the latter are solvable chiefly by touch, sight, and personal dexterity, whereas those with which the physician has to cope require not only the piecing together in order of importance a number of data obtained from various sources but the correct deduction from the whole assemblage. The power of doing this varies with individuals, but from time to time men appear who, possessing a faculty for retrieving and marshalling in surprising context impressions latent in sub-consciousness, have it in remarkable degree. The term *clair* is commonly used to describe this faculty, and McCrea was one of these gifted persons. To the gift was added an insatiable zest for professional knowledge which was continually added to by acute observation and voluminous reading. The result was a many-sided physician without one weak facet, so that whatever the nature of the case he brought to it the ability of an expert in that particular malady. His outstanding professional qualities became so widely recognized that he may justly be termed the consultant's physician, so many of them and so great a number among his patients. His energy and kindness, matched his abilities, for he threw his whole heart into every case, great

or small, to which he was called, and a multitude is in his debt. His passing enhances a regret, often felt before, that he was never on the staff of a teaching hospital, where the high ideals and deep mine of clinical lore of which he stood possessed could have been passed on to the younger men coming after him.

ROSA BALE, L.R.C.P.&S.Ed.

Dr. Rosa Bale died at Barnstaple on November 3, after a brief illness. She had her professional training at the London School of Medicine for Women and obtained the Scottish triple qualification in 1892. She was the first woman to start in general practice in the West of England, and up to last March still did a little work for old patients and friends at her home in Plymouth.

For nine years Dr. Bale ploughed a lonely furrow and faced much opposition and abuse. But she lived to prove that her job was a woman's job, and a long list of her patients and friends proves that she did it well. She was a woman of strong religious principles: week by week she held a women's Bible class and helped many a weary woman to hold on to the Christian faith. Strong for temperance, she always took her place among the band of workers in our midst who pleaded the cause of total abstinence; but she prescribed alcohol when needed. When the Passive Resistance movement was strong against the levying of the education rate, because religious instruction was not given in the council schools, she year by year took her place in the court and a piece of her furniture was sold to pay the rates. She was a Suffragist, and although non-militant she did her bit to win votes for women.

Her home was seriously damaged by enemy action. Then began the first signs of illness of which she was to die. Up to that time she had refused to seek safety because, in her own words, "the Plymouth Education Authority have not evacuated the school children: I cannot leave Plymouth and those for whom I work, and prove myself a coward." Since March she had lived with her brother and sister at Barnstaple, but she grieved sadly for her Plymouth friends and home. Many will remember her association with the Plymouth Education Committee, the Council of Social Service, the Mental Deficiency Committee, the Salvation Army, and temperance work. She did much to improve the midwifery service both as a teacher at Three Towns Nursing Association and as a practitioner.

Dr. Bale was a member of the British Medical Association for forty years and of the Medical Women's Federation (ex-president S.W. Association); she was also an honorary member of the oldest medical society in Plymouth, being the second woman doctor allowed to join it. Her associations with her medical colleagues were always of the happiest, and she inspired the younger medical women with her wise advice and help. When she had done thirty-three years' practice at Plymouth she was presented with an illuminated address of thanks by her women medical colleagues for her wise pioneering and guidance. Since her start in practice forty-three years ago some twenty to thirty medical women (and more in other parts of the West of England) have followed the path which she pioneered, so that to-day in Plymouth medical women are in practice in surgery, medicine, pathology, radiology, and public health: a candle light has become a flaming torch. Beloved by all, setting a noble example, always ready to help the needy and poor, Rosa Bale has passed from our midst and we mourn a great woman.

MABEL L. RAMSAY.

We announce with much regret that Dr. JOHN CARSON LOUGHRIDGE died on October 5 at his residence, Whitewell, Co. Antrim. He was educated at Queen's College, Galway, and Queen's University, Belfast, and took the Scottish triple qualification in 1892. Dr. Loughridge was a hard-working member of the British Medical Association, to which he had belonged for thirty-four years. He was chairman of the Belfast Division in 1924-5; president of the Ulster Branch and a member of the Central War Emergency Committee in 1929-30; member of the Central Council from 1931 to 1939; member of the Irish Committee from 1932 to 1936; and representative at seven

Annual Representative Meetings from 1925 to 1931. Dr. Loughridge had been dispensary medical officer of Whitewell area for many years. Apart from being a local magistrate he was associated with many charitable organizations in his district. Some years ago he was bereaved of his only son, Dr. Jack Loughridge, in a motor accident near his home at Templepatrick, Co. Antrim. He is survived by Mrs. Loughridge, to whom the sympathy of all his colleagues is extended.

Dr. WILLIAM PARKER died on November 4 at Farndon, Cheshire, at the age of 75. Born at Rossett, Denbighshire, he graduated M.B., C.M. at Edinburgh in 1887, at the age of 21, and in the same year started practice at Holt, a few years later moving across the Dee to reside at Farndon. He had a very wide and extensive country practice among people who came to recognize and value his ability, kindness, and great consideration for others. He lived a life of altruism, the financial side of practice being quite a secondary one to him. The affection his patients had for him was deep and abiding, and was manifested in many ways in words and in deeds. When, due to failing health, some five years ago he retired, more than a thousand, rich and poor, subscribed to a testimonial of their regard for him, which included a cheque for about £400. His special hobby was farming and stock-raising, and he much enjoyed discussions with his many farmer friends of the merits of certain breeds of cattle, of which he had practical and erudite knowledge. My friendship (writes W. H. L.) with him dates back to our student days, and as the years passed it became closer and dearer. It could be truly said of him that he was one that loved his fellow men. A true man, of whom all who knew him thought and spoke well and regarded with affection and esteem. He is survived by his wife and daughter.

Although Dr. JAMES KINGSTON BARTON retired from practice a good many years ago, there must be still a very large number of colleagues and patients who will mourn his death, which occurred recently at Wimbledon at the age of 87. From St. Bartholomew's Hospital, where he was Bentley Scholar in 1874, he qualified M.R.C.S., L.R.C.P. in 1875, and was ophthalmic house-surgeon there; he became M.R.C.P. in 1894. For a great number of years he practised in South Kensington, close to Gloucester Road Station, where he had a very extensive clientele indeed. He was the founder and a lifelong supporter of the Kensington Medical Reading Society, which in the end supplanted the much older similar social medical club known as the Brompton M.R.S. Not only at the meetings of this friendly collection of colleagues but in many other ways as well he could be relied on to help and encourage junior practitioners with freely dispensed wisdom and advice. As the years went on he became the admitted doyen of South Kensington practitioners, affectionately looked up to by patients and doctors alike. As far back as 1900 he published *Records from General Practice*. His strong lean face was often lit up by the twinkle of a kindly humour, and his whole outlook was one of humane and upright urbanity, with a pleasing self-confidence in his own really great professional ability. At a time when the black tailed coat and the stiff white collar were still thought indispensable for a Kensington doctor, Barton adopted flannel shirts and tweed suits; yet never gave the slightest impression of being unsuitably or untidily dressed. He was also one of the first in his district to give up his horsed carriage and adopt the "new-fangled motor," which he often drove himself. Nor did he rely on a garage service to diagnose and treat the ailments of his car: the writer vividly remembers seeing him in the street more than thirty years ago with smears of black oil on his face as he emerged from investigating some disorder in the interior of his engine. A very exceptional doctor and a very exceptional gentleman.

E. J. B. Miller (*Med. J. Australia*, 1941, 1, 614) records the case of a boy aged 14 who in convalescence from varicella developed iridocyclitis of the right eye and paralysis of the sphincter pupillae. When seen eight months later the pupil was still dilated, but the fundi were healthy and there was good binocular vision.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The Appointments Committee of the Faculty of Biology "B" will shortly proceed to appoint a University Demonstrator in Pharmacology. Particulars of this post, which will be governed by the Statutes and Ordinances of the University, may be had from the secretary of the Appointments Committee, Mr. H. E. Tunnicliffe, Department of Physiology, Cambridge, to whom application should be addressed before December 9.

At a Congregation to be held to-day (Friday, November 21) a Grace is being submitted; on the recommendation of the General Board, that the Final M.B. Examination begin in the present term on Monday, December 8, a day earlier than is prescribed by Ordinance. The number of candidates for this examination is abnormally high, and it is not possible to conduct the examination in the normal manner.

During October the titles of the degrees of M.B., B.Chir. were conferred by diploma on E. H. M. Gillieson and R. M. Stevenson of Newnham College.

UNIVERSITY OF LONDON

WESTMINSTER HOSPITAL MEDICAL SCHOOL

An entrance scholarship examination in anatomy and physiology will be held on Thursday and Friday, December 11 and 12. Two scholarships will be awarded, each to the value of £75. Further particulars can be obtained from the Secretary, Westminster Hospital Medical School, Horseferry Road, S.W.1.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council of the Royal College of Surgeons of England, held on November 13, with Sir Alfred Webb-Johnson, President, in the chair, Messrs. R. Milne, R. Davies-Colley, G. T. Mullally, V. Zachary Cope, C. E. Shattock, and E. W. Riches were re-elected members of the Court of Examiners for the year beginning December 11, 1941.

It was proposed to hold a Buckston Browne lunch on Thursday, February 12, 1942.

Diplomas

Diplomas of Membership were granted to the 159 candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London in the *Journal* of November 8 (p. 675).

Diplomas in Public Health were granted, jointly with the Royal College of Physicians of London, to L. C. Lodha, L. G. Norman, and M. A. G. Ward.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—T. L. Benson, H. V. T. Payne, G. M. Pearson, R. L. Skea, J. S. Taylor, S. S. Zoha.

MEDICINE, PATHOLOGY, AND FORENSIC MEDICINE.—C. R. Deuchar, J. S. Taylor, H. A. Worthy.

MIDWIFERY.—M. Fishman, M. C. Hannon, W. J. Lewis, Pak So, W. C. Salter.

The diploma of the Society has been granted to G. M. Pearson, J. S. Taylor, H. A. Worthy, and S. S. Zoha.

The Services

MENTION IN DISPATCHES

Surgeon Lieut. Patrick O'Brien, R.N. (H.M.S. *Defender*), has been mentioned in dispatches for gallantry and distinguished services in operations in Greek waters.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

The name of Major MARTIN MCAULEY MORROW is included as "Died" in an Army Council Casualty List published on November 8. He was educated at Queen's University, Belfast, where he graduated M.B., B.Ch., B.A.O. in 1936. He entered the R.A.M.C. as lieutenant in 1938, became captain in 1939, and was recently promoted to major. He had been a member of the British Medical Association since 1937.

Prisoners of War

Major Arnold Gourevitch
War Substantive Captain John Hunter Annan.
War Substantive Captain Lachlan Maclean.

Medical Notes in Parliament

Health in the Debate on the Address

A new Session of Parliament was opened by the King in person on November 12. The Speech from the Throne spoke of the strengthened resolution of the British Nations to prosecute the war to final victory, and announced that Parliament would be asked to make further financial provision for its conduct. A promise was given that the Government would continue to take all practical steps to sustain the health and well-being of the people under the stress of war.

Speaking in the House of Lords on November 12 during the debate on the Address, Lord ADDISON praised the Speech's emphatic declaration about the health of the people, and welcomed the steps which were being taken to provide more milk for school children. He thought the war provided opportunities for developments in improved nutrition which peace hitherto had not made possible. He hoped for further advances and said the Labour Peers would, at an early date, ask the House of Lords to consider this subject. Lord MOYNE, in reply to the debate, said the Government's Colonial policy must press on with the improvement of health facilities. At home, despite the suffering and waste of war, they had improved the social services. The remarkable record of national health was largely due to the food policy of Lord Woolton, which had brought nutrition on the best scientific advice within the reach of many who previously suffered from some deficiency. To-day had brought the announcement that children up to the age of 2 were to get free supplies of vitamins.

Mr. CHURCHILL, speaking in the House of Commons on November 12, said an Education (Scotland) Bill was required so that full effect might be given in Scotland to the Government's scheme for nutrition of children by maintaining a high standard among school children and by expanding as rapidly as possible the provision of meals and milk in schools. He went on to say that the dietary of the people, though curtailed and less varied, was sufficient for physical health. He hoped the Government would be able to give a larger share of available supplies of meat to the workers who needed it most. This would be done by rapid expansion of canteens. The Minister of Food had been able to make, during the winter months, minor relaxations in his restrictions.

In fulfilment of Mr. Churchill's promise of November 12, the Education (Scotland) Bill was introduced in the House of Commons on November 13 by Mr. T. JOHNSTON. It proposes to amend the law regarding the provision by education authorities of food and clothing to school children.

Committee on Nurses' Salaries.—On November 11 Mr. ERNEST BROWN told Sir Joseph Lamb that the present terms of reference to the committee under the chairmanship of Lord RUSCHLITZ extended only to the salaries and emoluments of nurses who were either State-registered or in training with a view to State registration, including any members of the staff of public assistance institutions covered by this definition.

Purchase Tax and Diagnostic Reagents.—Mr. PAICE asked the Secretary to the Treasury whether it was intended that all biological products used for medical and veterinary purposes should be exempted from purchase tax; why such items as tuberculin, Johin, and *B. coli* antiserum solely used for veterinary purposes were not referred to in Statutory Rules and Orders, No. 1390, 1941; and if he could put this matter right at an early opportunity. Captain CROOKSHANK said that exemption was intentionally confined to certain medicines and drugs of a specially costly character considered essential for the treatment of disease, and in the case of veterinary preparations for the treatment of serious diseases of livestock of economic importance. Diagnostic reagents were not regarded as taxable medicines, and it was accordingly unnecessary to exempt substances such as those mentioned in the second part of the question which were prepared for such use.

The Vienna Health Office has recently asked for the most rapid institution of measures to obtain serum from convalescent cases of poliomyelitis. All persons who have had the disease within the last six years are invited to offer their blood.

No. 44

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 1.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	102	3	26	1	3	132	3	23	1	3
Deaths ..	—	—	—	—	—	—	—	—	—	—
Diphtheria ..	915	61	295	28	27	1,282	39	459	28	36
Deaths ..	22	1	9	—	2	33	1	10	—	6
Dysentery ..	123	14	51	—	—	81	—	39	1	—
Deaths ..	—	1	—	—	—	—	—	1	—	—
Encephalitis lethargica, acute ..	2	—	—	1	—	3	—	—	—	—
Deaths ..	—	1	—	—	—	—	2	—	—	—
Enteric (typhoid and paratyphoid) fever ..	—	—	—	—	—	28	2	10	1	1
Deaths ..	—	—	—	—	—	2	—	—	—	—
Erysipelas ..	—	—	47	11	5	—	17	63	5	3
Deaths ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	59	3	13	25	7	43	6	14	9	2
Measles ..	624	46	19	43	5	12,592	176	458	2	14
Deaths ..	2	—	—	—	—	25	—	—	—	—
Ophthalmia neonatorum ..	79	3	22	—	1	76	1	21	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid ..	35	4	4	—	—	—	—	—	—	—
Deaths ..	1	—	—	—	—	—	—	—	—	—
Pneumonia, influenza* ..	553	18	6	—	3	572	34	11	1	3
Deaths (from influenza) ..	11	1	—	—	4	20	4	1	—	—
Pneumonia, primary ..	—	—	152	13	—	—	—	156	10	—
Deaths ..	—	—	—	11	—	—	58	—	16	7
Polio-encephalitis, acute ..	1	—	—	—	—	5	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Poliomylitis, acute ..	23	—	5	3	1	34	—	9	—	—
Deaths ..	—	—	—	—	—	—	1	—	—	—
Puerperal fever ..	—	—	14	1	—	1	1	12	3	1
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia ..	118	6	24	—	—	119	3	21	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever ..	1,204	36	245	60	35	1,789	50	266	73	52
Deaths ..	—	—	—	—	—	2	—	—	—	—
Small-pox ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Typhoid ..	20	2	3	4	9	—	—	—	—	—
Deaths ..	1	—	—	—	—	—	—	—	—	—
Typhus fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough ..	1,955	188	50	15	4	1,740	11	129	—	22
Deaths ..	9	3	—	—	—	13	2	—	—	—
Deaths (0-1 year) ..	325	23	73	36	16	327	28	58	21	15
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) ..	3,941	493	558	196	137	5,502	1,322	587	169	108
Annual death rate (per 1,000 persons living) ..	—	—	12.1	13.0	†	—	—	11.9	11.3	9.5
Live births ..	4,678	443	760	246	200	5,011	481	730	253	182
Annual rate per 1,000 persons living ..	—	—	15.5	16.3	†	—	—	14.8	16.9	15.9
Stillbirths ..	157	17	37	—	—	219	24	31	—	—
Rate per 1,000 total births (including stillbirths) ..	—	—	46	—	—	—	—	41	—	—

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

A general decline in the incidence of infectious diseases in England and Wales occurred during the week, the only exception being cerebrospinal fever with an increase of 14 cases compared with the preceding week. The largest outbreaks of dysentery during the week were in Cornwall (Bodmio M.B. 9), Staffordshire (Lichfield R.D. 9), Lancashire (Blackburn R.D. 8).

The notifications of infectious diseases in Scotland also showed a decline, although there were 18 cases of diphtheria in excess of the preceding week. The largest decline was in respect of dysentery, notifications of which fell from 95 to 51.

Paratyphoid and Typhoid Fevers

A further decline was recorded in the incidence of these diseases in England and Wales during the week. Local centres of infection, which have been a feature of the returns during recent months, are tending to disappear, and the total is now formed of isolated and widely distributed cases. The 35 cases of paratyphoid were in fifteen counties, the largest returns being those of Warwickshire 7 and Hertfordshire 6. The 20 cases of typhoid were contributed by sixteen counties.

Cerebrospinal Fever

An increase of 14 cases over the preceding week was recorded in England and Wales. Almost half the notifications occurred to four counties—namely, Durham 9, Lancashire 17, Warwickshire 8, and Yorkshire, West Riding, 8.

The incidence of this disease has shown, of all the infectious diseases, the greatest increase during the war. The following table makes a comparison of the trend, in four-week periods, between this year, 1940, and the immediate pre-war years:

Week	No. of cases notified		Cases as a percentage of the average of 1937-9	
	1941	1940	1937-9	1941
1-4	1,092	458	137	797
5-8	1,483	1,847	140	1,059
9-12	1,437	2,237	146	984
13-16	1,256	1,749	151	959
17-20	1,110	1,401	120	925
21-24	992	1,001	98	1,012
25-28	777	830	91	854
29-32	604	703	75	805
33-36	463	470	64	723
37-40	439	471	64	686
41-44	403	535	70	576

The epidemic of 1940, which began in the first weeks of the year and reached a maximum of 617 cases in the ninth week, failed to subside to the pre-war endemic level; as a result the notifications in the first weeks of this year were higher than in the preceding year. The rate of increase in the first weeks of this year was below that of last year, and despite the higher initial level the maximum weekly notification was only 430, occurring in the eighth week. During the weeks following the maximum the rate of decline was less this year than last. The fall in the number of cases from weeks 9-12 to weeks 29-32 was 73% in 1940 and 58% in 1941. The decline has persisted for a longer period this year than in 1940, when the trend during the last three of the four-weekly periods tabled was similar to the pre-war years, although at a considerably higher level.

Quarterly Return for England and Wales

The returns for the second quarter of 1941, published by the Registrar-General, show that the births and deaths have deviated much from the recent trends. A death rate of 13.5 per thousand was recorded, compared with 11.6 for the second quarter of 1940 and 11.7 for the average of the five years before 1940. The birth rate was 14.2 per thousand, compared with 16.2 in the second quarter of 1940 and 15.8 of the five preceding years. Infant mortality was 59 per 1,000 live births, 6 above the average of the ten preceding second quarters. Stillbirths formed 3.6% of all births. The natural increase (excess of births over deaths) was only 7,355, as compared with 46,980, 43,777, and 44,991 for second quarters of the three years 1940-38.

Returns for the Week Ending November 8

Notifications of infectious diseases during the week in England and Wales included scarlet fever 1,366, whooping-cough 2,029, diphtheria 1,069, measles 747, cerebrospinal fever 113, poliomyelitis 33, dysentery 148, paratyphoid 31, typhoid 12. Twenty deaths were due to influenza.

Medical News

Group Captain C. P. Symonds will deliver a lecture on "Meningitis" at the Weston Hotel, Bath, on Thursday, November 27, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

The meeting of the Section of Neurology of the Royal Society of Medicine, which was to have taken place at Chase Farm Hospital, Enfield, on November 15, will be held on Saturday, November 22, instead.

The next quarterly meeting of the Royal Medico-Psychological Association will be held at 11, Chandos Street, W., on Wednesday, November 26, at 2.15 p.m., under the presidency of Dr. Thomas C. Graves, F.R.C.S. Dr. E. L. Hutton will read a paper on "The Investigation of Personality in Patients treated by Prefrontal Leucotomy."

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, November 27, at 4 p.m., when Dr. H. Neville Stafford (coroner, County of London, Western District) will read a paper on "The Coroner and Civilian War Deaths."

The annual meeting of the Medical Benevolent Society for the East and North Ridings of Yorkshire was held recently in the rooms of the York Medical Society, Stonegate, York. After routine business was completed the following officers were elected for the ensuing year: President, Dr. Thornley of Beverley; President-Elect, Dr. M. Jacobs of Hull; Vice-President, Dr. Longbotham of Middlesbrough; Honorary Treasurer, Dr. Mackay of Hull; Honorary Secretary, Dr. Kelly of York. An application for aid was received on behalf of a disabled member, and it was decided to make a grant towards the education expenses of his son, who will be selected in April, 1942, for a university course. It was also decided to invest the credit balance for the past year in 3% Defence Bonds.

On November 13 at Liverpool Assizes Mr. Justice Croom-Johnson passed sentence of four years' penal servitude on John Knox Thompson, M.B., B.S., R.U.I., of Princes Road, Liverpool, and ordered him to pay the costs of the prosecution. Dr. Thompson, who is 61 years of age, had been found guilty on ten counts under Defence Regulations of having issued untrue medical certificates to members of H.M. Forces, and on a further count of having attempted to obtain £1 14s. 6d. from the War Department by false pretences. The judge, in his stern comment when passing sentence, said he had thought carefully over the case to see whether he could find the smallest excuse or extenuating circumstance for what the accused had done, but he found none; Dr. Thompson had brought scandal and disgrace on a noble profession.

The Medical Research Council has decided to print the monthly bulletins of the Emergency Public Health Laboratory Service, so that copies may be distributed more widely than has hitherto been practicable. The first to be printed is the November issue, and deals, among other matters, with paratyphoid in the Liverpool area, an outbreak of food-poisoning in Oxford, and a further one in Romford.

In a circular (2517) issued by the Ministry of Health on November 14, attention is directed to a new regulation, relating to scabies, which has been added by Order in Council to the Defence (General) Regulations, 1939. The regulation enables the Minister to make an Order providing for the inspection of premises in which verminous persons are or have been accommodated, for the examination and treatment of any other verminous person in such premises, and for any necessary cleansing or destruction of articles on such premises—all this if the Minister is satisfied that "scabies or any other disease associated with verminous conditions is so prevalent as to prejudice the efficient prosecution of the war, or the maintenance of supplies and services essential to the life of the community." The Scabies Order has now been made, and powers are given to local authorities to take the necessary steps to bring under control this widespread infestation of the public.

On November 12 Dr. Astley V. Clarke was nominated as a sheriff for the County of Rutland.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.
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QUERIES AND ANSWERS

Intermittent Polyuria

Dr. G. BAYNTON FORGE (Salisbury) writes in reply to G. A. G. S. (April 26, p. 658): In similar cases I have obtained excellent results from eullavine (neutral acriflavine) in 1/2-grain doses t.d.s. Very often two tablets will secure the desired result in one day. The condition seems to be due to an increase in the number of colon bacilli, and the acriflavine acts promptly. I usually give 100 tablets, 1/2 grain, enteric-coated, from British Drug Houses.

LETTERS, NOTES, ETC.

Blood Grouping in the Forces

Dr. W. LEES TEMPLETON (Highgate, N.6) writes: In a recently published book, *Under the Iron Heel*, by an American who lived in Belgium up to 1940, the author comments on the thoroughness of the German preparations, and mentions as one example the fact that on each soldier's identity tag is placed, in addition to the usual name and number, his blood group, so that even on the field it is possible for any man, even a high staff officer, to be stopped and, if it is required, to be compelled if of a suitable group to give his blood. It may be, of course, that similar precautions are taken in our own Army, but it would seem that it is something worth copying not only in the Forces but among the civilian population. That it would entail a lot of work is undoubted, but one feels that it could be undertaken—for example, by members of the E.M.S. staffs standing by during quiet periods.

Anti-tobacco Campaign in Germany

An article by Prof. Hans Reiter, president of the Reich Health Office, on the evils of tobacco-smoking appears in the *Reichs-Gesundheitsblatt* of July 2, 1941. The article is based on the investigations into the dangers of tobacco undertaken at a meeting in Weimar last spring, where it was stated that it was the right and duty of the State and party to combat the evil of tobacco-smoking by every possible means. The individual is asked to make sacrifices for the community. Formerly the "property condition" of a State was the standard of its wealth. Under the Führer the wealth of a country consists in its biological possibilities of development, and the condition of a nation's health is the measure of its cultural and material value. An intensive campaign of organized propaganda against the consumption of tobacco, financed by the State, is to be undertaken in the Press, theatres, cinemas, and all places of public assembly.

Treatment of Scabies

Dr. E. DRYBROUGH-SMITH (Sutton Coldfield) writes: The following is a simple and effectual way of treating scabies in the home. The patient is directed to sponge the body with warm water and soap (a tub of hot water is all that is required); the skin is then rapidly rubbed over with a towel, and before it is thoroughly dry it is sprinkled over with flowers of sulphur (sublimed sulphur), avoiding the eyes. Some of the sulphur is also sprinkled between the bed sheets. In the case of adults this is performed on three consecutive nights, in the case of children on two in order to avoid sulphur rash. On the day following the completion of treatment the patient should put on clean underclothes and clean sheets which have been put on the bed; no more sulphur should be used. As regards infected clothes and bedding, I understand that in most large towns the health departments will collect these, sterilize them, and return them on the same day, free of cost. Where that service is not available linen and cotton underwear and bedding should be boiled, and flannels and blankets should be steeped in a solution of lysol in water of a correct strength and then hung out in the open to dry. The advantages of this method are: it is quick, it is undertaken and the patient easily understands it; many organisms are avoided and valuable fats are saved; it is cheap (lindane is not available in the country cottage or in the town-worker's home).

BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 29 1941

COMBINED ACTIVE AND PASSIVE IMMUNIZATION AGAINST DIPHTHERIA II. CONTROL OF EPIDEMICS IN THE FIELD*

BY

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(From the Emergency Public Health Laboratory, School of Pathology, Oxford)

In the previous paper (p. 717) evidence was brought to show that by means of combined active and passive immunization a degree of active immunity can be produced which, though slower in its development, is ultimately not greatly inferior to that resulting from active immunization alone.

Attention was drawn to the difficulty in practice of protecting children against diphtheria during the intermediate phase of relative susceptibility which, according to Gundel and König's (1938) experiments on guinea-pigs, probably occurs between the waning of passive immunity due to the injection of antitoxic serum and the development of active immunity due to inoculation with diphtheria prophylactic. Information on the length and degree of this intermediate phase of relative susceptibility cannot be obtained in human beings by the direct experimental method, but the observations of Gierthmühlen and Voges (1939) on children during an actual epidemic of diphtheria suggest that with doses of 0.3 to 0.5 c.c.m. of A.P.T. and 1,000 units of antitoxin it is at its maximum between about three and six weeks after the first injection of A.P.T. and serum, and that it is considerably less in degree than the susceptibility of uninoculated children.

Though this information was not available to us when we were conducting the observations about to be described, we were fully aware of the possible occurrence and danger of such an intermediate phase of relative susceptibility. It seemed to us, therefore, that, if an outbreak of diphtheria was to be brought under immediate and complete control, the only satisfactory way to prevent fresh cases from developing during the relatively susceptible phase was by protecting the children so far as possible from further risk of exposure to infection. This we proposed to do by detecting all carriers in the community and segregating them until the remaining children had acquired an adequate degree of active immunity.

Method of Controlling an Outbreak of Diphtheria

The method we adopted when it was evident that an outbreak of diphtheria in a school had begun was as follows:

1. Separate swabs were taken from the nose and throat of all children and teachers in non-residential schools and of the complete staff in residential schools. These were streaked on to a modified Horgan and Marshall tellurite blood agar, and

* Part I, "Studies of Antitoxin Response in Normal Students," appeared last week.

diphtheria bacilli that developed were typed in the usual way. All strains of mitis and of intermedius type were uniformly tested for virulence to guinea-pigs, and a proportion of the strains of gravis type.

2. At the same visit all children were inoculated simultaneously into the left upper arm with 0.1 c.c.m. of Burroughs Wellcome's alum-precipitated toxoid (A.P.T.) and into the right upper arm with 350 to 500 units of refined diphtheria antitoxin globulin (Pope, 1938, 1939) contained in about 0.1 c.c.m. of serum. All injections were given into the deep subcutaneous tissue. The use of refined serum greatly lowers the incidence of serum rashes (Hutchison, 1939; Parish, personal communication, 1940).

3. All carriers were isolated or segregated as soon as the results of the swabs were known.

4. Four weeks later all children, including the carriers, were given 0.3 c.c.m. of A.P.T. into the right upper arm.

5. All carriers were allowed to return to school two weeks after the second inoculation with A.P.T., but, though permitted to mix freely with the other boys and girls, they were forbidden, in residential schools, to participate in games with visiting teams. Any carrier who gave three consecutive negative swabs on tellurite blood agar before the end of the six-weeks period of segregation was allowed to return to school at once.

This general technique was adopted in seven outbreaks of diphtheria for which our help was sought. In the first three outbreaks it was modified by Schick-testing and swabbing the children at the first visit in accordance with the recommendation of Okell, Eagleton, and O'Brien (1924), and giving combined active and passive immunization three days later to the positive reactors. A single dose only of 0.3 c.c.m. of A.P.T. was given to the negative reactors to serve as a stimulus to their antibody-producing mechanism. Preliminary Schick-testing was subsequently abandoned owing to the high proportion—75 to 90%—of susceptible children usually met with in the non-residential type of school population with which we later had to deal and to the waste of time involved. Not only did it necessitate an extra visit for the immunizing staff, but it meant the loss of three days in protecting the children at a time when they were most likely to develop infection. Another modification concerned the typing of the diphtheria bacilli, which was not undertaken as a routine in the early outbreaks investigated.

Results

The following is a brief description of our observations on the individual schools:

Royal Merchant Navy School.—This is a boarding school for about 200 boys and 100 girls. Diphtheria broke out, mostly

of the nasal type, in October, 1939. By the beginning of December, 1939, when this laboratory was consulted, some 20 cases had occurred. All the children, as well as the teaching and domestic staff, were swabbed. Schick tests were carried out on the children, but not on the staff. Three days later the Schick tests were read: 58.4% of the children proved positive. With one exception all the Schick-positive children, the children in the hospital and sick bay, the domestic staff, and many of the teaching staff were given 400 units of antitoxin and 0.1 c.cm. of A.P.T. The second dose of 0.3 c.cm. of A.P.T. was given four weeks later. The swabs revealed 21 carriers of virulent diphtheria bacilli; 12 of these were carrying in the throat, 6 in the nose, and 3 in both throat and nose. These carriers were isolated for six weeks—that is, two weeks after the second injection of 0.3 c.cm. of A.P.T. Eight weeks after the second injection the children were re-Schicked. A conversion rate of 97% was recorded. The 3% of children who still reacted positively were given a third dose of 0.3 c.cm. of A.P.T. Two cases of diphtheria occurred after the first visit of the laboratory staff. One was in a boy who was removed from school by his parents without being immunized. The other, which was extremely mild, occurred in March, 1940, in a girl who had entered school in January with a history of having just received one immunizing injection of an undisclosed antigen at home. She was given 0.3 c.cm. of A.P.T. at school six days after her first injection. The interval between the two doses was presumably too short to enable an adequate degree of immunity to develop.

Turner's Court Training Colony.—This is a training colony for males between the ages of 14 and 24, and contains some 300 pupils. At the time of the first visit of the laboratory staff in December, 1939, at least 6 cases of diphtheria had recently occurred, one of which had proved fatal: Owing to the age of the boys, the whole colony was Schick-tested; 36% of the total were Schick-positive. The positive reactors were given 350 units of antitoxin and 0.1 c.cm. of A.P.T., followed four weeks later by 0.3 c.cm. of A.P.T. Nose and throat swabs which were taken at the first visit from all the boys revealed the presence of 11 carriers of virulent diphtheria bacilli. Six of these were carrying in the throat and 5 in the nose. The carriers were isolated for six weeks, but were not treated in any way. The pupils were re-Schicked eight weeks after the second injection. The conversion rate was 97.7%. The two boys who still reacted positively were given a third dose of 0.3 c.cm. of A.P.T. Two cases of diphtheria occurred subsequent to our first visit. One was, a few days after Schick-testing, in a boy whose immunizing record was defective; the other was in March, 1940, in a new boy who had entered the colony in the meantime without being immunized.

Chadlington and Spelsbury.—In these adjacent villages in Oxfordshire 22 cases of diphtheria were reported between January and November, 1939. All except three were in school children. Twenty of the cases had occurred at Chadlington, where the school population was about 120, and two at Spelsbury, where the school population was about 50. Closure of the school at Chadlington on three occasions for a considerable time had failed to prevent the occurrence of further cases. In November, when this laboratory was called in, Schick-testing was carried out on all the available school children, and nose and throat swabs were taken; 76% of the children proved to be Schick-positive. These children, together with those who had not been available for testing, were given 350 units of antitoxin and 0.1 c.cm. of A.P.T. The parents of 13 children refused immunization; these children were therefore excluded from school, together with 3 who were found to be carrying virulent diphtheria bacilli—2 in the throat and 1 in the nose. The school was reopened as soon as the carriers had been isolated. A second dose of 0.3 c.cm. of A.P.T. was given one month later to those children who had received a first dose. No cases of diphtheria occurred in either village after the beginning of immunization. Of the children who had been immunized 87 were re-Schicked ten weeks after the second dose of A.P.T., and a conversion rate of 96.5% was recorded. The two positive reactors were given a third dose of 0.5 c.cm. of A.P.T.

Chippenham.—In a day school containing over 400 children 7 cases of diphtheria occurred within a single week in the middle of October, 1940. The school was visited at once.

Nose and throat swabs were taken from 360 of the children, all of whom were given 500 units of antitoxin and 0.1 c.cm. of A.P.T. No fewer than 27 carriers of virulent intermediate type of diphtheria bacilli were found—22 nasal, 4 throat, and 1 nose and throat. These were excluded from school for six weeks. Four weeks after the first visit the children were given a second immunizing dose of 0.3 c.cm. of A.P.T. Only one case of diphtheria occurred subsequent to our first visit, and that was in a child who had left the school without being immunized.

Lyneham and Tockenham.—In these two small adjacent villages in Wiltshire 9 cases of diphtheria, 2 of which were fatal, occurred between October and December, 1940. The school population numbered about 100. In the beginning of January, 1941, the children were given 500 units of antitoxin and 0.1 c.cm. of A.P.T. At the same visit nose and throat swabs were taken. Six carriers of the virulent gravis type of diphtheria bacilli were found; 3 were nasal, 2 were throat, and 1 was both nose and throat. These children were excluded from school for six weeks. Four weeks after the first immunizing dose the children were given a second dose of 0.3 c.cm. of A.P.T. No further cases of diphtheria occurred.

Leafeld.—Two cases of diphtheria occurred in this Oxfordshire village. One was in an evacuee school child in August, 1940; the other was in a local child in November, 1940. Swabs were taken on November 11 and 15 from 170 children and staff, with the result that 22 carriers of diphtheria bacilli were found, all of the virulent mitis type; 4 were nose, 13 throat, and 5 nose and throat. Though cases of clinical diphtheria had been few, it was decided, owing to this high carrier rate, to give combined active and passive immunization to the children. This was done on November 20, when 0.1 c.cm. of A.P.T. and 500 units of antitoxin were injected. Since hospital beds for the isolation of the carriers were not available, these were kept segregated during school hours in a single classroom and forbidden to play with the other children. Two weeks after the second immunizing dose of 0.3 c.cm. of A.P.T., which was given on December 18, they were allowed to return to their normal school routine. No further cases of diphtheria occurred. The failure of this outbreak to assume epidemic proportions in spite of the high carrier rate is of some interest.

West Wycombe.—In August, 1940, 4 cases of diphtheria occurred within a week in the local school. On Monday of the following week the school was visited. Nose and throat swabs were taken from 120 of the children and staff, and the children were given 0.1 c.cm. of A.P.T. and 500 units of antitoxin. Nine carriers of the gravis type of diphtheria bacillus were detected—1 nose, 6 throat, and 2 nose and throat. The carriers were isolated. A second dose of 0.3 c.cm. of A.P.T. was given a month later. No further cases of diphtheria occurred.

Discussion

The results described in these seven outbreaks of diphtheria are very promising. With one possible exception, a boy whose immunization record was incomplete, there was not a single case of diphtheria after the first dose of A.P.T. and serum; whereas at least four cases occurred in children who for one reason or another had not been immunized. It is of course impossible to say what would have happened in the absence of our intervention, but the fact that in two outbreaks several cases had occurred in the previous week, and that in five of the outbreaks a large number of carriers were detected, renders it probable that in some at least of the schools cases would have continued to develop.

The problem created by the intermediate period of relative susceptibility, discussed briefly in the introduction to this paper, appears to have been satisfactorily solved by the detection and segregation of the carriers in the community. Permitting them to return to school a fortnight after the other children had received their second dose of A.P.T., even though they were still carrying the diphtheria bacillus, was admittedly hazardous, but in practice it did not lead to the development of any fresh cases in immu-

nized children. Two cases did occur, however, in children who either had not been immunized at all or had been imperfectly immunized.

It seems clear that if carriers are to be allowed to return to school in six weeks the remainder of the school children should in the meantime have been adequately treated. With the active co-operation of medical officers of health, such as we have been privileged to enjoy, there should be little difficulty in ensuring that all, or practically all, the children are immunized. If for any reason this proved impossible, either the carriers or the non-immunized children would have to be kept out of school, depending on which was the smaller group.

Judging from Fjord-Nielsen's (1940) observations on guinea-pigs, it is possible that a greater and more rapid degree of immunity might be obtained if a second dose of A.P.T. was given two weeks after the first combined injection, and a third dose a fortnight later. This would necessitate an extra visit for the immunizing staff, but it might render safe the liberation of the carriers within four instead of six weeks. No data, however, are available on this point, and it would be wise to make careful observations on the antitoxin production of non-contacts treated by this method before applying it to the control of epidemics in the field. Meanwhile, in view of Glenny, Buttle, and Stevens's (1931) observations, it would probably be sound practice, in order to ensure a greater amount of unneutralized toxoid remaining after the first injection, to increase the first dose of A.P.T. from 0.1 c.cm. to 0.3 c.cm.

It is curious that the method we advocate in this paper—namely, the use of active and passive immunization, and the detection of carriers and their isolation for six weeks—does not seem to have been employed previously, though each has been tried by itself. Ramon (1940), for example, states that the treatment of diphtheria contacts by combined active and passive immunization has been used extensively in France, but he mentions nothing about the detection and isolation of carriers, nor does he give any record of the results obtained. Gierthmühlen and Voges (1939) used the method of combined active and passive immunization in a school epidemic near Hamburg, but as they likewise paid no attention to possible carriers it is not surprising that a number of cases developed after passive immunity had worn off and before active immunity had become sufficiently established. Martin, Loiseau, and Laffaille (1928) used combined active and passive immunization for 14 school contacts, but again they did not attempt to remove the carriers. Okell, Eagleton, and O'Brien (1924), on the other hand, recommend the isolation of carriers but rely exclusively on active immunization of the Schick-positive contacts. The weakness of this method consists in wasting time over the Schick test and in affording no protection to susceptible children who are already infected or who contract infection before the carriers are removed. It would seem that if an outbreak of diphtheria is to be stopped at once, and that if further cases developing from exposure to infection after passive immunity has worn off are to be prevented, both combined active and passive immunization and the detection and isolation of carriers are necessary.

Summary and Conclusions

A method is described for bringing outbreaks of diphtheria in closed or semi-closed communities to an abrupt end.

The method consists essentially in (a) giving combined active and passive immunization to all those exposed to risk, and (b) detecting and segregating carriers of the diph-

theria bacillus. Preliminary Schick-testing is neither necessary nor desirable.

The doses used in our work were 0.1 c.cm. of Burroughs Wellcome's A.P.T. and 350 to 500 units of refined diphtheria antitoxin for the first injection, and 0.3 c.cm. of A.P.T. for the second injection, four weeks later. It might be advisable, however, in future to increase the first dose of A.P.T. to 0.3 c.cm. and to give 500 units of antitoxin as a routine. Refined serum is advisable, because of the low proportion of serum reactions that follow its use. Carriers are immunized in the same way as the other children.

Six weeks after isolation—that is, two weeks after the rest of the school has received its second immunizing dose—the carriers can be liberated and allowed to mix freely with the other children, even though they are still infective. All new-comers must be immunized before entering the school or be kept segregated till they have been immunized.

This method was used in seven residential and non-residential schools in which diphtheria had broken out. The population at risk was about 1,500. In every instance the outbreak ceased immediately. Only five fresh cases are known to have occurred subsequent to the first combined injection: three of these were in children who were not immunized, one was in a child that did not receive its second dose of A.P.T. after four weeks, and one was in a child whose immunization record was defective.

These results are very promising, and it is hoped that other workers will give the method a trial. The fact that the children are protected at once by virtue of the serum injected renders closure of the school quite unnecessary. The saving of time, money, and inconvenience thus effected is too obvious to need stressing.

In outbreaks involving so many different administrative authorities it is impossible to accord due recognition to all the medical officers, head masters, health visitors, and school teachers who helped us. We should, however, like to mention particularly Dr. Campbell, M.O.H., West Oxfordshire Combined Districts; Dr. Rose of Wokingham; Dr. Warburton of Wallingford; Dr. Tange, County M.O.H., and Dr. Blackley, Assistant County M.O.H., Wiltshire; Colonel Powell, M.O.H., borough of Chippenham; and Dr. Moore, M.O.H., borough of Chepping Wycombe. We are also greatly indebted to Miss D. M. Elliott for her care and help in keeping the records, and to our chief technician, Mr. J. D. Atkinson, whose forethought and continual watchfulness in arranging for the necessary provision of equipment cannot be praised too highly.

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According to the *Klinische Wochenschrift* (May 5, 1941), large quantities of rose-hips, the vitamin C content of which is ten times that of lemons, have been collected in Bulgaria. Roughly seven times the quantity gathered in the same period in Germany was obtained for Germany by a common organization in the two countries. The hips were dried, ground, and packed in Bulgaria, and were sent to Germany to be prepared for consumption. During the months of April and May the hips are to be distributed for sale among selected towns in accordance with instructions issued by the Reich Ministry of Health and the Reich Ministry of Food. Half of them will be given to the troops in Norway and sailors of the fleet, who are in special need of vitamin C, and the hospitals will also receive some.

INDUSTRIAL MEDICAL SERVICES IN GREAT BRITAIN A CRITICAL SURVEY

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Problems of 1914-18

It is an interesting fact and a sidelight on British mentality that the significance of industrial health and its relative importance in the scheme of things has been generally appreciated only when the country has been in a state of extreme emergency—namely, in the great war of 1914-18, and again in the present war. At the end of 1915 an unparallelled health problem was created because of the massing together of large numbers of munition workers—very many of them women—their abnormal hours of work, the intensive speeding up of production, and labour unrest generally. Fatigue became a primary cause of absenteeism and definitely interfered with the war effort, and the Government was therefore forced to take action. Lloyd George set up what he termed the Health of Munition Workers Committee "to consider and advise on questions of industrial fatigue, hours of labour, and other matters affecting the health and physical efficiency of workers in munition factories and workshops," and the results of its investigations are reported to have done much to improve conditions. This committee was replaced at the end of 1918 by the Industrial Fatigue Research Board. The Board is responsible to the Medical Research Council, which in turn is under the control of the King's Privy Council. An account of the work of the committee and the Board, known from 1928 onwards as the Industrial Health Research Board, has recently been published (Vernon, 1940) with particular reference to present-day health problems in factories.

Developments after 1918

Much of the pioneer work of the Health of Munition Workers Committee was either forgotten or disregarded after the war, and a general apathy developed on the part of both employers and organized labour regarding health matters. Academic research was continued by the Industrial Fatigue Research Board, but these efforts were rarely translated into practice. With trade revival in 1923 and during the next three or four years a number of the larger firms in England developed their own medical services—for example, Boots Pure Drug Company, the Chloride Electrical Storage Company, the Mond Nickel Company, J. Lyons and Co., and Imperial Chemical Industries Limited. By 1927 the number of whole-time industrial doctors was probably about 20 in all, including those employed by the General Post Office (Bashford, 1938), and Woolwich Arsenal, two large Government-owned industrial concerns which for many years before 1914 had whole-time medical officers. There was a gradual increase up to 1935, when the demand for contact and mutual help between doctors doing this type of work resulted in the formation of the first British scientific society in connexion with industrial medicine—the Association of Industrial Medical Officers. This association soon increased its membership, and the subject of health in industry began to take its place as a specialized branch of medicine, due largely to the pioneer work of Howard Mummary, Lane, and Lockhart; a branch which soon proved to link up closely with the work of the general practitioner and hospital specialists, and to be in its turn but a part of social medicine and the

INDUSTRIAL MEDICAL SERVICES IN GREAT BRITAIN

practice of public health. Regard must also be given to the work of Hyde and the Industrial Welfare Society in connexion. His efforts from the earliest days to forward the case for industrial medical services in the country.

Developments in this War

In September, 1939, there were some 60 whole-time industrial medical officers in England and, so far as is known, only one in Scotland, but it was not until the introduction of the Factory (Welfare and Medical Services) Order, 1940—a direct result of the appointment of Ernest Brown as Minister of Labour—that industry and the medical profession both realized that the Cinderella of our services had been given a place in the front rank. Then there has been a rapid development, and it is estimated that to-day there are over 150 whole-time and over 500 part-time medical officers employed by factories in Great Britain, practically all of them in factories. Of the part-time doctors are also factory examiners (the number of whom is over 1,750), who are appointed by central Government under the Factory Act, mainly to examine all juveniles under 16 years of age, in industrial factories and to give certificates in connexion with industrial diseases.

A similar impetus to industrial nursing was given by this Order. Not only have employers had to appoint industrial nurses but even more frequently they have been asked to appoint nurses. The Ministry of Labour, acting in collaboration with the Royal College of Nursing, has taken the training of nurses wishing to enter industry, and has advised that factories wishing to enter industry should, wherever possible, employ fully trained registered nurses. This is an advance of some significance, replacing as it does the old conception that a woman could become a capable factory nurse simply by "graduating" in the work. The scope of the industrial nurse's work is gradually widening, and in the smaller units in particular, i.e., those employing fewer than 1,000 persons—her sphere of activity is becoming more closely associated with preventive medicine and public health.

Why is there a Need for Industrial Health Services?

The term "industrial health" is not confined solely to a state of bodily and mental fitness in the individual, but includes what is really the state of the public health of groups of employees, both small and large. Productive capacity and output are dependent on health, and the economic status of any country is therefore closely related to the physical and mental well-being of its workers. The present health services of Great Britain—namely, the National Health Insurance Scheme, the fields of general and consultant practice, hospital services, and municipal and Government health services—do not cater fully for industry, because they have not given enough consideration to the varying physical and psychological factors within factories and business organizations which can so profoundly affect health. There are therefore in the nation's health service certain gaps which can be bridged only by the appointment of industrial medical officers and by the formulation of a comprehensive industrial medical policy as part of the general health services of the country. The more important of these gaps are as follows:

1. The First Treatment of Men and Women Injured or becoming Sick while Actually at Work

Hitherto this part of treatment has been mainly in the hands of persons with doubtful qualifications, first-aid workers of all types, and untrained nurses. Even where fully trained nurses are employed there is often no medical supervision of their work, and incidentally this is probably the only branch of nursing in which there can be a complete absence of medical

control. Because of this, casualty and first-aid services in industry have developed slowly and unsatisfactorily. For example, over 11% of all injuries reported* to the Factory Department in 1939 were septic. This is due not only to a lowering of individual resistance to infection and to carelessness in reporting so-called trivial injuries but also to the comparatively low standard of equipment required by the Factories Act, and the absence of any standard of treatment except a statement (Section 45) that the person carrying out this work in factories employing more than 50 persons shall be "a responsible person trained in first aid." The present first-aid organizations in Great Britain do not cater specially for this type of training, but the British Medical Association has considered the matter constructively and in some detail in a special report (1939).

Where a medical officer and trained nurses are appointed to a firm it has been proved that there is an immediate return to both the employer and the employee through the marked increase in the efficiency of the first treatment services. One proof of this is the reduction of sepsis that can rapidly be brought about (Stewart, 1939).

2. Medical Supervision of the Return to Work of Sick and Injured Employees

Sick and injured workers are often sent back to their jobs too soon and in a state of sub-fitness which for some considerable time makes it difficult for them to be really efficient; and, again, it may be that the doctor keeps a man or woman off work too long, and for that reason earning capacity is interfered with and production unconsciously retarded. The fact is that the majority of medical men and women have a scanty knowledge of the physical and mental requirements of the occupations of their patients; the return to work is determined by rough-and-ready hit-or-miss methods, and rehabilitation in the fullest sense of the term is a closed book to a great many of them.

The industrial medical officer who acquires an extensive and accurate knowledge of the different occupations in his industry can be of great help to medical practitioners and hospital authorities in assessing capacity for work. His part in rehabilitation is as essential as that of any occupational therapy clinic, and proof of this lies in the fact that where an industrial medical officer is employed the process of return to work is facilitated, to the greater satisfaction of both the worker himself and his employer. There is an opportunity for continued supervision under working conditions, of obtaining true alternative or "light" occupation during the toning-up process, of giving supplementary treatment in the factory clinic while the man is at work, and of obtaining for the workman a degree of indulgence from his supervisor for a short period which is so essential in completing rehabilitation. In any scheme for the setting up of accident hospitals, such as that already started at Birmingham, the position of the industrial medical officer as an essential part of the service must not be overlooked.

The implications of this side of his work are wider than is perhaps realized at first. During illness the patient consciously or subconsciously wishes to maintain some contact with his employer because of an inherent sense of insecurity, and particularly so if illness is prolonged, because there are limits to which financial assistance can be given, even if based on insurance methods; and so the industrial medical officer can be of assistance not only to sick and injured workers but to general practitioners, specialists, and hospital officers as their medium of contact with the employer on behalf of their patients. Because of his neutral position he can conserve a certain balance between employers and labour, and by so doing can build up good will and make a contribution of importance to industrial relationships.

3. The Effect of Working Environment on Health in Relation to Preventive Medicine

Because the medical profession knows so little of what goes on inside industry it becomes imperative that knowledge gained in the field of industrial medicine should be widely disseminated and the fullest facilities for education and research made avail-

* A "reportable" accident is one which has caused an absence from work of three days or more. (See Annual Reports of the Chief Inspector of Factories.)

able to the medical profession. The unique opportunities now afforded to many hundreds of doctors for preventive work within the factory walls will be wasted for future generations if some scheme of co-ordination is not evolved. Practical research into the prevention of accidents, industrial diseases, and sick-absenteeism generally, all offer scope for the best brains of the profession on economic grounds alone, apart from the value to the individual worker and the health of the nation.

Much research work, which before this war was of its kind outstanding in the world of scientific medicine, has been carried out by the Industrial Health Research Board. This work has included studies on hours of labour; environmental conditions in the factory, such as lighting, heating, and ventilation; dusts and toxic vapours; and the physiology and psychology of work. Each annual report in itself is a comprehensive document, and the individual reports on these various subjects are unique in their respective fields. Nevertheless there has been the greatest difficulty in having the results of the Board's investigations put into actual practice in British industry—a difficulty which the Board itself has recognized. It may be that terms of reference preclude it from propaganda and advertisement, but it is more urgent now than ever before to form some policy which will enable the results of health research work from all sources to become embodied as an essential part of industrial management. For example, industry should have some authoritative statement at an early date regarding the vexed questions of the use in industry of vitamins, physiotherapy, and inoculation in the prevention of the common cold and its derivatives, generally accepted to be the most frequent cause of sick absence in factories.

The Factories Act (1937) is a document of great significance. Its trend and appeal are towards an improvement of health; and as a contribution to preventive medicine its potential importance has perhaps as yet not been fully realized. Suggestions regarding medical supervision of factories are laid down in a pamphlet recently published by the Ministry of Labour (1940), which also will repay close consideration. And how industrial health is influenced by war conditions is described in an emergency report of the Industrial Health Research Board (1939). But perhaps the fullest account of the position in the country before September, 1939—an account not only of industrial health but of the British health services as a whole—is contained in a comprehensive report published by Political and Economic Planning in 1937.

The B.M.A. Medical Planning Commission, set up recently to consider the present and future development of Britain's health services, will undoubtedly have much to do with industrial health, especially with its relation to other branches of medicine. The suggestions of the Commission are to be fully considered at every stage by the profession as a whole, for it is only by the help of open and frank constructive criticism from all parties that any comprehensive scheme to meet the needs of the community can be evolved satisfactorily and put into practice.

What is the Nature of the Present Service?

Our present industrial medical services are mainly in factories and are for the most part voluntary in nature, medical officers being appointed and paid by the employer. There is no control, therefore, either by the medical profession itself or by the State, over the development of this type of service. The efforts of individual factory doctors have done much to improve health in industry, but mainly in the larger firms which could afford the service; and because of the lack of a suitable propaganda medium these benefits have often not been fully available for the great mass of workers.

There has been only a sporadic attempt to arrange for any training of the many new medical officers appointed to factories, nor is there any provision for education in the health problems of mines, the transport industry, or shipping. With the exception of London and Manchester the universities have done little to help. Birmingham University in 1935 set up a Department of Industrial Medicine, which for a number of reasons was closed in 1938; and because of the demand from individual doctors Manchester, Birmingham, and Sheffield Universities have within recent months organized successful week-end courses of training. The methods of selection and appointment of new industrial medical officers under the present system are open to criticism. Salaries and conditions of appointment vary greatly, and some general practitioners obtaining part-time appointments do so without much interest in industry; nor, with the responsibilities of a large general practice as their major problem, have they the time to develop this work.

The main way in which the State has come into the picture is because firms have been recommended and in some cases forced to appoint whole-time and part-time industrial medical officers by the Factory Department of the Ministry of Labour under the Factory (Medical and Welfare Services) Order, acting on behalf of the Minister of Labour. The Department has no say in how these services should be developed, but has given suggestions in the Memorandum on Medical Supervision in Factories already referred to.

The Factory Department itself has on its staff thirteen medical inspectors under the supervision of a senior medical inspector. These doctors are grouped regionally and supervise the statutory aspects of health in the 250,000-odd factories throughout the country. They work in close liaison with the lay inspectors, and have been helpful both to medical officers entering industry and to employers who have had to introduce medical and nursing services into their factories. Because of their extensive knowledge and experience of factory conditions they play an important part in the prevention of occupational diseases, and much of the success in eliminating these diseases from British industry in the past fifteen years has been due to their efforts.

The Ministry of Supply has since the start of the war set up its own medical service under a Chief Medical Officer, who is responsible for the administration and policy of the health services for all Government-owned factories in the control of the Ministry. Already he has under him 50 whole-time and a large number of part-time medical officers situated in various parts of the country, so what is really the first State-controlled medical service in the history of British medicine has now been set up, and its development will be watched with considerable interest.

The Mines Department has only one medical inspector, but a number of colliery owners and insurance companies interested in compensation problems among miners—for example, accident treatment and silicosis—have appointed their own doctors to supervise health conditions in mines. The Silicosis and Asbestosis Board is a body of doctors grouped regionally and appointed primarily to examine suspected cases from the point of view of capacity for work and compensation claims, but its individual members have been of considerable help to employers in the prevention of these diseases in industry.

Medical officers of health have little to do with health in factories, although it is a significant fact that local authorities are themselves often large employers of labour. The Ministry of Health has so far taken little part in industrial problems, being forced by circumstances to leave

the matter largely in the hands of the Factory Department of the Ministry of Labour.

Relation of Industrial Medical Service to General Practitioners and Hospital Services

This relation was the subject of considerable controversy during 1935 and 1936, and a special committee of the British Medical Association was appointed to discuss the matter. As a result a set of ethical rules was drawn up by both sides, and these on the whole have operated satisfactorily from that time. In 1940 the Association appointed an Industrial Health Committee "to further the co-ordination of industrial medical practice with other forms of medical practice, in particular with general practice and the public health and hospital services," and its first report will be issued shortly.

Relations between general practitioners and industrial medical officers throughout the country are good, particularly in the case of whole-time medical officers. Where part-time medical officers who themselves are also general practitioners are employed there is evidence that relations are not always fully satisfactory or of the happiest. This is particularly noticeable where the part-time works doctor has an appointment in his own area and where he may unconsciously attract members of the works and staff of his factory to his private practice. The question of part-time medical service in industry is one of importance and must be closely considered in planning for the future, because a large proportion of the working population is employed in units of 250 or less. There is one view which suggests that industrial medical service after the war should be linked up with general practice, and another which maintains that an industrial medical service should be set up consisting of specially trained personnel who would devote the whole of their time to this type of work.

Hospital authorities have so far given little consideration to the effect of work and working environment on their patients' lives, especially in relation to the rehabilitation of the sick and injured. Schemes are on foot for improving conditions in hospitals with particular regard to the treatment of accidents, and a memorandum drawn up by the Birmingham Accident Hospital (1941) for industrial concerns in the Midlands brings out some of these points very clearly.

The Worker's Point of View

During the past ten years there have been complaints from individual workers and from organized labour about the employers' methods in connexion with the medical examination of workers. It was strongly felt that factory medical officers were essentially on the employer's side because they were appointed and paid by him; that they therefore had a biased outlook; and that if a man was found by medical examination to be unfit for certain work and this was disclosed to the employer, it would lead in many cases to injustice being done and in the end outweigh all the potential value of industrial medical services. But when the doctor understands the problem of relationships and has a reasonable outlook, and when he is fearless in his statements and gives opinions founded on accurate facts and observations, his position is soon recognized by employer and employees alike to be that of one entirely uninfluenced by the vested interests of either party, and his opinion is fully accepted by both sides in any matter to do with health. It is only by obtaining this bilateral confidence that the industrial medical officer can be successful in his work.

The Employer's Point of View

There are many employers in the country to-day who fully agree with the introduction of industrial medical ser-

vice and have welcomed its increase. They realize the economic value of such service and acknowledge that they have a responsibility in management beyond that of being merely custodians of the shareholders' money. This outlook is encouraging and provides greater reason for confidence that the service must have a place of no little importance in any future health planning for the nation. On the other hand there are still employers of labour who consider that the health of their employees is little or none of their business; they are prepared to fulfil the letter of the law and keep their statutory obligations, but are unwilling to go further. Where doctors are appointed under the new Order to such firms they have a great responsibility. They have to prove to the employer that the service they are giving is helpful not only to the workers but to industry as a whole, and one not lightly to be discarded after the war.

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"ETHER CONVULSIONS"

BY

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"Ether convulsions" were described simultaneously in May, 1927, by two Manchester anaesthetists—K. B. Pinson (1927) and the late S. R. Wilson (1927). Pinson thought them to be due to an over-accumulation of CO_2 . This explanation has never been generally accepted, for not only have convulsions occurred during endotracheal administrations, when the alveolar CO_2 content is at its lowest, but the administration of CO_2 has been found an effective method of treatment. Wilson, on the other hand, attributed the convulsions to impurities in the ether, aldehydes and peroxides having been detected in the samples used. Walton (1928) found impurities which supported Wilson's theory, but Sykes (1930) and Ross Mackenzie (1931) did not find them, or only in such minute quantities as to be negligible. This theory, however, received much attention both from the chemical houses producing ether and from the makers of anaesthetic apparatus. It became customary to sell ether in dark-coloured bottles wrapped in black paper, and the ether bottles of some anaesthetic apparatus were made of heavily tinted glass. Later, copper was found to be a powerful antieatalytic agent, and the tubes which dip into the ether in Boyle's and similar machines were subsequently made of this metal. In spite of these precautions convulsions still occurred, and it has long been generally accepted that impure ether could not be regarded as their cause. Conclusive evidence of the correctness of this view is the fact that typical "ether convulsions" have

occurred when no ether has been used—for example, during operations under local (Hudson, 1936), chloroform (Bull, 1927), and nitrous-oxide-oxygen anaesthesia (Sington, 1927).

When the convulsions were first described it was uncharitably suggested that these new and extraordinary phenomena might be due to faulty provincial technique. As reports were published of similar convulsions having been seen in all parts of the country this explanation had quickly to be abandoned, but, as will appear later in this paper, I consider the frequency with which they have occurred in Manchester to have a definite aetiological significance.

Since Pinson and Wilson first described this condition much has been written on the subject. Many case reports have appeared and numerous theories have been advanced, though none of them has been universally accepted. This is possibly because no one theory has explained and fitted in with all the known facts and the many observations that have been made. It is common knowledge, however, that the combination of youth, heat, and a septic condition with pyrexia occurs in some 85% of cases, and on this account the heat-stroke theory, first put forward by Dickson Wright (1935) and upheld by Woolmer and Taylor (1936), has received more support than any other. It is proposed in the present paper to support and elaborate both this theory and that of neurogenic shock advanced by Hudson (1936) and to explain the occurrence of the hyperpyrexia.

I suggest that ether convulsions are caused by a strong neurogenic stimulus in a hyperpyrexial patient. I consider that the hyperpyrexia is due to the administration of a general anaesthetic to a dehydrated pyrexial subject in a hot humid atmosphere, the subsequent rise in temperature possibly being increased by the previous administration of atropine.

Neurogenic Stimuli

In the cases recorded in Hudson's valuable paper the convulsions were undoubtedly initiated by neurogenic stimuli. This is equally true of a case reported verbally to the Anaesthetic Section of the Royal Society of Medicine. The last-mentioned patient was being given nitrous-oxide-oxygen for a thyroidectomy and had been premedicated with omnopon-scopolamine. The surgeon pulled rather hard to expose the upper pole, and convulsions started immediately. These settled in a minute or two, the operation was continued, and the surgeon repeated his over-forceful manoeuvre, whereupon the convulsions immediately restarted.

The exact stage of the operation at which convulsions began has unfortunately not been mentioned in all the published case reports. In the majority of those in which it has been recorded one cannot but be struck by such off-recurring phrases as "just as the peritoneum was being opened" or "while the peritoneum was being shut"—i.e., while the peritoneum was being lifted upwards, possibly rather forcibly. Again, in two or three cases bone chiselling was taking place at the moment of onset. I have seen one case in which convulsions started the moment the peritoneum was picked up by forceps previous to incision. The convulsions were controlled and the operation continued. The convulsions restarted when the peritoneum was picked up again as a preliminary to closure. I have seen another case in which the convulsions definitely started just as cross-action peritoneal forceps were applied. Yet another case of mine showed this initiating nociceptor factor even more dramatically.

The patient, a boy aged 8, was suffering from an acute mediastinitis due to a swallowed pin, which had passed through the oesophagus. He was extremely ill, was badly dehydrated,

and had a temperature of 103.8° F. I gave him nitrous oxide, oxygen, and ether from a Boyle machine via a Magill tube. The posterior mediastinum was opened under very light anaesthesia. The surgeon saw the pin at the bottom of the wound and turned round to choose a suitable instrument with which to extract it. Meanwhile his assistant unfortunately inserted and pulled on a deep retractor. The boy's pulse immediately halved its rate, and within a few seconds he experienced typical violent generalized convulsions.

It must be emphasized that it is not considered that neurogenic stimuli alone will cause convulsions. Every year thousands of patients receive gross peritoneal and other nervous insults without showing any alarming symptoms. But in the presence of hyperpyrexia, whether or not a general anaesthetic has been given, severe neurogenic stimuli are apt to initiate convulsive symptoms, though admittedly the latter very occasionally may occur without the patient having received any sensory stimuli—e.g., before the start of the operation.

The nature of the underlying biochemical change associated with the hyperpyrexia and predisposing to convulsions is not at present understood, though in this connexion the alteration of the wave-and-spike electrical activity of petit mal resulting from changes in blood-sugar concentrations (Gibbs, Gibbs, and Lennox, 1939) is of interest and worthy of further study.

Hyperpyrexia

There is a considerable volume of evidence in the literature that hyperpyrexia is present in patients who have had ether convulsions. I can add to this record two cases in which I found rectal temperatures of 108° and 108.5° F. immediately after short convulsions.

The possible factors leading to this hyperpyrexia must be carefully considered. In a typical case of ether convulsions the patient is 5 to 15 years of age and is suffering from an acute septic condition—often an acute appendicitis of forty-eight hours' standing. He has a raised body temperature and the weather is hot. All these factors, with the common addition of vomiting and reduction in fluid intake, combine to cause a severe degree of dehydration.

It was considered in the past that simultaneously with a rise in the skin temperature of the extremities (Scott and Morton, 1931) a fall in body temperature occurred under ether anaesthesia. Watkins and Wilson (1927) showed, however, that this was true only of quiescent-interval cases, and that in acute cases in dehydrated subjects body temperature rose during ether anaesthesia. I have repeated, and confirmed, the latter observation on a series of patients.

I have found that a dehydrated subject with a temperature of, say, 101° F. who is given a general anaesthetic is, particularly if young, likely, under the best conditions as regards theatre ventilation, to return to the ward with a temperature about 2° higher. If theatre conditions are not optimal his temperature may rise considerably more. The association between hot weather and ether convulsions has often been noted. As has been mentioned, hot weather can exert an influence by increasing the patient's pre-operative dehydration. It can also raise the temperature of old-fashioned theatres. The temperature of the theatre is not, however, of very great importance *per se*. It is the wet-bulb temperature and the relative humidity which matter. Hamilton Bailey (1940) recently cast doubt upon the heat-stroke theory when reporting two cases which occurred in extremely cold weather. Without a record of the wet-bulb temperatures of the theatres this observation does not carry much weight.

On two occasions I have been able to measure the wet-bulb temperatures of theatres immediately after ether con-

vulsions had occurred, and found readings of 78° and 79° F. the latter being only 1° F. less than the temperature at which, under Board of Trade regulations, cotton factories must be evacuated. Every degree rise in wet-bulb temperature reduces the amount of heat which the body can lose. It follows that if a dehydrated pyrexial young subject is anaesthetized in a hot humid theatre the expected rise in temperature of 2° to 3° F. may be greatly exceeded. I would suggest that this is the reason why Manchester has seen such a regrettable number of ether convulsions, the prevailing humidity being notorious.

In this connexion it is interesting to note that no case of ether convulsions has occurred in any of five busy air-conditioned theatres in that city since they were built six years ago.

Atropine

Hornabrook (1927) first suggested that large doses of atropine were the chief cause of ether convulsions. Singleton (1927) rather refuted this idea on the evidence of the Hospital for Sick Children, Great Ormond Street, where 7,000 children are operated on each year and where all receive large doses of atropine. While there is no evidence that atropine ever acts directly as a convulsive agent in these cases, as Hornabrook suggested, but rather the reverse, it is possible that it does contribute to the hyperpyrexia.

Observations were made on the effect of atropine on the rise of body temperature which occurs in a hot atmosphere with a high-percentage saturation of moisture. Three subjects sat for twenty minutes in a room of a Russian bath. When they had cooled down again each was given 1.60 grain of atropine subcutaneously. Half an hour later they sat for another twenty minutes in the Russian bath. Their temperatures on the different occasions are given below:

	I	II	III
Before experiment	97°	97.4°	93°
After 20 minutes in Russian bath	100°	100.4°	100.2°
Return to normal	97°	97.6°	95°
After 20 minutes in Russian bath 1/2 hour after injection of atropine	100.6°	101.3°	101.5°

These results showed that the very hot humid atmosphere caused a slightly greater rise in body temperature after the administration of atropine. Incidentally the atropine also caused a very marked and unpleasant exaggeration of the subjective symptoms.

Treatment

Acceptance of these theories opens up a definite line of treatment which must primarily be preventive. This dangerous complication can be very largely averted, and particular care should be taken to remove the exciting factors in those subjects in whom the onset of the condition might be feared.

1. The dehydrated pyrexial young patient should be put on a glucose-saline drip before operation, and anaesthesia should not be induced until at least 1 to 2 pints have been given.

2. All new theatres should, of course, be air-conditioned. Apart from this, much may be done to improve existing theatres by the use of extractor fans, air vents, steam condensers, removal of sterilizers outside theatres, and similar steps. A wet-and-dry-bulb thermometer should be found in every general theatre, and an anaesthetist should normally refuse to induce a dehydrated young patient if the wet-bulb temperature is over 70° F.

3. It is unnecessary to emphasize here the importance of gentle surgery and of avoiding neurogenic trauma. So far as the anaesthetist is concerned, he should see that the depth of anaesthesia is always adequate for the stage of the operation in progress.

4. Heavy mackintosh coverings should not be used.

twice in hospital for "chorea" (the diagnosis is doubtful). Her intelligence is slightly below the average. She is pleasant, friendly, inclined to moodiness and temper, and normally sociable, but looks pale and tired. She made twenty-two attendances at the clinic during February to May, 1938. The incontinence stopped a few weeks after she started treatment, and she began to look cleaner and brighter. Her play showed a conflict of feelings of various kinds, such as inferiority and self-assertiveness; jealousy, together with the inhibition of natural aggression; and sex curiosity. She was able to understand through her play how the opposing sides of her personality were causing profound maladjustments towards both her family and herself.

As the home situation could not be altered and she was "out-growing her strength," it was decided to give her a year or so at a residential open-air school. Later on, after leaving school, she had a difficult period owing to conditions at home, but managed to survive it.

In this case incontinence was evidently a form of aggression against an intolerable home situation.

When prolonged into adolescence the condition is especially distressing to the patient, particularly in girls. The following case illustrates a probable association with suppressed sex curiosity and desire:

A girl aged 15 was referred for wandering and staying out at night; she was said to go out with soldiers and to spend nights in air-raid shelters. She suffered from faecal incontinence, which occurred only when she stayed out late in the evenings. She was the younger of two daughters, the elder one being the model girl. The parents were a mixture of hardness and sentimentality. With friendly interest at the clinic the incontinence stopped, and an attempt was made to get her away to suitable training.

The association of this symptom with sexual maladjustment or sexual "habits" is understandable as a regression to early sex development, and particularly the fantasy association between the process of birth and defecation. This appeared to be vividly illustrated in the following case:

A girl aged 8 was referred to the child guidance clinic by the head teacher with the story that the child deposited her faeces in odd places, such as a corner of the school cloakroom, and, moreover, arranged scarves, bits of wool, etc., like a nest around them. The child, who lived alone with her mother, had recently discovered that a new baby was expected. The mother was in bed, and the girl was naturally having a difficult life. As something had to be done urgently, arrangements were made to get her away for a time. It was subsequently found that she had been unwanted; the mother was a very unreliable person, and the father worse. The complaint stopped as soon as the child got away from home into happy friendly surroundings, but she was described as a bit "queer" and not making friends easily. Unfortunately, owing to frequent changes of address, the case could not be followed up.

The association between the feelings of this child, unwanted (as later events proved) and expecting the advent of a rival, and the attempt which she made symbolically (as well as very realistically!) to give birth herself to something, which she treated as though it were a baby, appears fairly obvious.

The next case is one in which the condition, also associated with depositing faeces in curious places, yielded surprisingly quickly to removal from home for a short time.

This case was that of a boy aged 10 in whom the trouble had arisen only eighteen months previously. His incontinence was accompanied by various methods of disposing of the faeces—by plastering the walls, putting them in his pocket, etc. The situation at home was that he had a second stepmother, who was well-meaning but neurotic and disagreed with the father over the boy. There was a younger stepbrother (the son of the first stepmother), of whom the boy was jealous. He was of

average intelligence and had a good school report. The complaint ceased when he was boarded out on a farm. A few weeks later the parents took him home on some trivial excuse, but the trouble did not recur, and he was well when seen a year later.

Finally, here is a case illustrating an association of faecal incontinence with attacks of what may probably be described as pyknolepsy.

A boy aged 11 was referred from hospital in April, 1938, for enuresis and faecal incontinence. He was free from both while in hospital for two weeks. His father is normal; the mother has migraine. He was born after a gap of seven years, and has four older sisters and one younger brother. He had always had enuresis and was spoilt as a baby. He began soiling his trousers when he started school, and was smacked at first.

"Turns" which resembled petit mal began three years ago, and now occur frequently during the day. He is backward, and his intelligence is below the average. He is shunned or teased by other children. Soon after starting attendance at the clinic the enuresis stopped, and two months later the incontinence also stopped. His play showed much repressed aggression, and the world was to him a place full of danger. He remembered being tied down in his pram as a baby.

He relapsed, and spent some time at an open-air school, but did not sustain the previous improvement. No apparent reason was found for these relapses, and attempts to gain the further co-operation of the parents have failed.

Aetiology

Encopresis is primarily a psychogenic disorder. It is a physical symptom which appears, in response to certain psychological situations, in children who are in some way constitutionally predisposed to the particular response. Apart from the aetiological factors constantly found in the environment, proof of its psychogenic nature is furnished by the cessation of the complaint when psychological means such as reassurance, explanation, alteration of environment, etc., are applied. It is, generally speaking, a protest against an inimical and threatening environment: an unconscious reaction, both of aggression and of fear. The details of the mental mechanism and fantasies involved, though of great interest from the psycho-analytic point of view, are too complex for discussion here.

With regard to the physiology of the condition, it would seem as though the emotional tension operated by cutting out the voluntary control of the excretory mechanism and reducing it to a spinal reflex. It would be, in this sense, a hysteric mechanism of dissociation.

In all such psychosomatic symptoms it is obvious that, however predominant a part the psychological side may play, physical aspects and measures must not be neglected. Some cases of apparent incontinence, for example, are more in the nature of lenterie diarrhoea, while others may actually need treatment for constipation. It is a fact, however, that most cases are associated with normal evacuation.

Treatment

The treatment may be summarized as follows. Whereas full psychological treatment at a clinic may be desirable, it is often not obtainable; but all measures are in a sense psychological.

1. An inquiry by the doctor into the child's background, habits, etc., may reveal something which needs to be put right—e.g., the child may be worrying over school. The doctor who has an intimate knowledge of the family should score in this respect. Advice may be accompanied by medicine both for its actual effect (e.g., *pulv. cretae*) and as a vehicle for suggestion, if its properties are emphasized to the child and parent. Some of the cases, however, are actually constipated, and this must be carefully inquired into.

2. As regards psychological treatment, this will follow the usual lines of child guidance. Direct treatment aimed at removal of the symptom, by suggestion or other means, is, in my opinion, desirable in many cases, as it eases the situation considerably for both parent and child, and further treatment can be carried on for the neurosis as a whole. This will generally be in the nature of play therapy, depending on the technique employed. In adolescents, vocational guidance is usually necessary, as well as readjustment of their attitude to their problems. It must be pointed out, however, that prolonged treatment is not required in all cases. For many of them the symptom can be cured in two or three interviews or by simple environmental readjustment.

3. Very good results can be obtained in an institution provided it is of the right type. A residential open-air school has cured some of the cases first seen at the child guidance clinic. Others are cured at hostels for evacuated children. Everything, however, depends on the good relation between staff and children. At the school mentioned above remedial exercises to strengthen the abdominal and pelvic muscles were considered useful.

4. If simple measures fail a period of observation in hospital may be advisable, both to eliminate organic disorder and because it may effect a salutary break, and show the child and the parent that the habit can stop (just as asthmatic, epileptic, and other attacks often disappear while the child is in hospital).

Summary

An inquiry is made into the investigation and treatment of encopresis in children based on cases treated at the Birmingham Child Guidance Clinic over the past seven years.

No definite organic condition is found, and the cause is held to be psychogenic, the symptom being a regressive one.

Examples of cases and a summary of various lines of treatment are given.

My thanks are due to Miss A. McClure, Miss T. Alcock, and Dr. S. Isaacs for their observations and suggestions.

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MACROCYTIC ANAEMIA FOLLOWING GASTRO-ENTEROSTOMY

BY

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The following two cases seem to be of some clinical interest. Both men developed a macrocytic anaemia after gastro-enterostomy. The first had had an operation for duodenal ulcer eleven years ago, and now shows a hyperchromic macrocytic anaemia which coexists with the hyperacidity of the gastric juice. The second patient developed a severe hyperchromic anaemia with some features of pernicious anaemia after a gastro-enterostomy performed twenty-eight years ago. He recovered without incident after liver therapy. Owing to the long time since the operation it is impossible to state definitely in this latter case if the present anaemia arose in connexion with the previous operation or if it is a separate entity.

Case Reports

Case 1.—A miner aged 52. Eleven years ago he was operated on for duodenal ulcer, a posterior gastro-enterostomy being done. The fractional test meal before the operation showed hyperacidity. Since then he has had little trouble, only occasionally having slight attacks of pain; lately, however, the pain has been worse, and is accompanied by vomiting. On examination pallor of the skin, a slightly enlarged spleen, and tenderness in the epigastrium were found. A radiograph revealed a normally functioning gastro-enterostomy with some ulcer deformity in the duodenum; there was no ulcer crater. Fractional test meal: fasting juice volume 40 c.cm.

	Fasting:	1	1½	2	2½	3 hrs.
Free HCl ..	35	10	40	45	35	25
Total acidity..	45	25	55	55	45	35
						25 N/10 NaOH 45 as % of HCl

Blood examination showed: red cells, 1,630,000 per c.mm.; haemoglobin, 40%; colour index, 1.25; macrocytosis; white cells, 10,000 per c.mm.—polymorphs 69%, eosinophils 4%, basophils 1%, lymphocytes 14%, monocytes 12%. Sternal puncture showed the bone marrow to be normal. Liver (pernaemon) was given with good result.

Case 2.—A railway constable aged 62 complained of weakness and breathlessness on exertion. In 1912 a posterior gastro-enterostomy was performed for duodenal ulcer. Examination showed pallor of the skin, slight glossitis, sluggish knee- and ankle-jerks, but no enlargement of the spleen and liver. The fractional test meal showed no free HCl, the total acidity not exceeding 10; the fasting juice volume was 50 c.cm. Blood examination: red cells, 1,500,000 per c.mm.; haemoglobin, 55%; colour index, 1.8; macrocytosis; white cells, 3,000 per c.mm.—polymorphs 49%, eosinophils 6%, lymphocytes 42%, monocytes 3%. Normoblasts 7 per one hundred white cells; reticulocytes 2 per thousand. The fragility of the red corpuscles against hypotonic NaCl solution was normal—0.36 to 0.46%. Sternal puncture revealed an excessive number of large erythroblasts. Liver (pernaemon) was given, and three weeks later examination of the blood showed a great improvement.

Commentary

The development of a hypochromic anaemia following simple gastro-enterostomy for gastric ulcer has been noted by many authors. This type of anaemia was reported by Wits (1930) in four cases, by Cosin and Hurst (1930) in one case, by Davies (1931) in five women and one man, by Lublin (1936) in 23 cases, by Meulengracht (1932) in one case, and by Hartfall (1934) in six women.

There are also much rarer reports of hyperchromic anaemia, sometimes called "megalocytic" anaemia, developing after gastro-enterostomy. Davidson (1928) described an Addisonian anaemia developing twenty months after gastro-enterostomy; Conybeare reported such a case in 1922; Hurst (1934) collected seven cases; Lublin mentioned this type of anaemia in one case two years after operation; and Fairley and Kilner (1931) reported one case of megalocytic anaemia following gastro-jejunosomy which eventually developed gastro-jejuno-colic fistula. Lastly, Salus (1932) reported two cases of subacute combined degeneration of the cord, without anaemia, fifteen years after gastro-jejunosomy.

The period in which the cases developed anaemia varies considerably—from twenty months to twenty-eight years after the operation. For the most part the anaemia occurred in women. Vaughan (1932) and others have stated that the anaemia may coexist with hyperacidity as in Case 1 above. They found normal acidity or hyperacidity in a certain proportion of cases after gastric operation even if severe anaemia was present.

The diagnosis of pernicious anaemia in the above cases is based on the blood picture (megalocytosis, colour index,

Notes on Books

Contraception: Its Theory, History, and Practice, as surveyed by MARIE STOPES, D.Sc., Ph.D., contains a great deal of information, not all of equal importance, upon the subject. In the preface to the fifth edition the pioneer's enthusiasm still shines. Peace is founded on contraceptive birth control, which is the only means of ensuring that love shall take control for every infant born. Contrast the coercion of motherhood by the three aggressor nations. Dr. Stopes has her preferences and gives good reasons for them. Nevertheless, the bulk of experience in municipal and voluntary contraceptive clinics is surely against her in their choice of a Dutch cap much more often than of her racial occlusive pessary; also in their satisfactory results from "Volpar" in spite of her alarm about its minimal content of Hg. Though no mention is made of a gold filigree ring as an improvement on Gräfenburg's silver one, the objections to all intra-uterine appliances are well stated. Perhaps because the book has so much personal interest, it would be spoilt for some readers by compression; but the value of recounting past controversies and ignorances becomes a little doubtful. To the majority of medical readers the possibilities of plastic repair operations, for instance, have become more important than those varieties of contraceptives designed for displaced or damaged parts. The book is published by Putnam and Co. at 15s.

Under the title *Allies of Life* the Church Missionary Society (Salisbury Square, E.C.4) publishes at 2d. a brief report of its medical work in Africa, the Near East, India, and China. Nearly 100 C.M.S. doctors and more than that number of nurses, together with their colleagues of other races (including fifty-nine doctors), are working in these fields. In Africa two pioneer efforts have actually been started since the war began—a new out-patient work in the Sokoto province of Northern Nigeria and the first C.M.S. hospital in the Yomba country, the southern portion of the vast Lagos diocese. Three C.M.S. hospitals in Palestine and one in Transjordan are doing valuable maternity and infant welfare work. In Iran the mission hospitals are increasingly appreciated by the Government. In the Moru district of the Southern Sudan 17 out-stations now bring medical facilities within reasonable reach. In India at Quetta a new hospital was opened last year, and another in Kashmir, where, Dr. Noel Fletcher remarks, osteomalacia is probably more prevalent than in any other part of India; out of 65 deliveries at the mission hospital in eight months, only 19 were normal. In China the C.M.S. hospital at Kunming, the chief Chinese city on the Burma Road, instead of being a distant outpost, is now a very important strategic mission centre. With the co-operation of the Shanghai Medical College it has become a teaching school.

Volume 13, No. 1 (June, 1941), of the *Index to the Literature of Food Investigation* has now been published by the Department of Scientific and Industrial Research at 4s. 6d. net. It is obtainable from H.M. Stationery Office, York House, Kingsway, London, W.C.2, or through any bookseller. The *Index*, compiled by Agnes E. Glennie, B.Sc., assisted by Gwen Davies, B.A., and Catherine Alexander, B.Sc., is divided into fifteen sections and deals with the different classes of meat, poultry, fish, vegetables, and dairy produce, with grain and fats, and with canning, freezing and chilling, bacteriology, mycology, and engineering.

The calendar of the Royal College of Surgeons of England 1941 (Taylor and Francis, Ltd., Red Lion Court, Fleet Street, 2s. 6d.) is necessarily stripped of much material to meet the acute shortage of paper; it has 226 pages, compared with 630 last year. All the current official information is given, but the introductory historical matter, the chronological and alphabetical register of Fellows, and the lists of Members, Licentiate in Dental Surgery, and of diplomates have been omitted. There is a roll of honour, recording the names of Fellows, Members, and holders of the L.D.S. who have been killed in action or have lost their lives from wounds or disease contracted while on active service during the present war.

Preparations and Appliances

REMOVAL OF PLASTER CASTS

A MODIFICATION OF BICKFORD'S METHOD

Major C. W. R. PRICE, R.A.M.C., writes:

About a year ago Mr. R. G. Bickford¹ described his method of removing plaster casts by incorporating piano wire in them. In practice at the Royal Devon and Exeter Hospital we found that it was a most difficult operation to hold simultaneously a limb with an unstable fracture and a springy length of wire while a plaster cast was applied. Secondly, when the time for removal came, the cut which the wire made was very narrow and a separator was required to break open the cast; impatience with the manoeuvre readily led to broken finger-nails. This second objection could be met by incorporating two lengths of wire in the cast so that "bivalving" could be carried out. However, the application of a cast having two wires involved such fantastic dexterity on the part of the operator and his assistant that it was deemed impracticable. Our third dislike was for the use of stockinet as a lining for the casts. We did write to the makers for some of the wire backed by adhesive tape which Mr. Bickford suggested as an alternative to the use of stockinet, but had adopted the method which follows long before any answer to our inquiry arrived.

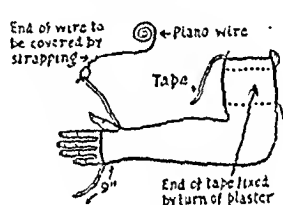


FIG. 1.

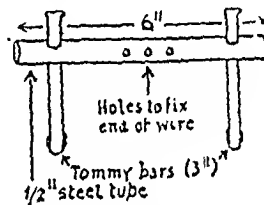


FIG. 2.

Ordinary cotton tape well smeared with vaseline is laid on the skin of the limb, either in the mid-line of its anterior aspect if only one wire is to be used, or on the inner and outer aspects, or fore and aft, if two wires are to be used. The tapes are about 18 inches longer than the length of the proposed cast, so that there is about 9 inches excess at its top and bottom. The tapes readily adhere by virtue of their vaseline coating and thus do not require to be held while the plaster is being applied. When the cast has been completed, any adhesion of the tapes to the inside of the cast which the vaseline coating has failed to prevent can be broken down and the ends of the tape can then be turned back and secured by a single turn of plaster bandage (Fig. 1).

When the time comes for removal, lengths of 24-gauge piano wire can be readily pulled into position by the tapes. For the actual twisting of the wire we use two "twisters" of the type shown in the sketch (Fig. 2). These are easily made from 6-inch lengths of 1/2-inch steel tubing, and one is used to fix an end of the wire while cutting proceeds from the other end of the plaster.

DESICCANT PASTE FOR THE SKIN

British Drug Houses Ltd. have now put on the market "siccolam," a desiccant paste containing titanium dioxide, zinc oxide, and small quantities of purified silicates in a fat-free base. This preparation of metallic oxides with dehydrating and antiphlogistic effects on the skin was described by H. C. Semmon and F. Herrmann in the *British Journal of Dermatology and Syphilis* (June, 1941 (p. 177)). In the authors' experience "siccolam" proved, among many combinations examined for over a year, to be the most favourable application in the treatment of inflammatory dermatoses in which the use of fatty preparations was contraindicated. It is a dense creamy substance, dries rapidly when spread thinly over the lesions, and is supplied in collapsible tubes of 2 oz. and 4 oz. Other medicaments, such as tar or sulphur, can be incorporated at the physician's discretion.

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PROTECTION AGAINST DIPHTHERIA

To combat the toxin which is harming a child suffering from diphtheria the physician must administer antitoxin instantly, and to this end he injects antitoxin ready-made in the horse. But the immunologist has long wished to induce the infected patient to manufacture antitoxin rapidly in his own body; thus two sources of attack would be directed against the toxin. The problem has been studied by two teams of workers in close concert with the Emergency Public Health Laboratory Service. A. W. Downie with one team studied the effects of the injection into one group of volunteers of diphtheria toxoid (A, the active immunization section), and of the simultaneous injection of diphtheria antitoxin and toxoid into a second group (A + P, active and passive immunization). F. Fulton with the other team used the A + P method in epidemics in schools. After a valuable review of the experience of previous workers it was difficult to avoid the conclusion that the antitoxin in the A + P method interferes with the primary response to the toxoid—that is, the immediate active immunization—but does not abolish the sensitizing influence which leads to the very rapid production of antitoxin when toxoid is administered at a later date. The correctness of this conclusion is the chief result of the careful research described in the pages of this and last week's issue of the *Journal*. Some 300 third-year medical and farm-training students were first Schick-tested while at the same time a sample of blood from each was taken for estimation of "natural antitoxin" content. About half of the Schick-positive individuals formed Group A and half Group A + P. In Group A (148) each received at once 0.1 c.cm. of A.P.T. (alum-precipitated toxoid) by subcutaneous injection, and those in Group A + P received the same dose of A.P.T. and also 350 to 500 units of diphtheria antitoxin into the other arm. A month later the blood of all students was titrated for antitoxin, and 0.3 c.cm. of A.P.T. was injected. From eight to twelve weeks later a third titration and a Schick test were made. Thus data were available which indicated the gradual excretion of the therapeutic diphtheria serum and the appearance of antitoxin produced in the student's body as the result of active immunization. In the A group the well-known

minimal production of antitoxin was noted after the first injection, with a rapid increase after the second injection given a month later. In from twelve to sixteen weeks from the beginning of the observations 95.7% of the A group became Schick-negative. In the A + P group the general picture was the same, with the important difference that the production of antitoxin began much later and was then slower, the early delay being due to the therapeutic serum still present in the blood. By the end of the month this had fallen to one-tenth of its initial content. The A + P group probably reached maximum production of antitoxin a month later than the A group, but the level was not much different: 90.5% became Schick-negative.

A period of low immunity occurred in the A + P group during the first month, when the therapeutic serum had disappeared from the blood and active production of antitoxin was low. This period of danger was provided for in the management of epidemics in schools by Fulton and his team. The children in the seven infected residential and non-residential schools received a dose of 500 units of antitoxin as well as 0.1 c.cm. of alum toxoid. A month later the second dose of 0.3 c.cm. of alum toxoid was injected. During the period of low protection disclosed in the research on the students the children in the schools were protected from infection, for all carriers were isolated for six weeks, when it was assumed—and correctly as the event showed—that the A + P children were immune and safe even if still infected carriers were readmitted. In the schools, with a population of about 1,500, five cases of diphtheria occurred after the campaign started, but in none of the five had the full series of injections been given. Obviously, new children entering the school must be fully immunized. The method gave excellent results in the seven epidemics in the schools, and without doubt it will be widely adopted.

The team of eight workers would have put public health administrators even more deeply in their debt if they had discussed variations of the method which may be imposed by absence of laboratory facilities or other lack. In these distressful days one may have to combat an epidemic—for example, among masses of ill-fed refugees—far indeed from laboratory aid, with only antitoxin available. Here the familiar procedure is to give 500 units of antitoxin to everyone in contact with the infected persons. Virtually complete protection is thus assured for three weeks. So far as we can learn the earliest recorded attack of proved clinical diphtheria after the giving of antitoxin occurred eighteen days later. Thereafter antitoxin would be kept in reserve ready for instant administration to anyone observed during daily inspection to be showing any symptoms suggestive of diphtheria. As the death rate from diphtheria if adequate antitoxin is given in the first twenty-four hours is almost nil, such a method gives a high degree of safety. Before Park put active immunization against diphtheria on a sound basis this method of blockage by antitoxin worked fairly

well, but recurrences after the safety period of three weeks constantly harassed the physician. If some laboratory facilities are available, what is the best evolution of this simple method of using antitoxin? We do not know if the method favoured by the late Prof. Okell¹ has been applied on a large scale: this consisted of Schick-testing and swabbing all in the infected community. It was an interesting plan. He read his Schick reactions and the swabs at twenty-four hours and immediately began active immunization of the Schick-positive, swab-negative group. The members of the group would not develop satisfactory immunity for some few weeks—a danger period. This he met by keeping antitoxin available at each daily inspection. His dangerous carriers—the Schick-negative, swab-positive group—were immediately isolated, the aim being to allow the Schick-positive group to develop some immunity free from the danger of the carrier. It is possible, even probable, that Okell would have prescribed antitoxin at the first visit if the modern digest antitoxin, with its almost complete freedom from serum reaction, had then been available.

It is difficult to estimate the danger period in the method used by Downie, Fulton, and their colleagues. Of 116 people in the A group—that is, receiving active immunization only—82% at four weeks still had 0.001 unit or less of antitoxin per c.cm. of blood, and were probably liable to infection from any chance undetected carrier. Even eight weeks after the second dose of prophylactic 29% of the A + P group showed 0.001 unit or less of antitoxin, and only 12% in the A group; presumably both were still in the danger zone. But the proverbial pudding was good to eat, for the method gave brilliant results, and most administrators would plump for this instant insurance with antitoxin. Incidentally, the value to the medical students of this training in theoretical and practical immunology must have been indeed great.

A small comment is suggested by the recent paper of Bunch and others.² They found that almost 40% of Schick-positive medical students were sensitive to toxoid—one may say they were “pseudo-reactors.” These people would suffer severe reaction if toxoid were used in the ordinary dose, but Bunch immunized them successfully by minute doses of toxoid intracutaneously or by a long series of a dozen or more gradually increased subcutaneous doses of toxoid, starting with a 1% dilution. As Downie and his colleagues eliminated from the tables the Schick-positive students with more than 0.001 unit of antitoxin per c.cm. of blood they probably excluded many of the people acutely sensitive to toxoid but nevertheless easily immunized.³ It would have added one more to the many fascinating points in the report if the heavily “pseudo-reacting” had been dealt with in special tables.

The whole account of the research work published in our columns is a model of concerted and statistically controlled observation and its epidemiological application. The same Service will no doubt supply us with others.

CHEMOTHERAPY OF PROTOZOAL INFECTIONS

In 1937 Lourie and Yorke⁴ showed that synthalin (decane diguanidine) exerted a powerful trypanocidal action *in vitro*, a concentration of only 1 in 100 millions sufficing to destroy all the trypanosomes in a suspension of nutrient medium within twenty-four hours at 37°C. This discovery of the direct trypanocidal action of synthalin, which was of considerable academic interest in view of the fact that the chemical constitution of synthalin is essentially different from that of all known trypanocidal substances, opened up a wide field of biological and chemical inquiry. With the chemical collaboration of Dr. H. King of the National Institute of Medical Research and of Dr. Ewins of Messrs. May and Baker, a large number of guanidines, isothioureas, amidines, and amines were prepared and their trypanocidal activity examined. Certain of the aromatic diamidines produced by Ewins were found to exhibit quite remarkable trypanocidal activity, single injections of a small fraction of the tolerated doses sufficing to cure infected laboratory animals. The most active were 4:4'-diamidino-stilbene, 4:4'-diamidino-diphenoxypropane, and 4:4'-diamidino-diphenoxypentane. As Lourie and Yorke in 1939 found that some of these compounds also exhibited a curative action in *Babesia canis* infections of dogs, they were sent to Dr. Adler at Jerusalem with a request that he would ascertain whether they had any therapeutic action in hamsters experimentally infected with leishmaniasis; in due course Adler reported favourably. It was then decided to try the new compounds in man, and Adams and Yorke in 1939 administered diamidino-stilbene to a severe case of Indian kala-azar. The patient was apparently cured by a short course of eight daily injections of 1.0 mg. per kilo of body weight. Shortly afterwards in the same year Adler and Rachmilewitz reported the successful treatment of a woman infected with *Leishmania infantum* in Palestine, and, a year later, Adams and Yorke of a second case of Indian kala-azar.

In view of these successful preliminary results the compounds were sent to various workers in the field for more extensive clinical trial. In 1940 Napier and Sen in Calcutta tested diamidino-stilbene in eight patients with kala-azar, all of whom were apparently cured by a course of eight to twelve daily injections of 1 to 2 mg. per kilo. Kirk and Sati, in the same year, tried the compounds on a series of forty-nine patients with Sudan leishmaniasis, some of whom had relapsed after previous treatment with antimony. Forty-one of these forty-nine cases were discharged as provisionally cured; of the eight fatal cases, five of the patients were moribund when admitted to hospital and died after only a few injections, and one died after a debauch. As Kirk and Sati point out, these results compare very favourably with those hitherto obtained in the treatment of Sudan leishmaniasis with the antimonials. They write:

“The clinical picture of the uncomplicated disease is a grave one. Intractable diarrhoea, haemorrhages, and complications like cancrum oris and lobar pneumonia are frequent. Experience with antimony has shown that the

¹ Okell, C. C., Eagleston, A. J., and O'Brien, R. A., *Lancet*, 1924, 1, 393.

² *J. Immunol.*, 1940, 33, 427.

³ Fraser, C. J., *Amer. J. publ. Hlth.*, 1927, 17, 1027.

⁴ See *British Medical Journal*, 1939, 1, 412.

Indian standard treatment is inadequate in the Sudan disease, where the action of the drug is much slower. A larger total dose is usually required to effect a cure, and cases are frequently encountered which are completely resistant to any form of antimony treatment. Moreover, Sudanese kala-azar patients are very sensitive to the toxic effects of antimony, and the early attempts to treat the Sudan disease with this drug along the lines advocated in India led only to a series of disasters, which Archibald recognized as attributable to the drug rather than to the disease."

In view of the relatively great difficulty which has been experienced in curing Mediterranean and Sudan leishmaniasis with antimonials, it is not surprising that both Adler and Kirk found that much larger quantities of the diamidines were required in this form of leishmaniasis than in Indian kala-azar. The size of the individual dose given varied between 1.0 and 2.5 mg. per kilo of body weight, and apparently at least thirty injections were necessary to produce a cure. It is as yet too early to decide what value these compounds have in the therapy of human trypanosomiasis. Reports so far available indicate that they produce rapid peripheral sterilization, and that they cure early cases. Diamidino-stilbene, which has hitherto been mostly used in cases of sleeping sickness, apparently fails to cure cases in a late stage with pronounced changes in the spinal fluid; but preliminary reports received from Lourie in Sierra Leone suggest that diamidino-diphenoxy-pentane and diamidino-diphenoxy-propane may prove more valuable than diamidino-stilbene in such cases. The therapeutic activity of these compounds in dogs infected with *Babesia canis* has been examined in Kenya and Uganda. In 1941 Daubney and Hudson in Kenya treated sixteen infected dogs—most of them pure bred—with diamidino-stilbene, and cured fourteen with a single dose; two advanced cases; one of which was moribund when treated, were fatal. In the same year Carmichael and Fiennés, in Uganda, cured 102 of 116 infected dogs with a single dose of diamidino-diphenoxy-propane; ten relapsed, but were cured with a second dose, and four died. Carmichael and Fiennés conclude that this new compound has proved the most valuable drug they have so far encountered in the treatment of tick fever (*Babesia canis*) in dogs.

WAR PRODUCTION AND HEALTH

Because of the increasing magnitude of the national effort we are now as a nation faced with production problems which are unparalleled in history. Not the least of these problems is that of absenteeism. It is difficult for medical observers to know how much of absenteeism is due to ill-health, and therefore to what extent ill-health is responsible for the falling off in factory output which is reported to have taken place recently. In a few industries accurate statistics are available, but only in a proportion of these is the sickness record of the individual and his occupational group analysed critically with a view to the employment of preventive measures. Until we have a compulsory method of notifying factory absenteeism caused by sickness, just as it is now compulsory for employers to notify to the Factory Department accident

cases that cause a loss of three or more working days, we cannot as a profession see the problem in its true perspective or give industry our optimum assistance. Prof. John Ryle has recently commented forcibly on the need for further inquiries into the human factor in its relation to war production "if a true assessment of causes and effects is to be reached." The report of the B.M.A. on industrial medicine, now published and summarized elsewhere in this issue, backs up Prof. Ryle's appeal and emphasizes the need for both research and education in connexion with industrial health. These and other problems in industrial medicine are ably dealt with by Dr. Donald Stewart in an article at page 762.

The time has never been less propitious for resting on the laurels of research carried out during the last war or in times of peace. The work of the Industrial Health Research Board, which was based on accurate facts and observations at the time, must go on and must take cognizance of present-day factors, and in particular of the importance of propaganda. Factory accidents are increasing; the black-out has its own peculiar problems; the importation of labour to many industrial centres presents medical aspects of the greatest significance; and the ever-increasing number of women workers entering factories has become associated with many health problems, not the least of which is the possible increase in tuberculosis. Again, some authoritative statement is required on the supposed efficacy of vitamin therapy, ultra-violet therapy, and vaccination in the prevention of the common cold, generally accepted as the chief cause of absence from work. Some statement, if it can be given, is wanted now because both workers and managements are demanding guidance from the medical profession on the institution of positive preventive measures, and in the absence of this they are often proceeding on their own responsibility on "hit-or-miss" lines and without medical advice.

As a result of the Factories (Medical and Welfare Services) Order of 1940 the number of medical officers in factories has so increased that our profession is now well represented within the factory walls and ready to help. But how? The majority of these doctors have had but little training in their subject. Many of those newly appointed have had to find their own feet and work out their own salvation. And in these days of crisis how wasteful this has been! The facilities for education and practical help have been limited to sporadic week-end courses at three provincial universities—Birmingham, Manchester, and Sheffield—although there never was a better case for continuous assistance, possibly at week-ends, both in these centres and in London. The factory doctor wants advice and help from the best brains in the profession, and he wants it now. He needs it not so much on the treatment of injuries and the organization of casualty services—for which at least he has had some training—but rather in relation to the wider problems of the prevention of accidents and sickness among his workers, and to the need for linking up medicine with the social requirements of the community, which is the true basis for the maintenance of health in industry.

THE STIMULANT ACTION OF IRON

Whatever may happen in animals, it is generally agreed that the normal human being absorbs large quantities of medicinal iron, even when all precautions have previously been taken to ensure adequacy of the reserves; two directly contradictory papers dealing with this point were presented at the last meeting of the American Society for Clinical Investigation.^{1,2} During the last decade it has been assumed that iron acts as a nutritional element rather than as a drug. Helen Mackay,³ at the beginning of this phase, had shown that the haemoglobin levels of artificially fed babies treated with iron surpassed those of breast-fed babies, and she had used the higher figures in the construction of a standard normal haemoglobin curve in infancy. In 1936 Widdowson and McCance⁴ gave iron to a normal group of men and women and observed their haemoglobin levels. The women's haemoglobin tended to rise and approach the men's level; the men's haemoglobin did not change. This might have suggested that women normally have a mild but pathological anaemia. In 1938 Sankaran and Rajagopal⁵ confirmed the fact that the haemoglobin content of the blood in healthy young females could be raised by the daily administration of ferrous sulphate, but they found that the haemoglobin returned to the original level when the iron was discontinued. Miss Widdowson⁶ then showed that the administration of iron in therapeutic doses to pregnant women converted into a rise the fall in haemoglobin which was then in progress. After the administration of iron had been discontinued the haemoglobin fell once more, and at about the same rate as if iron had not been administered.

These observations have very seriously upset the view that the maximum haemoglobin levels which can be attained by giving iron to pregnant and non-pregnant females and to infants really are optimum or physiological levels. They are probably just as abnormal as complete saturation with vitamin C. Miss Widdowson suggested that one of the factors concerned in the level of haemoglobin in circulation is the amount of iron in the plasma; the administration of iron temporarily raises the level of plasma iron, which stimulates the marrow to greater activity. Such a stimulus is from the evolutionary point of view a highly abnormal one, as the intake of iron in the food is never such as to cause comparable rises in the plasma iron. The subject has been carried a stage further by Fowler and Barer,⁷ who show that when medicinal iron is administered to normal subjects there is a gradual increase in the blood haemoglobin which reaches a peak in about ten to twelve weeks and then gradually falls to the pre-treatment level even though the administration of iron is continued. This is true whether the initial haemoglobin level was low normal or high normal, though in the latter the response is less marked. The work was apparently done on both males and females, but the effects are more noticeable in females, inasmuch as their haemoglobin level is more often on the low side of normal. A similar supernormal peak and subsequent fall to normal levels is observed during the successful treatment of hypochromic anaemia. What, then, is the student of nutrition to regard as the normal level of haemoglobin? It is certainly not a uniform level but a rather broad zone with considerable individual, sex, and age variations. It is the level found in a group of healthy people living on a good

diet. The mere fact that a haemoglobin level can be temporarily raised by iron medication is no proof that it was initially abnormal, and unless we are to regard infancy and pregnancy as morbid states we must accept the view that the level of haemoglobin is normally lower at these times, perhaps for some good reason. In pregnancy, at all events, the circulation is much altered, and it may well be that the tissue tension of oxygen remains normal in spite of the depression in haemoglobin.

OCCUPATIONAL ACNE

Among the manifold skin lesions met with in industry, and clearly attributable to chemical causes, acne is relatively uncommon. So-called "oil acne" is not, we believe, the result of chemical injury. Where acne is already present a superimposed chemical dermatitis does not appear to aggravate the condition: the distribution is, in general, different, and the dermatitis may clear up, leaving the acne to pursue its course more or less uninterruptedly. While many hold that sufferers from acne are likely to have an increased tendency to industrial dermatitis, this probably applies only to certain exposures, and may, in the last analysis, be traceable to the coexistence of dirt and seborrhoea rather than to the acne. Typical acne, with its characteristic lesion, has for long been known as an industrial disease and referred to variously as "chlor-acne," and by the Germans as *Pernakrankheit* from its association with exposure to the fumes of perchloronaphthalenes. Inorganic chlorine compounds have been blamed as well as chlorine itself. A. Thelwall Jones, who has had much practical experience, does not believe¹ in the association of chlorine with so-called chlor-acne. Occupational acne among workers engaged in the manufacture of a host of chlorinated organic compounds is a disease almost unknown in one large firm in this country. Many of these compounds give rise to severe dermatitis, but acne does not occur. Many reports, however, have appeared on the acne which results from exposure to the fumes of chlorinated naphthalenes and chlorinated diphenyl, and Jones describes his own observations of occupational acne among workers engaged in the manufacture of these compounds. Alkyl derivatives of naphthalene with chlorine substituted in the side chain readily give rise to dermatitis, but never of the acneiform type. Thus there seems to be something very special about the action of chlorinated naphthalenes and chlorinated diphenyl. The view of Teleky in 1927 was that the effect on the skin was proportional to the chlorine content, and that much improvement was attainable if the chlorine content were diminished from 30% to 8%, the loosely bound chlorine being removed.

There are several points of great interest in these cases of occupational acne, and they are carefully described by Jones. There is a long latent period between the beginning of exposure to the fumes of these compounds and the appearance of the lesions; this varied in Jones's series from one month to two years, with an average of seven months. After proper treatment the acne may recur even after removal from exposure, and final disappearance may be delayed for anything up to two years or more, particularly if infection has become superimposed. The lesions in Jones's cases were most commonly on the face and below the ears; a few occurred on the forehead, but the nose and mid-line of the face were spared; in severe cases the neck, chest, upper abdomen, arms and extensor surfaces of the forearms, the back, thighs, and buttocks may also be affected. As distinct from acne vulgaris there is in this condition a very large number of fine blackheads and

¹ *J. clin. Invest.*, 1941, 20, 436.

² *Ibid.*, 1941, 20, 437.

³ *Med. Res. Cncl. Spec. Rep. Ser.*, 1931, No. 157, *Nutritional Anaemia in Infancy*, London.

⁴ *J. Hyg., Camb.*, 1936, 38, 13.

⁵ *Indian J. med. Res.*, 1938, 25, 753.

⁶ *Lancet*, 1937, 2, 640.

⁷ *Am. J. med. Sci.*, 1941, 201, 642.

¹ *J. Industr. Hyg.*, 1941, 23, 270.

the eyes without the greasiness of the skin found in the former. Areas of skin where friction is likely to arise or which are not washed regularly are particularly susceptible; dirt in general is a predisposing factor, and Jones's worst cases occurred in workers of uncleanly habits. He suggests that the mechanism of production depends upon the solution of the chlorinated bodies in sebum; when not washed away the compounds irritate the sebaceous glands, stimulate the local growth of the stratum corneum and the secretion of sebaceous matter, and thus lead to blockage of the follicle with possible secondary infection. As opposed to the view of several other observers (Macleod among others) that chlor-acne results from absorption of the chemical through the respiratory and digestive tracts, with subsequent excretion through the pilo-sebaceous follicle, Jones believes that it is due to local external irritation, particularly as the effects are local and leave the rest of the skin untouched. Attempts to demonstrate an attack on the skin by direct application of the vapour of molten chlor-naphthalenes to human skin (back) were, however, negative. In view of the recent addition of poisoning by chlor-naphthalenes to the schedule of industrial diseases, it is interesting that Jones found no cases with obvious signs of hepatic disease. Nevertheless there can be no doubt, on the grounds both of animal experiment and of several human cases in the literature, that excessive exposure to these fumes leads to necrosis of the liver.

The recommendations the author gives for protection of workers engaged in the manufacture of these compounds follow well-recognized but often neglected principles. The trouble lies in part in the lack of co-operation and understanding by the workers. Jones's points are worth recording: (1) The worker must be taught the nature and course of the condition. (2) Overalls must be provided—light-coloured, highly starched, closely woven, full-length sleeves, and a proper neck. Full-length underwear should be laundered at least once a week. (3) There should be adequate locker accommodation. (4) The worker should avoid touching the body and the face with his hands; rags should not be used for wiping the nose or face. Washing should be enforced before meals, and no one should eat while at work. (5) Adolescents should not be employed, nor should men with seborrhoea or acne. (6) Frequent medical inspection is necessary, and early cases should be removed from further exposure. (7) No other work should be done which entails much sweating. No reliance can be placed upon "protective" creams in this hazard; the whole emphasis is on cleanliness and medical supervision.

A NEW TEST FOR INFLUENZA VIRUSES AND THEIR IMMUNE BODIES

The unexpectedness of research is one of its charms: the most unlooked-for things turn up. Hirst¹ was removing influenza A virus from developing chick embryos when he noticed that the red cells of the infected chick, coming from ruptured vessels, were agglutinated in the allantoic fluid. Since red cells in the allantoic fluid of chick embryos inoculated with sterile materials did not agglutinate at all, it seemed that this agglutination phenomenon might be the result of infection with influenza virus in the chick: such in fact proved to be the case. It is quite an easy thing to demonstrate the agglutination phenomenon in the infected chick embryo. The egg shell is opened over the air sac, the outer chorio-allantoic membrane is torn away, and several large blood vessels are purposely ruptured. Fifteen to thirty seconds are allowed for the embryo to bleed into the allantoic fluid before the contents of the

allantoic sac are emptied into a Petri dish. If the embryo has been infected with the influenza virus macroscopic agglutination of the red cells occurs within fifteen to thirty seconds in the Petri dish. If agglutination does not appear promptly it usually does not occur at all, and the differentiation between positive and negative eggs is thus rendered easy.

By using this agglutination phenomenon as an index of infection it was found possible to carry out virus titrations and serum neutralization tests. One-tenth c.c.m. of the material is inoculated into the allantoic sac of 11-day-old embryos, which are allowed to incubate for two days; the eggs are then opened and positive and negative reactions are recorded. The end-points in serum and virus titrations are as sharp as those obtained in the mouse-protection test; agglutination tests work equally well with strains of influenza A and B virus and swine influenza virus, the specificity of each strain being easily demonstrated. A neutralization test with acute and convalescent serum from a case of influenza A demonstrated a rise in antibody titre in the convalescent serum which was consistent with the rise obtained in similar tests in mice. A test-tube agglutination reaction has also been elaborated. When infected allantoic fluid, either fresh or stored at -72°C ., from which the red cells have been removed by low-speed centrifugation, is mixed with washed red cells from the normal developed chick agglutination occurs. The *in vitro* agglutination phenomenon is somewhat slower than that carried out in the egg, as it takes from five to twenty minutes to get a reading. The red cells sediment rapidly and form a characteristic ragged granular pattern on the bottom of the tube. When an influenza antiserum is added, in dilutions as high as 1 in 1,024, to the allantoic fluid infected with the homologous virus, the agglutination phenomenon is inhibited. The agglutination-inhibiting substance in human sera parallels the neutralizing antibody titre more closely than the complement-fixing titre. At present neither the mechanism of the agglutination phenomenon nor its specificity for influenza virus infections is well understood, but it seems that this test may well replace the mouse-protection test for determining serum neutralizing antibodies.

Dame Edith Mary Brown, M.D., Principal of the Women's Christian Medical College, Ludhiana, Punjab, has now completed fifty years of devoted work in alleviating the physical sufferings of Indian women by the provision of qualified Indian women doctors, nurses, and midwives. She first landed in Bombay on November 9, 1891, and with a gift of £50 from a Bristol lady she rented an old school house at Ludhiana, using a little hospital near by for the clinical teaching of her early students. From this small beginning the first medical school for women in India has developed into an institution where for years past there has been an average of 300 Indian women students in the medical, nursing, pharmacy, and maternity schools, with classrooms, laboratories, and a hospital of 260 beds. A tribute to Dame Edith Brown's pioneer work in the Punjab appeared in the *Times Educational Supplement* of November 15. A jubilee thanksgiving fund has been opened at the London office of the College, 39, Victoria Street, S.W.1.

Prof. F. C. Bartlett, F.R.S., who holds the Chair of Experimental Psychology in the University of Cambridge, has been appointed a member of the Medical Research Council in the vacancy caused by the death last July of Prof. A. J. Clark, F.R.S.

¹ *Science*, 1941, 94, 22.

CLINICAL TEACHING

BY

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Generally speaking, one assumes that scientific knowledge is handed down by means of the written word. Advances are communicated to the journals, from these into books, and to students in the form of textbooks. This is certainly so in the exact natural sciences—physics, chemistry, botany, and the others; but there are limitations to this process. In individual schools attention is devoted to certain specialties; views are taught which differ from the opinions in other institutes, and special techniques are cultivated. Many such schools, like those of Karrer, Euler (vitamin chemistry), Einstein (theoretical physics), Mme Curie, Ramsay, and Rutherford (radiant energy), remain unique; but these are exceptional. In the main there is a continuity of teaching, and a new teacher can, without difficulty, proceed from the point arrived at by his predecessor.

It is quite otherwise in *clinical* instruction—not so pronounced with undergraduate as with postgraduate teaching. Personal methods, often unpublished, occupy an important position and have to be passed on to the pupil in connexion with appropriate cases. This applies to the choice of method in investigation and treatment, and to the determination of indications for certain operative procedures, and, last but not least, to operative technique.

Individuality of the Teacher

The choice of particular specialties within a specialty is very characteristic. In this matter the individuality of the teacher plays its part. The wide knowledge of the master, which even the most careful study of the literature cannot replace, saves the student from many handicaps which otherwise would be unavoidable. The daily instruction based on the clinical cases gives the junior a stimulus to pursue new investigations with results which are a source of pride to the master as great as if the work were his own. It was in this way that the large clinical schools came into being, such as the surgical clinic of Billroth in Vienna and of Czerny in Heidelberg, the ophthalmological school of Fuchs in Vienna and of Axenfeld in Freiburg, Cushing's neurosurgical clinic in Boston, the neurological and psychiatric schools of Paris and Rome, and others. The unique character of the clinical work, of the teaching, of operative technique, and of investigation is absorbed almost unconsciously by the student. He receives the stamp of the school, and is initiated into many unpublished details through verbal tradition. Although each member of the school is concerned with his own line of investigation, all work together towards a common end.

It is obvious that this system has its drawbacks. A chief who has a strong individuality may tend to overpower his juniors; independent pupils often become antagonistic to their teacher, while the less independent lose the rest of their individuality; but there is no doubt the positive side of this kind of teaching prevails.

In this country what impresses a clinical teacher from Central Europe is this cult of individuality, and, as a corollary, the absence of "schools" in the explained sense of the word. All prominent clinical scientists here are individual workers, not standing on the shoulders of predecessors and carrying forward their work. They are like mountains rising out of the plain without foothills! It is difficult to understand how these prominent personalities could perform their great work alone, without any help.

No doubt this has its advantages; for the need to overcome obstacles is a valuable discipline, and it ensures that only those really capable reach their goal and that all competitors are eliminated. On the other hand, the system involves a certain dissipation of energy, since each investigator has to make a fresh

beginning, lacking the support of his teacher's experience. No one removes the stones from his path. The logical result is that the "middle class" of science, who form the backbone of scientific investigation everywhere throughout the world, is eliminated.

It seems to me unfortunate that the great mass of first-class ability which I have met with in this country is thus deprived of the opportunity for the easy training in clinical science of which it is capable. The large numbers of talented, interested, and enthusiastic young men whom I have met here present a guarantee of capacity for first-rate achievement. Their independence of thought and interest in new ideas would be the joy of any academic teacher. It seems to me that in this we may see an important principle of the British educational system, which aims rather at the development of individual character than at the accumulation of knowledge.

I have found the same characteristics in the undergraduates, whose powers of judgment and understanding are well above the average of those of Central Europe. The questions they ask in the course of their instruction show a gratifyingly acute grasp of essentials. But in this country medical education is placed far more in the hands of the young men *unaided* and *unencouraged*. They must take the trouble themselves to get up the necessary information. There is no doubt that they have a much harder time than their Continental comrades. As the number of paid assistants here is very few, most of the young men willing to learn more have to strive for their own living. Usually they serve their time as general practitioners. They gain their education in the chosen specialized subject by great sacrifice, by means of serving in their free hours as voluntary assistants in a clinic. They often arrive tired and worried, as they have only a short time at their disposal. The senior surgeon is so busy running his big clinic that he has very little opportunity for discussion and teaching, even with the best will to do so. I have often admired the idealism of these young people to be able thus to qualify themselves in spite of unfavourable conditions.

Choice of Clinical Teachers

For those of us who have been teachers in the universities of Central Europe it is particularly difficult to understand that the medical faculty of the university has hardly any control, for instance, in the choice of the majority of clinical teachers, except in the case of professors, and that the office of lecturer is often attached to that of physician and surgeon in a hospital in whose appointments the university has little influence. On further reflection, this also is seen to have a certain advantage, for the head of a clinic can easily become an absolute dictator when all the appointments to his special department are entrusted to him. At the same time it is risky to hand over the duty of instruction to any practitioner, however experienced, without regard to his capacity as a teacher.

If it is difficult to find a clinical teacher who possesses didactic, clinical, operative, and scientific ability in equal degrees, still more is it unfair to expect all this of a very busy practitioner, even though he lose no income. The practitioner who has to move from one job to another cannot have time for the necessary careful preparation of lectures even if he were well supplied with teaching material, which is not easily available. It will be especially unsatisfactory in the case of postgraduate instruction, where the effect of growing competition is great.

Clinical teaching as a whole-time job as we see it in many parts of the U.S.A., and also as adopted voluntarily by some outstanding individual and idealistic teachers in this country, is the only solution of the difficulty. Only by an adequate salary and pension provision can the whole-time teacher be freed from the burden of private practice with its competition, to find time for his teaching and for scientific work without care and without anxiety for the future.

The choice of full-time teachers must be very carefully made, and "inbreeding" must be avoided. Experience shows that the appointment of those educated and qualified in the same way does not bring the necessary fresh blood. I would strongly support the plan whereby clinical university chairs should not be restricted to citizens of these islands. Young American teachers, for instance, could bring new ideas and fresh opinions which would be welcomed here.

Chairs for Special Subjects

Only on historical grounds can we understand how it comes about that diseases of the skin, eye, nose, and ear, and the diseases of children are taught often in second-rate clinics with very limited teaching periods and no control by examination. These specialties have assumed their present significance only within the last few decades; their social importance has enormously increased, and the methods involved in their investigation and treatment have become too complicated to be taught, even sufficiently for the general practitioner, in the short time here allotted to them—namely, one term of ten weeks, three hours a week—while 300 hours of ophthalmology are compulsory at most of the Continental universities. The fact that there is only one professor of ophthalmology in the British Empire is scarcely credible.

But the authority of this professor is no greater than that of a lecturer. The foundation of similar chairs for such special subjects as diseases of the eye, nose and ear, children, skin, and neurology, with endowed clinics and with the power of examination, is a necessity for all universities. Whether private charity can achieve such great expenditure I naturally cannot say, but teaching and the care of the sick should not need to depend on whether a rich man will leave the necessary money in his will.

Independence of the Universities

The absolute independence of the universities in all directions from Government and politics is one of the greatest stimuli. We have learnt with astonishment to what straits freedom of teaching and learning can be brought by the uncontrolled dominance of absolutist States. That is the basic idea which has led to the independence of the universities in this country. A glance at conditions in Europe shows us clearly enough that domination of the universities by the State is not an ideal for which to strive.

But in a democratic State it is easy to have security of the universities from excessive Government control, as we see in the exemplary constitution which the universities of my country, Czechoslovakia, owe to Masaryk, the first President of the republic. Even the high schools are national, but the Government had merely the power to confirm appointments, and every other form of interference is rendered impossible by law. Thus the remarkable condition arose that the German University of Prague, the high school of a minority, was the last free and independent German university at a time when all others except those of Switzerland were under dictatorial control.

In Great Britain, this democratic country of individualities, there would be little danger to freedom in teaching and learning, even under financial dependence on the State.

An Urgent Aim

The future of the nation lies with the youth. That which life has taught us, our knowledge, is a loan only, and we have to pass it on to the next generation after it has been increased by the result of our research work. All depends on the education of the young medical men, to whom will be entrusted the health of the nation. To educate these promising young men in the most skilful and efficacious manner and to remove the whole affair from the atmosphere of financial anxiety is the most urgent aim of the medical schools, universities, and Government.

The first thing to have in view is the instruction of the coming academic teachers responsible for the education of the future generation of physicians. It is more than careless to leave the election of these to chance, as happens everywhere (I am not informed how it is done in Soviet Russia), instead of seeking the most suitable. The best of all the medical pupils must be chosen according to their creative gifts, to their knowledge and enthusiasm, and they should get scholarships and paid assistantships to provide their livelihood, just as lectureships are available in physics, chemistry, etc. The young clinician has to dedicate himself to full-time learning, research, and teaching. During this time of apprenticeship at the clinic the young scientist requires study-leave to take up special methods in other clinics. This study-leave is one of the most important factors for the furtherance of development. This is usually very difficult to arrange later on, owing to the calls of private practice and family life. The best time for such a study-leave is towards the end of the

assistantship, when four to five years of careful learning have made the young man into a well-informed clinician who has probably by this time published some results of his research work. It is a disadvantage that the teachers and specialists in this country often receive all their education and pursue their calling in one centre. The danger of "inbreeding" can be avoided only by the interchange of clinicians and teachers between the different schools and universities of this country and abroad.

The Specialist

At least three to four years' intensive full-time training should be required before a medical man is granted the title of specialist. I doubt if an examination limited to one or two days is enough to convince the examining board that the life and health of thousands can be entrusted to the candidate.

The specialist must progress with his profession: he learns the developments in his science by reading the medical journals, but personal contact with modern clinics is necessary. The best results have been obtained in the so-called "postgraduate courses" for specialists. One well-known clinician is deputed to prepare such a course, and he enlists the co-operation of other colleagues—specialists in related subjects. All advances in this specialty—in diagnosis, histology, chemistry, pathology, optics, in operations and treatment—are carefully gathered and concentrated into a week's teaching. Very often quite old senior surgeons sit enthusiastically at the feet of young teachers. The debates after the meetings are really delightful and are highly appreciated. These postgraduate courses in Continental schools, as well as in the U.S.A., where they have been highly developed during the last few years, are so greatly valued that usually not more than one-quarter of the applicants can be accommodated.

Excellent postgraduate teachers could be found in this country very easily. The specialists of the British Empire and of America would be the enthusiastic audience. There could easily be created medical centres greater than all previous ones. It is only a question of organization.

The education of the medical man is a matter concerning the whole nation as a unit, as well as concerning individuals. The national prosperity very often depends on it. The labour expended on this task is a fruitful one. It must follow the development of science closely, without regard to historical constraint.

Conclusion

I have attempted here to explain why Great Britain does not enjoy the world-wide importance in medical science which she should have in view of the great intelligence of her people. This is, in the first place, due to the lack of financial security for teachers which compels many able and outstanding men to waste their energy in private practice, and to the insufficient opportunities of specialist training, for young and promising medical men, who find themselves forced to concentrate their energies on earning a livelihood instead of devoting themselves to study, investigation, and research. I have repeatedly had occasion to learn that to follow the second of these courses is their real desire.

From all sides I hear of the longing for reforms, which are certainly on the way. The sooner they come the sooner will this country, so rich in creative talent, take the place in clinical medicine which the ability of its people entitles it to claim.

For perhaps the first time in German hospitals an attempt has been made in a reserve hospital to utilize sick and wounded soldiers for silkworm culture. The arrangements which had already been made in a military tuberculosis hospital served as a basis. The soldiers were set to work on the cultivation of mulberry trees, and followed on with the breeding of silkworms. The care of silkworms, which is easily learnt, was carried out under the instruction of experienced doctors and nurses. It is necessary, as in the case of all occupational therapy, that the doctor himself should take part in the work.

THE GEOGRAPHICAL DISTRIBUTION OF GASTRIC AND DUODENAL ULCERS IN THE BRITISH ISLES

WITH NOTES ON THE AETIOLOGY OF PEPTIC ULCER

BY

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At a meeting of the Section of Medicine of the Royal Society of Medicine Sir Arthur Hurst (1941) mentioned some remarkable differences between the incidence of peptic ulcer in soldiers and in civilians. In private practice duodenal ulcer was about four times as frequent as gastric ulcer, though in hospital practice this did not obtain (in three of the large London hospitals the statistics, both clinical and post mortem, over a good many years showed an equal incidence of gastric and duodenal cases). In the Army, apparently, duodenal ulcers were in the large majority.

In view of the increasing importance of peptic ulceration in both the Forces and the civilian population, the following investigation carried out in Aberdeen in 1938 and 1939 may be of interest.

Relative Incidence of Duodenal and Gastric Ulcer in the British Isles

During a "follow-up" investigation of 435 patients admitted to Aberdeen Royal Infirmary suffering from proved peptic ulceration the relative incidence of duodenal to gastric ulcers was found to be 6.8 to 1. When these figures were compared with others previously published it was found that the relative incidence of duodenal and gastric ulcer apparently varied slightly throughout the world, but very remarkably in the British Isles. The collected figures are shown in Table I. Although the series are not strictly comparable, some being from medical, others from surgical, wards, the findings in the different

districts are constant enough to be considered significant. Two interesting facts have been noted: (a) the apparently high incidence of gastric ulcer in the hospital patients in London; and (b) the very constant sex incidence of peptic ulcer throughout the world, whatever the relative incidence of duodenal and gastric ulcers in a given area.

(a) The relative incidence of duodenal and gastric ulcers in hospital patients varies considerably between London and the Provinces. The ratio of duodenal to gastric ulcers (male and female) in London is 1 to 1, in Leeds 2.8 to 1, and in Scotland from 6.8 to 8 to 1. Luff (1929), reporting the collective investigation from the whole of England, found the ratio to be 1.8 to 1, intermediate between the London and Leeds figures. Table Ia shows that the incidence of duodenal and gastric ulcers is very constant in private patients, both in America and in the British Isles, although the figures from America show a slightly lower ratio of duodenal ulceration to gastric ulceration. In Britain it appears that gastric ulcer is less common in the north than in the south, and, in particular, London seems to have a very high proportion of gastric ulcers (Table II).

TABLE II.—Showing the High Proportion of Gastric Ulcer in London

	Duodenal	Gastric
London	1,667	1,826
Leeds	927	327
Scotland	1,050	154

For purposes of comparison with figures being collected from the Forces, the numbers of males in these areas are shown separately in Table III. The incidence of duodenal

TABLE III.—Incidence in Male Civilians

	Duodenal	Gastric	Ratio
London	529	426	1.2 to 1
Leeds	333	98	4.4 to 1
Scotland	639	55	11.6 to 1
Aberdeen (18-40 years)	255	24	9.4 to 1

and gastric ulcers in different age groups is available only in the Aberdeen figures, where it was found that the ratio of duodenal to gastric ulcers between the ages of 18 and 40 years, forming the bulk of the mobilized Services to-day,

TABLE I.—Relative Incidence of Duodenal and Gastric Ulcers (Hospital Cases)

Author	Duodenal			Gastric			Multiple	All Ulcers		All Ulcers		All Ulcers		District	
	Males	Females	Total	Males	Females	Total		Male & Female	D %	G %	Male	Female	Male %		Female %
											D %	G %	D %		G %
Burger and Hartfall (1934)	—	—	774	—	—	888	—	—	49	51	—	—	—	—	London
Souttar (1927)	529	86	615	462	198	660	—	—	49	51	52	48	30	70	"
Walton (1927)	—	—	278	—	—	273	—	—	50	50	—	—	—	—	"
Flint (1927)	—	—	411	—	—	148	—	—	73	27	—	—	—	—	Leeds
Moynihan (1920)	433	83	516	98	81	179	23	—	74	26	82	18	51	49	All England
Luff (1929)	832	163	995	356	182	538	—	—	65	35	70	30	47	53	Edinburgh
Wilkie (1927)	234	76	310	22	30	52	51	—	86	14	92	8	72	28	Glasgow
Young (1927)	112	16	128	10	8	18	—	—	87	13	92	8	67	33	"
Nicol (1939)*	293	75	368	23	31	54	13	—	85	15	93	7	71	29	Aberdeen
Hinton (1931)	—	—	270	—	—	34	—	—	38	12	—	—	—	—	New York
Emery and Monroe (1935)	—	—	1,167	—	—	434	—	—	84	16	—	—	—	—	Boston
Allen (1937)	—	—	1,002	—	—	133	—	—	70	30	—	—	—	—	Paris
Moutier (1932)	—	—	495	—	—	110	—	—	79	21	—	—	—	—	France
Chang and Chang (1937)	173	52	225	84	26	110	20	—	67	33	67	33	67	33	"

TABLE Ia.—Relative Incidence of Duodenal and Gastric Ulcers (Private Cases)

Author	Duodenal			Gastric			Multiple	All Ulcers		All Ulcers		All Ulcers		District
	Males	Females	Total	Males	Females	Total	Male & Female	D %	G %	Male	Female	Male %	Female %	
										D %	G %	D %	G %		Male %	Female %
Barford (1923)	—	—	130	—	—	30	4	81	19	—	—	—	—	England
Ryle (1932)	—	—	209	—	—	52	—	50	50	—	—	—	—	Scotland
Nicol (1939)*	149	39	188	20	21	41	—	82	18	—	—	74	26	America
Eusterman and Balfour (1935)	551	150	701	223	50	273	—	72	28	71	29	75	25	"
White (1926)	—	—	152	—	—	54	—	74	26	—	—	—	—	"

was 9.1 to 1. Payne and Newman (1940) found a ratio of 4.2 duodenal ulcers to 1 gastric ulcer among 227 proved cases from the Forces, and Graham and Kerr (1941) reported that the ratio of duodenal to gastric ulcers among 158 serving men was 5.9 to 1. The great excess of duodenal ulcer in the Forces compared with gastric ulcer is similar to that found all over the world, excluding London.

(b) The sex incidence of peptic ulceration in both private and hospital practice is remarkably constant throughout Britain and the world generally, affecting males three times as frequently as females. In districts where the incidence of duodenal ulcer is very much higher than gastric ulcer the predominance of males is not quite so great, owing to a relative increase in the number of females suffering from duodenal ulcer (Table IV). Table I shows that this sex

TABLE IV.—Sex Incidence of Peptic Ulceration

	Males	Females	Ratio
London	1,707	499	3.4 to 1
Leeds	531	164	3.2 to 1
All England	1,153	345	3.4 to 1
Scotland	694	236	2.9 to 1

incidence of about three males to one female is very constant throughout the world. Certain differences in the aetiology of duodenal ulcer and gastric ulcer have been observed, and are here reported, as they appear to have a bearing on the problems of the geographical distribution and sex incidence.

Differences in Aetiology of Duodenal and Gastric Ulcers

Age Incidence.—The age of onset of symptoms in the majority of cases of duodenal ulcer is between 20 and 30 years. In gastric ulcer the curve for the age of onset is spread uniformly throughout life between the third and sixth decades, the maximum incidence being distributed evenly, without the marked peak between 20 and 30 found for duodenal ulcer (see Chart).

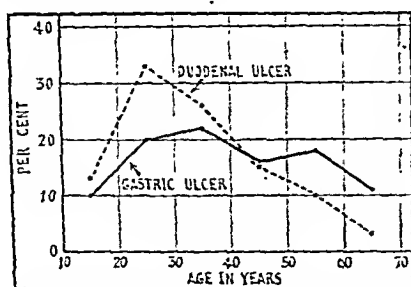


Chart showing percentage of all duodenal and gastric ulcers in 10-year groups. (Age at onset of symptoms.)

Family History.—In cases of duodenal ulcer a family history of peptic ulceration has been found more than twice as often as for gastric ulcer. In a control series of 300 cases of acute and chronic appendicitis a family history of peptic ulceration has been found with the same frequency as in the gastric ulcer patients of this series (Table V). The

TABLE V.—Family History

	Positive	Negative	% Pos.
Duodenal ulcer	76	292	21
Gastric ulcer	5	49	10
Appendicitis	29	271	10

larger number of positive family histories among the duodenal cases has been shown to be statistically significant.

Factors associated with the Onset of Relapse of Duodenal and Gastric Ulcers.—Davies and Wilson (1937) pointed out the very frequent occurrence of external events causing mental or psychological strain shortly before the onset of dyspepsia in peptic ulcer patients. They found that such events were present in 84% of their cases. Using their methods of investigation in 232 patients of this series (187 duodenal and 45 gastric ulcers) external events of a nature disturbing to the patient have been found on 160 occasions (Table VI). These events have been classified

TABLE VI.—External Factors

	Duodenal	Gastric	Total
Mental Strain:			
Worry—			
Family troubles	22	2	24
Finance	21	—	21
Employment	19	6	25
Mental overwork	14	2	16
Excessive mental drive (Culpin, 1935)	11	1	12
Total	87	11	98
Physical Strain:			
Dietetic errors	21	15	36
Excessive smoking	10	12	22
Miscellaneous	1	1	2
Excessive smoking	1	3	4
Miscellaneous	—	7	7
Total	33	29	62

under two headings, mental and physical. An external factor was thus found in 70% of patients, the strain being mainly mental or psycho-physiological in 43% and mainly physical in 27%. The factors most often associated with the onset or relapse of symptoms are worry and dietetic errors. There is a marked difference in the incidence of gastric and duodenal ulcers due to these two factors: mental strain is more commonly associated with the onset or relapse of duodenal ulcers; physical factors, mainly acting through irritation of the gastric mucous membrane, are more frequently associated with the onset of gastric ulcers. Worry or overwork often leads to faulty dietetic habits, and many nervous or irritable patients blame dyspepsia as the cause of their irritability. Overlapping of mental and physical factors is bound to occur, but among the patients examined and classified in Table VI one predominant factor could always be found. The larger number of duodenal ulcer cases falling in the mental strain group is statistically significant.

Ulceration of both the stomach and the duodenum was found in 13 patients of the Aberdeen series (not included in Table VI). Among these patients only 2 had associated mental and physical strain factors, both of which could be classed as important; in 5 the external factor was physical in type, in 2 mental, and in 4 no external factor of disturbing significance to the patient was discovered.

Discussion

In view of (1) the variation in relative incidence of duodenal ulcer and gastric ulcer in Britain and throughout the world, and (2) the differences noted in the aetiology of the two forms of ulcer, the following hypothesis is advanced.

Two different sets of factors are at work in the causation of peptic ulceration. These can be called "D" factors, leading to duodenal ulcer, and "G" factors, resulting in gastric ulcer. The "D" factors are usually inherited, but may be aggravated or even originated by mental stress and anxiety. They are active most frequently in the third decade of life, and appear to be psycho-physiological in character. The "G" factors, on the other hand, are not inherited, occur throughout life more or less uniformly from the second to the sixth decade, and lead to local

trauma of the gastric mucosa. The sum of the "D" and "G" factors causes peptic ulceration approximately three times as often in males as in females.

Without detailed knowledge of the environmental conditions and habits, both mental and dietetic, of the general population of this country, it is impossible to test this hypothesis satisfactorily, but arguments can be brought forward to support it.

It is probable that faulty habits of eating or occasional excesses, resulting in trauma to the gastric mucosa, occur throughout life and are not mainly concentrated in the third decade. Upper respiratory or other infections at a distance from the stomach but which may result in acute focal gastritis of a blood-borne type, and acute febrile illnesses, are also found throughout life. During the decade in which the majority of cases of duodenal ulcer start—i.e., 20 to 30—the individual is faced with the issues of success or failure in his or her profession, and has often assumed responsibilities which strain both his ability and his financial resources. Later, as security becomes more certain and responsibility is less of a strain upon the individual the incidence of duodenal ulcer falls.

If it be assumed that the "D" factors are chiefly psycho-physiological in character and the "G" factors act mainly by irritating the gastric mucous membrane locally, an explanation is supplied for the greater incidence of both types of ulcers in males. Worries of all sorts, errors of diet or excesses of eating and drinking, and irregularity in meal hours are all much more apt to occur in males than in females. The incidence of peptic ulcer, particularly of duodenal ulcer, has increased in females since the beginning of the century in common with the incidence of peptic ulcer as a whole (Wilkie, 1927), and this may be explained by the increased responsibilities assumed by and delegated to the female sex. The swing from a preponderance of gastric ulcers to a preponderance of duodenal ulcers that has occurred since the beginning of the twentieth century is due to (a) improved methods of diagnosis, (b) an increase of "D" factors (hurry, anxiety, competitive strain, etc.) which has occurred since the beginning of the present century, and (c) a reduction in "G" factors owing to an improvement in the nation's diet and a spread of knowledge regarding physiological methods of eating.

London is the only big city in the world in which an equal number of duodenal and gastric ulcer patients are treated in hospital. There are two possible explanations of the London figures: (1) that the population of London has dietetic habits that differ from those of the populations of other cities; or (2) that the percentage of patients in London suffering from duodenal ulcer who are treated as in-patients in hospital, and not as out-patients or as private patients in their homes by general practitioners, is less than in other cities all over the world.

Since the figures for the incidence of duodenal ulcers and gastric ulcers in London differ so materially from those available from other large cities all over the world, it is suggested that the second explanation given above is the correct one.

It is generally believed that peptic digestion of a devitalized area of gastric or duodenal mucous membrane is the ultimate factor in the production of peptic ulceration. The cause of this devitalization is not known for certain, and no doubt many factors play a part. Cushing (1932) and Necheles *et al* (1938) have noted an association between nervous lesions or disturbances and peptic ulcer. In view of the above-noted aetiological importance of external factors, chiefly psycho-physiological disturbances ("D" factors), in the production of duodenal ulceration, and local

trauma to the gastric mucous membrane ("G" factors) in gastric ulceration, it is suggested that the cause of the devitalization is mainly psycho-physiological in duodenal ulcers and traumatic in the case of gastric ulcers.

Summary and Conclusions

The relative incidence of duodenal and gastric ulcers in hospital patients varies throughout Britain from 1 to 1 in London to 8 to 1 in Scotland.

Evidence is brought forward to suggest that the figures for London do not give a correct picture of the relative incidence of duodenal ulceration and gastric ulceration in that city.

The sex incidence of peptic ulceration is remarkably constant throughout the world, being approximately 3 males to 1 female.

The incidence of peptic ulceration in the Forces is what would be expected from the civilian pre-war figures.

The aetiology of duodenal and gastric ulcers varies in age incidence, familial tendency, and precipitating cause of onset.

It is suggested that psycho-physiological factors play the most important part in the production of duodenal ulcers, and that local trauma to the gastric mucosa plays the biggest part in the production of gastric ulcers.

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Detailed description and statistics have been omitted from the 1940 report of the work of the social service department, Samaritan Fund, of St. Thomas's Hospital. What speaks more eloquently is the description of the days after the first bombs had fallen on the hospital and surrounding district, an extract of which is given here to show how difficult and all the more necessary was the work of the Samaritan Fund during that time: "To Lambeth itself, the mere fact that the hospital during these dark days was continuing to treat patients had a steady effect only realized in full by those who were working there day in and day out throughout the period. Everywhere the normal and the abnormal were in strange juxtaposition. . . . Suffering was widespread. Many of the patients from one hour to another were rendered homeless. In many cases everything they treasured was lost. More than ever was it necessary for the almoners to do everything in their power to help and relieve the suffering in every way possible. . . . Very often the needs were small, even trivial, yet the fact that they were met promptly and adequately had a significance to the patient greatly in excess of the specific service given for a moment with a world in flux they could still feel that his help regarded them as individual human beings whose sufferings and anxieties were of consequence, whose recovery he wished, and something worth struggling for."

IV, 29, 1941

MEDICAL SUPERVISION OF INDUSTRIAL WORKERS

DICAL SUPERVISION OF INDUSTRIAL WORKERS

REPORT OF B.M.A. SPECIAL COMMITTEE

An important contribution to the war and post-war industrial situation is made by the report, just published, of a special Committee set up by the Council of the British Medical Association last year. The instruction to the committee was to make recommendations for the better co-ordination of industrial medical practice with the existing medical system, particularly with general practice and the public health and hospital services.

The personnel of the committee included eleven medical members; also a prominent Lancashire industrialist, a trade union leader, and the director of the Industrial Welfare Society. Observers attended from the Factory Department of the Ministry of Labour and from the Ministry of Supply. The committee confined its attention to the places of work covered by the Factory Acts; collieries were not included in its scope.

The report, presented by deputation to the Minister of Labour and National Service, outlines the place of medicine in industry and defines the duties of an industrial medical officer and the staffing of his department. The relations of the industrial with the outside medical services are mentioned, and there is a brief reference to rehabilitation, but the views of the Association on this last subject were fully set out in the report of the Committee on Fractures in 1935 and in the evidence submitted a year ago to the Royal Commission on Workmen's Compensation. Medical education for industry and industrial health research are the subject of some recommendations, and the final chapter is on the future of industrial medical practice. There are two appendices: one reproduces the ethical rules for the guidance of industrial medical officers in dealing with outside medical services, as approved by the Representative Body in 1937; and the other is a memorandum by the Association of Industrial Medical Officers on a syllabus for courses of instruction.

Place of Medicine in Industry

The starting-point taken by the committee is the view expressed by the Council of the B.M.A. that on both humanitarian and economic grounds the time is ripe for an extension of industrial medical service, and that more emphasis should be laid on the preventive aspects of industrial medicine, that there should be closer association between the medical profession and industry, and that the part played by industrial factors in the causation of disease should be more fully appreciated by both medical practitioners and employers.

Industry loses through the ill-health of workers 31½ million weeks' work in a year, and while it is not suggested that conditions in industry are the primary source of this loss, the environmental conditions during the working day must account for a large share. The loss resulting from accidents is estimated in terms of money at over 30 million pounds a year. Accidents do, of course, occur to the healthiest employee, but much of the time which might be lost as a result of them is saved if there are adequate arrangements for medical supervision. One firm reports complete disappearance of its special hazard—lead poisoning—as a result of medical care. In contrast with the average loss through illness of 10 days a year for men and 12½ for women (the figures are pre-war), firms employing from 700 to 6,000 workers have reduced this sickness absence, as a result of rendering medical service available, to from 3.75 to 5.25 days for men and from 4.5 to 7.9 days for women.

Medical supervision is not merely nursing, welfare, first aid, and accident prevention, or even the retention of a local practitioner on call in emergency. It implies continuous supervision of the health of the individual worker in his industrial environment, the prevention so far as possible of physical and

mental illness, a service for the initial treatment of injury, and efficient medical liaison between the factory and external medical services.

This does not necessarily mean an elaborate medical organization, beyond the capacity of small firms. Indeed, it is in the small firms that the future development of industrial medical practice must be expected, for they represent in total the larger proportion of the industrial population. More than half the number of factories in this country are small ones, employing fewer than 250 people.

Duties of an Industrial Medical Officer

A medical practitioner accepting a post in industry, whether part- or whole-time, must have some knowledge of industrial organization and factory methods, and must make himself familiar with the processes in his own factory. His duties can be set down under the following heads:

1. Medical supervision of employees during working hours.
2. Supervision of general working conditions.
3. Organization and supervision of accident service, including rehabilitation.
4. Study of specific occupational hazards and preventive measures for their control.
5. A.R.P. services.

Medical examination of new employees under 16 and of workers about to be employed in certain special processes is compulsory, but in the committee's opinion medical examination of other new entrants would be valuable in making possible the proper placing of workers. Workers returning after prolonged sick absence should be seen by the industrial medical officer. Here the general practitioner's knowledge of the medical history of the individual and the home conditions should be of value.

It is considered that the industrial medical officer should devote some of his time to advising individual workers. He should also encourage the management to undertake health education. Careful records should be kept, consisting of: (1) an ambulance room or casualty department book, (2) records (confidential) of medical examinations and individual case histories, and (3) statistical records of sickness absence.

As for accident service and rehabilitation, the medical officer must be responsible for securing that first-aid personnel are properly trained. Where there is a central casualty department he himself should train the staff, who would be responsible to him alone. Unfortunately the country does not as yet possess a comprehensive rehabilitation service, but the industrial medical officer will find that he can do a great deal to assist in the early return to suitable work of men who have been seriously injured. This again will call for close liaison with hospital officers and general practitioners.

Women in industry show a consistently higher sickness-absence rate than men, and this is not wholly explained by gynaecological conditions. A good deal of it must be attributed to the physical fatigue and consequent lowered resistance caused by the effort of running the home in addition to the work at the factory. The supervision of the health of the woman worker requires much assistance from trained welfare staff, but the industrial medical officer also has an important part to play. The employment of women during the later stages of pregnancy and the post-natal period will depend upon the circumstances of the woman and her work. Withdrawal from employment four weeks before confinement is usually sufficient, but in many cases it will be desirable for her to remain away from work for more than four weeks afterwards.

The practitioner entering industry should know something of toxicology and industrial hygiene. If he enters an industry in which a special hazard is attached this will have his attention. Inspection or medical examination of workers employed on dangerous processes will be carried out at frequent intervals. The medical officer will be in close contact with technicians, scientists, managers, and welfare supervisors, and much of the success of his efforts will depend upon his ability to work harmoniously with them, as well as to establish good relations with local general practitioners, hospital staffs, and public health

and Government officials. In the treatment of an individual patient there should be a continuous interchange of information between the various practitioners interested in the case.

Medical Officer's Appointment and Remuneration

The medical practitioner appointed to an industrial post should have wide sympathies and interests, good experience in general practice, some special knowledge of the treatment of injuries, an interest in occupational hazards, and an acquaintance with social conditions prevailing in industrial communities. He will be directly responsible for all health services in the factory to the managing director, but he should be given the greatest possible freedom in carrying out his duties. A large factory or factory with special hazards will find a whole-time appointment the most efficient and economical. Small firms may find it sufficient to appoint a part-time officer to attend at agreed intervals and on emergency. A number of such firms might combine in appointing a whole-time officer whose services would be apportioned among them.

For a medical officer in charge of medical work in a factory the minimum starting salary should be £800 a year; for an assistant medical officer, £600-£650. Payment in part-time appointments should be at a sessional fee of 1½ guineas for a session of not more than two hours, or payment may be by annual salary based on sessional rates. The scale just given relates to wartime conditions only. A whole-time officer should be given opportunities for postgraduate work and for clinical experience, possibly by acting as clinical assistant at the local hospital.

The direct appointment of the medical officer by the employer, who often has not the knowledge correctly to assess medical qualifications and suitability, is not altogether satisfactory unless he is suitably advised, and the committee suggests a central advisory body external to the factory, perhaps under the aegis of a Government Department, to guide employers in making a suitable choice. A successful precedent is quoted from Eire, where there is a Public Health Commission which receives all applications for public health appointments and submits its choice to the local authorities concerned. It is considered advantageous if the medical officer is enabled to transfer from one post to another without losing seniority; thus he would gather experience in different kinds and sizes of factories, much as a public health medical officer obtains experience in different types of local government appointments.

On the subject of nursing staff, it is considered that a fully trained State-registered nurse should be appointed in factories with over 500 employees in which whole-time supervision of the ambulance room is required; but there is also a place, especially in smaller factories, for the assistant nurse and the whole-time ambulance man.

Relations with Outside Medical Services

Only such treatment as is necessary during working hours should be undertaken at the factory, except in the case of certain industrial diseases which the industrial medical officer is specially qualified to treat. Any further treatment should be undertaken by the patient's own doctor or by the hospital to which he is referred. Factory patients presenting themselves to a general practitioner fall into three main categories:

1. Patients suffering from minor injuries, who can be treated entirely by the practitioner or referred to a hospital, and patients suffering from major injuries who are already under hospital treatment and attend for certification only.
2. Patients suffering from specific industrial diseases who for the most part are already under specialist hospital treatment, and are also seen for certification only.
3. Patients with common illnesses in the origin or development of which the conditions at the place of work may have played a part.

The problem is to increase the efficiency of the service which the patient's own doctor can give in the prevention and treatment of illness and accident arising from, or aggravated by, industrial environment. To this end much more emphasis needs to be placed in medical education on the relation of industry to health and disease. The committee makes the suggestion that

to the usual three histories noted in case-taking—namely, "past," "family," and "present conditions"—a fourth, "industrial," should be added. Another way of helping to solve the problem is again by interchange of information, the patient's doctor being kept informed of the progress of the illness which is being treated at the hospital or rehabilitation centre.

The need for a good working relationship between the general practitioner and the industrial medical officer is repeatedly stressed in the report. Such contact as at present exists is far too limited. It is suggested that the Divisions of the Association should consider what steps can be taken in their respective areas to promote means whereby the general practitioner can be brought into closer contact with the management of factories or with their medical officers. Visits of the medical profession to factories might be arranged.

"The object should be to arrange for the general practitioner facilities for making himself acquainted with the work of his patients or of any one patient so that this knowledge may help him to decide how far a patient's health is affected by his work and to advise and prescribe accordingly. On the other side, the industrial medical officer, where there is one, and the management of the factory would have the advantage of knowing the views of the patient's own doctor and of co-operating with him to the benefit of the patient and of the factory work. It is emphasized that the committee in making this suggestion has no desire to interfere with the Factory Medical Inspectorate or with the arrangements made by the management within the factory. Its only aim is to free the general practitioner from his present handicap of having to treat the patient without a full knowledge of the latter's working life and environment. Much help could be rendered by the employer if, when a practitioner feels that he needs for the efficient treatment of a particular patient some knowledge of the patient's working conditions, facilities could be given him to obtain that knowledge."

Hospitals, again, should make early notification to the doctor of a patient admitted directly for major injury, and the hospital staff should collaborate with the industrial medical officer and keep him informed of the patient's progress. The establishment of the Birmingham Accident Hospital and Rehabilitation Centre (the old Queen's) is mentioned. Any extension of hospital facilities for treatment of industrial accidents is to be welcomed, although the development of such special hospitals must be slow until there is a more adequate supply of (it is the committee's word, not ours) "traumatologists."

Medical Education and Research for Industry

Industrial medical practice is a comparatively new field, and the medical curriculum at present does not accurately equip the student with the knowledge that is necessary to treat industrial illness and injury and to recognize those factors in ordinary illness which are due to the industrial environment. The committee is of opinion that more university posts relating to industrial medical practice should be created. In each of the main clinical subjects of the curriculum the student's attention should be drawn to the industrial aspect, and he should be taught to understand the effects of occupation on health. The student who subsequently becomes a general practitioner in an industrial area will then possess a groundwork on which to base the treatment of his factory patients.

Postgraduate instruction for such general practitioners might well take the form of the organization of short courses, extending at the week-end, also addresses on industrial medical subjects at scientific meetings of the Divisions, more articles on industrial medical practice in the medical journals, and the organization of collective research by general practitioners on the relation of industry and disease.

As for research, at present no organization in this country equipped with the necessary staff and finance is available to conduct industrial medical research with skill and efficiency meaning by "research" the study by trained medical men with technical assistants and equipment, of the health of workers in relation to their employment. The Industrial Health Research Board is not able to spend money without the sanction of the Medical Research Council (of which it is an affiliated department), and, moreover, during the war, when a great

extension of its work might have been expected, its secretary is required to devote part of his time to acting as Chief Medical Officer to the Ministry of Supply. To the Factory Medical Inspectorate, even if they make use for research purposes of the material acquired in the course of their duties, research is only incidental to their main work. Some medical departments of individual firms do research work, but on the whole such research is sporadic and uncoordinated.

Scheme for Scientific Inquiry

The committee recommends that machinery, preferably on a national scale, should be devised to place industrial health research on an adequate and efficient basis. A partial scheme might immediately be set up to cover certain important industries, such as munitions, mining, and shipbuilding, or certain highly industrialized parts of the country, such as Birmingham, Manchester, or Glasgow. The work of the staff of these national or regional organizations would be: (1) to undertake research into industrial problems affecting health; (2) to collect and analyse sickness records; (3) to test in practice the theories formulated from such analysis; (4) to disseminate the knowledge wherever it can be applied of any definitely established fact that bears upon the health of the workers. The organizations should be set up in close association with existing universities. The staff should comprise both medical practitioners trained in research methods and technical assistants. Minimum equipment should include beds in a hospital, pathological and chemical laboratories, animal houses, and a library.

The keeping of records of all sickness absence should be compulsory, for such records must be the basis of industrial health research. "The type of information that might be made available is already provided with regard to occupational mortality in the Registrar-General's Decennial Supplements, where a mass of facts indicates work that might be done before the worker appears on the records because he is dead." Metal-grinders, for example, show a significant excess of deaths from certain causes; textile workers from certain others. As illustrations of the value of records, the observation of Alfred Greenwood in 1891 of the relation between cataract and glass-bottle finishing, gathered from a study of the superannuation lists of the Yorkshire United Trade Protection Society, and the discovery by S. R. Wilson in 1906 of mule-spinners' cancer from the records of the Manchester Royal Infirmary, are mentioned. A number of wide-scale problems, such as nutrition, fatigue, hygiene, and the prevention of respiratory disease, call for vigorous scientific investigations if the ill effects of wartime privations are to be avoided.

Future of Industrial Medical Practice

The report of the committee, which opened with a slight historical review, mentioning the first example recorded of a factory medical service (in Scotland almost exactly one hundred years ago), closes with a chapter discussing the possibilities of future development. In a well-planned health service the health problems of the industrial worker should receive more recognition than is at present given to them. Under existing conditions this service is more or less detached from the other medical services, due mainly to unplanned development. There is also a cleavage of responsibility in the matter of environmental health services. Outside the factory the public health authority controls, through its medical officer of health, water supplies, sewage systems, provision for infectious diseases, housing, and sale of food, but inside the factory very little control over hygiene is exercised in the name of medicine. Certain matters are controlled by the medical officer of health, many more by the Factory Inspection Department of the Ministry of Labour, but only a small proportion of factory inspectors—one for every half-million workers—are medical practitioners.

It will be necessary to decide whether there should be a single industrial medical service for the whole country, with a uniform method of appointment and remuneration, whether such service should be administered under the existing medical system directly under a Government Department or as a local authority function, or, if it is to form part of a State Medical Service, how it should be administered both centrally and locally. Whatever the ultimate form of the service, the committee, for a reason already touched upon in this summary, recommends

that there should be a uniform and generally acceptable procedure for the appointment of industrial medical officers. A single advisory body or an appointing body external to the factory should guide employers in the making of good appointments in a way acceptable to employers, workers, and medical practitioners alike.

The committee absolves itself from making any recommendations on the question of a full State Medical Service, the retention of the present system in its general framework, or intermediate forms of service. The Medical Planning Commission is at work on these problems, and its investigations will include the future of industrial medical practice. Whatever the ultimate form may be, the committee emphasizes its view that adequate provision should be made for the efficient co-ordination of factory health services with all other branches of health service, the association of the family doctor with the factory life of his patients, improved training and regular postgraduate courses for industrial medical officers, and systematic medical research in industry.

The report is published as a "grey book" by the British Medical Association (price 6d.).

CHEMISTRY AND PHARMACY

ADDRESS BY DR. HAROLD KING

The Hanbury medal of the Pharmaceutical Society of Great Britain was presented on November 13 to Dr. HAROLD KING of the National Institute for Medical Research. The President of the Society (Mr. WALTER DEACON), in making the presentation, described Daniel Hanbury, who was made F.R.S. in 1867, as one of the greatest pharmacists of all time.

Dr. King then gave an address on the relations of chemistry and pharmacy. The two subjects, he said, had been interdependent throughout the ages. As experimental sciences they were only between one hundred and two hundred years old, but as arts they had been practised from time immemorial. Their workshop traditions had been handed down from prehistoric ages, and it was not until the middle of the eighteenth century that chemistry began to blossom out of pharmacy and became a separate science. In a brief sketch of the early history of pharmacy Dr. King mentioned that the Babylonians and Assyrians knew of 250 drugs of vegetable origin, many of which served as the basis of the *Materia Medica* of the Greek physician Dioscorides of the first century of the Christian era.

The isolation of alkaloids, in very many cases by pharmacists, was the first important pharmaceutical development of the nineteenth century. In the current *British Pharmacopoeia* and its Addenda there were included twenty-one pure alkaloidal substances and their salts, and, of these, sixteen were first isolated by pharmacists. This early work on alkaloids was a great contribution made by pharmacy to chemistry. All those familiar with the changes in succeeding editions of the *British Pharmacopoeia* in recent years must have been struck by the decrease in the number of plants and the great increase in synthetic drugs included in it. It was instructive to examine how some of these substances originated. Many of the chemical substances were known for years before their therapeutic action was suspected. A number of them were laboratory curiosities of the chemist. It was not until forty-six years after its discovery that aspirin was introduced into therapeutics. Sulphanilamide was first prepared in 1908 in a search for components of dyes, but not until 1935, arising out of the German work on red prontosil, were its therapeutic properties discovered. Carbon tetrachloride was first prepared in 1840, but not until 1921 was its action on the hookworm recognized. Chloral hydrate was discovered in 1832 by Liebig, but only in 1869 were its hypnotic properties unmasked.

Speaking of the active principles which have been isolated from plant or animal tissues, including the majority of the alkaloids, hormones, and vitamins, Dr. King said that in the isolation of these principles or quintessences was to be seen the materialization of the dreams of Paracelsus, the first great pharmaceutical chemist. Substances which had risen mainly

as a result of organized research, with the pharmaceutical chemist and the pharmacologist in co-operation, including hypnotics, analgesics, anaesthetics, antiseptics, had been discovered, many of them in Germany, either in the universities or institutes or in the laboratories of large pharmaceutical organizations; and here the interval between the preparation of the substance and the discovery of its therapeutic properties had been quite short. Long-term organized research in pursuit of new drugs was the duty of large commercial organizations and subsidized undertakings, while the *laissez-faire* method of research should be the preserve of the university worker. What was needed in this country was more of the organized research into the chemistry of synthetic drugs and more pharmacological examination of the products of the chemical laboratory.

Finally, Dr. King mentioned some work which he had carried out on the alkaloids of curare. He said that he had been able to examine a specimen of curare which was deposited with the Pharmaceutical Society a hundred years ago, and this had enabled him to prepare in a crystalline state the active principle of one of the arrow poisons used by the South American natives. He had also been able to examine eleven species of *Strychnos*, and of these five had a curare action.

Sir HENRY DALE, in a few remarks after the address, endorsed what the lecturer had said about the enormous wealth of subjects offered by pharmacy to the chemist and through the chemist to the pharmacologist; just as, on the other hand, physiology and pharmacology in their turn were beginning to offer subjects to the chemist and through the chemist to the pharmacist.

Reports of Societies

PLACENTAL INFARCTS

At the last meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland, held in Dublin, with the President of the Academy (Mr. SETON PRINGLE) in the chair, Dr. N. FALKNER read his presidential address on the subject of placental infarcts.

Dr. Falkner alluded to the customary teaching with regard to these lesions and to the fact that most teachers in obstetrics did not attach much significance to their association with the toxæmias of pregnancy. He next described the work that Young had published in 1914. The main points in this work were the accurate description of the red infarct and its association with eclampsia. Prof. Young had evolved an attractive hypothesis and had made a most valuable contribution which included many interesting and stimulating statements with regard to placental anatomy and physiology. Recently workers in America had revived the views put forward by Young. Among these were Bartholomew and his co-workers. Careful examination of placentas from all toxæmic cases had resulted in the recognition of certain types of placental infarct in association with different clinical manifestations. Among the conclusions reached by these workers were: (1) Placental infarcts of the more acute types were definitely associated with the toxæmias of pregnancy. (2) It was possible to predict the type of infarct to be found in the placenta from a knowledge of the history. (3) With the experience of examining placentas as "unknowns," it had been found possible to establish criteria for an exact classification of placental infarcts and their relation to toxæmia. With regard to the significance of hypocholesteræmia and hypothyroidism as predisposing to infarcts in the placenta, the opinions of both Young and Bartholomew coincided in that they believed that the acute placental infarct had an aetiological significance. They differed in their interpretation of the causal factors producing these lesions.

Dr. Falkner showed sections from twenty cases of toxæmia of pregnancy and demonstrated the constant occurrence of acute infarcts in pre-eclampsia and eclampsia, and said that the older or more chronic infarcts were associated with nephritic toxæmias.

General Discussion

Dr. GIBBON FITZGIBBON said that he himself had made no investigations on this subject. He had found a few infarcts and had more or less discounted them as being causative elements in the toxæmias of pregnancy. Dr. BLAIR SETON said that the display of placentas that evening was extraordinarily interesting, but, alas! it shed little new light on the problem of the toxæmias. However, the work was valuable inasmuch as it might prove to be a link in the elucidation of the problem. It would be of great value if a series of placentas from normal cases were compared with a series of placentas from toxæmia cases. The relation of infarcts, and a good deal of bad decidual circulation, to toxæmias was still a puzzle. The general belief was that when infarcts were present with good decidual circulation the toxæmia was more severe.

The MASTER OF THE NATIONAL MATERNITY HOSPITAL referred to the very great delicacy of the vessels in the placenta, and said that the rate of growth of these vessels was enormous. When growth of this kind occurred something was bound to go wrong, and this would explain in some degree the development of infarcts. The most interesting question in his opinion was whether the toxæmia was due to the infarct or the infarct due to the toxæmia; he himself thought that the infarct was due to the toxæmia. Prof. A. H. DAVIDSON thought the chief question was, Did infarction come from the maternal circulation or from the foetal circulation? In his view it came from the latter.

Dr. R. M. CORBET had been greatly impressed with the researches of Bartholomew and his co-workers. While Dr. Falkner did not suggest that these infarcts were aetologically significant, Bartholomew was strongly of the opinion that they were the cause of the toxæmia. If this were so, it raised certain speculations. To have the foetal vessels primarily affected would postulate a hypercholesteræmia in the foetal circulation; also, the question might be raised why the foetus was not always affected to the same degree as the mother. Dr. Falkner had suggested that, when the infarction was acute, the whole cotyledon was involved. If this were so, the toxins liberated might not be absorbed by that cotyledon, but would be carried upwards in the maternal blood stream to the subchorionic pool, where there was little or no absorption, and thence into the general circulation, where they might be taken up by the maternal tissues before the blood returned to the placenta, thus leaving the foetus unaffected.

Dr. J. S. QUIN said that Dr. Falkner's paper must be looked upon as being only a very early progress report. He thought the question was, Were these lesions the cause or the effect of the toxæmia? Dr. W. R. F. COLLIS said that Dr. Falkner's paper was especially interesting from the point of view of foetal death and immature birth, which was the largest cause of foetal mortality. His experience was that in every case in which there was toxæmia in the mother there was toxæmia in the baby as well. Wherever the toxin was it certainly got into the foetal circulation. What were the cause and the mechanism of this actual thrombosis? Was it foetal or maternal? Had any work been done on the blood coagulation of babies born of eclamptic mothers?

Dr. FALKNER, in reply to the discussion, said that this work was still going on. The decidua had not been examined in any case; it was a most difficult thing to examine the decidua in the placental circulation. There were reasons to back up the view that disturbance of the maternal circulation would cause infarction. The greater proportion of patients who developed sugar in the urine during pregnancy developed albuminuria.

The Medical Director of Hospitals in Germany has recently stated that the special conditions brought about by war, and particularly in the areas liable to air raids, have made it necessary to have much more frequent blood transfusions than to man than used to be the case. In most cases blood transfusion is a life-saving measure for sick or wounded persons. As a result of an earlier appeal issued by the Party organization people have offered themselves as blood donors, but now while the demand for blood donors has grown to large numbers more volunteers must be obtained.

Correspondence

Economy in Dressings

SIR.—Your leading article on the above subject (November 1, p. 619) is very opportune and draws attention to a matter of increasing importance at the present time.

It may be of interest to place on record that for the past seven years I have used perforated cellophane dressings in the case of all abdominal incisions in my department at the General Hospital, Birmingham, and am continuing the same at the Queen Elizabeth Hospital to-day. No gauze and no cotton-wool are used in "clean" cases. The cellophane adheres to the skin and is simply covered with a flannelette washable pad kept in place by tapes. For the first twenty-four hours a "many-tail" binder is also applied, mainly for the patient's comfort during the vomiting phase after anaesthesia.

Apart from economy in gauze and wool—both expensive items to-day—the nursing staff favour cellophane coverings to the wound because the method facilitates easy and rapid inspection of the area involved. The cellophane must be perforated before use to permit of evaporation from the skin.—I am, etc.,

Birmingham, Nov. 14.

BECKWITH WHITEHOUSE.

Infantile Scurvy

SIR.—We read with great gratification the announcement in the *Times* of November 12 that it is the Government's intention to distribute free fruit juice and cod-liver oil compounds at welfare centres.

In a recent investigation of the number of cases of infantile scurvy coming to hospital and seen in various clinics about London, there appears to be a slight but definite rise. The cases seen at the Hospital for Sick Children, Great Ormond Street, were as follows:

Year	No. of Cases of Scurvy	No. of New Patients Treated
1938	3	31,057
1939	3	24,307
1940	2	10,109
1941 (to Oct. 31)	5	6,474

Although this is a very small number (1941), it will be seen that there are relatively more cases when one takes into consideration the total number of new patients seen in 1941 as compared with the total numbers seen in the three preceding years. This suggests that more care must be paid by the welfare officers and others in instructing mothers in the prevention of scurvy. It should be pointed out that orange or tomato juice, or blackcurrant puree, is quite necessary, and that cod- or halibut-liver oil or some of the malt preparations are no substitute. Not less than four teaspoons of fruit juice appears to be necessary for children of 6 months and older. Ascorbic acid, from 30 to 50 mg. daily, should be substituted where natural vitamin C is not available, but should not be given for preference. After the age of 18 months to 2 years there appears to be plenty of vitamin C in the diet to cover the infant's requirements.

A great responsibility rests on infant welfare centres where proprietary malt preparations are dispensed and recommended, some of which are not even claimed by the makers to contain the minimum amount of vitamins. We have seen acute rickets develop on such preparations. Cod- or halibut-liver oil should, of course, be given throughout the winter months.—We are, etc.,

DONALD PATERSON, M.D., F.R.C.P.
W. GUY DAYNES, M.R.C.S., L.R.C.P.

London, W.1, Nov. 14

Diagnosis of Helminth Cysts in the Brain

SIR.—Dr. L. J. Segal (November 15, p. 693) describes a case of suspected hydatid of the brain treated with sulphathiazole. The title of the paper describing this as "cysticercosis epilepsy" is surely misleading, for the author states quite definitely that "in view of these findings it was considered that the symptoms were due to the presence of a hydatid cyst of the brain."

But this diagnosis is apparently based solely on the discovery by x rays of a cyst about the size of a five-shilling piece in the left lung and "a suggestion of an infected left maxillary antrum." On the evidence available I think the diagnosis extremely doubtful. As the patient, while serving in the Navy in China, suffered from a "tropical disease," with loss of consciousness and with subsequent headaches and mental depression, I take advantage of Dr. Segal's request for comments to suggest that possibly this case is one of cerebral invasion with the eggs of *Schistosoma japonicum*, and that a microscopical examination of the faeces may even yet reveal their presence.—I am, etc.,

St Albans, Herts, Nov. 17.

R. T. LEIPER.

The Bombed Child and the Rorschach Test

SIR.—Dr. W. E. R. Mons (November 1, p. 625) suggests that the Rorschach test reveals the "bombed" child as a clinical entity, with special reference to K responses having a fire or explosive content given to the lower red in Card II. Since he adds that his findings must be regarded as tentative, pending records of a larger number of cases, it may be worth while, in corroboration, presenting the following small series, carried out with evacuee children in the County of Hunts, by kind permission of Dr. C. B. Moss-Blundell, county medical officer of health:

Age	Sex	Disorder	Response	Rorschach Determinant
15	F	Bombed:		
12	F	Hysterical fainting ..	Flames ..	K
12	F	Delinquent, unstable ..	Flames ..	K
12	M	Facial tic, enuresis ..	Nil ..	—
11	F	Unstable personality ..	A ray ..	K
13	M	Compulsive pilfering ..	Sunset ..	K.C.
9	M	Enuresis, anxiety ..	Nil ..	—
12	M	Pilfering, aggressive ..	Horse's head ..	Ad
10	M	Pilfering, anxiety ..	Fire blaze ..	K
11	F	Anxiety state ..	The sun ..	K
13	M	Facial tic, school failure ..	Guns going off ..	Km
		Unbombed:		
9	F	Psychopathic personality ..	Nil ..	—
10	M	Anxiety hysteria ..	Nil ..	—
10	M	Asthma, enuresis ..	Red fluid ..	Km.C.
10	M	Temper storms ..	Ink stain ..	C
12	M	Pre-psychotic, delinquent ..	Horse's head ..	Ad
9	M	Enuresis, anxiety ..	Church spire ..	Scene
12	M	Unstable personality ..	Animal ..	A
13	M	Anxiety ..	Bird's head ..	Ad
16	F	School failure ..	Part of butterfly ..	Ad

It will be seen that of these nineteen consecutive cases 70% of the bombed give fire or explosive K responses: the only K response in the unbombed group was given by a child who saw the results of severe bombing within two miles of his home, though his immediate neighbourhood did not suffer. As K is accepted by Rorschach authorities as a sign of disturbance in the deeper layers of the personality, these reactions seem significant, not necessarily of a "bomb-induced neurosis" (for some children in both groups showed symptoms of maladjustment before the war) but of serious endogenous anxiety aroused by traumatic experience.

There is another point of interest in this connexion. Klopfer describes the K response as indicative of mental "haziness or fog" created by anxiety; and also notes that such responses are often tinged with dysphoria. Such a condition would account for the commonly observed failure of bombed children to concentrate on school work, though they may struggle hard to do so.

As Dr. Mons points out, it would be unscientific to draw definite conclusions without examination of the whole Rorschach record in each instance and of a larger number of cases, but these preliminary results may perhaps serve to justify a fuller investigation into the effects of bombing upon children.—I am, etc.,

Huntingdon, Nov. 15.

A. T. ALCOCK,
Child Guidance Officer, Hunts.

Increase of Tuberculosis

SIR.—Dr. A. L. Jacobs (November 15, p. 703) notices my short letter (November 1, p. 632) in a somewhat formidable reply. In this he misquotes me by attributing to me the statement that the increase of tuberculosis at present evident "is to be explained entirely" by the discharge of a number of sana-

torium and hospital patients at the outbreak of war. I spoke of "the unwitting power of spreading the infection to those about them" possessed by the tuberculous, and, referring to the numerous theories now current on the subject, asked: "Is it necessary to postulate anything else?" I did not say or imply that the increase was to be explained entirely by the numbers of infective cases then added to those normally outside the sanatoria.

I am unable to accept Dr. Jacobs's statement that my contention as to the danger of infection is "one of the minor aspects of the problem." On the contrary, I consider it the keystone to the whole incidence of tuberculosis infection and disease. I take it, Sir, that Dr. Jacobs will not deny that clinically evident tuberculosis is due, in the first place, to infection. There may be, and are, secondary causes: poverty, unemployment, defective nutrition, close contacts, bad housing, want of resistance, and the various environmental disabilities; but infection is the one factor that underlies them all.

There is a great deal of poverty at present no doubt, but is there more or less than before the war? Is unemployment greater now than in pre-war England? Is it so much less as to be almost insignificant? Is nutrition really so very defective? There is not much clear evidence for or against in the incidence of proved "deficiency diseases." Bad housing and accommodation in shelters may lead to the spread of tuberculosis by bringing about more intimate contact between the tuberculous and the healthy, and there may well be a loss of resistance under the stress of war conditions, but, if so, this can only be operative by lowering the level at which infection leads on to disease. The National Association for the Prevention of Tuberculosis says, in a recent pronouncement, that "(a) in unselected samples of the normal apparently healthy adolescent population the incidence of definite pulmonary tuberculosis of the adult type is between 0.5% and 1%; (b) in unselected samples of contacts (using this word in its broadest sense) the incidence is between 3% and 6%." Opie, writing in 1935, said: "Since in persons exposed to tuberculosis after 15 years of age the frequency of infection, like that of early childhood under corresponding conditions, increases rapidly and far exceeds that of the general population, the adult type of pulmonary tuberculosis is evidently acquired by contact."

I fancy that Dr. Jacobs may have been a little too generous in allowing 15,000 as the number of tuberculous persons turned from sanatoria and hospitals in 1939, but it is safe to assume that they reckoned among their ranks a greater percentage of sputum-positive persons than those outside the institutes who keep up the normal entry by spreading the disease to others. It seems a fair guess, however, that those sent back to ordinary life were at least four times as many as the total number of persons constituting the "increase" since the beginning of the war. Nor is it true that those turned from sanatoria went back to a life the same as they had temporarily left. They emerged to find the nation at war. Many of them entered the Army and more still were evacuated to new homes and new surroundings to spread infection to comrades or to women and children in contact with them.

I will not quote my friend's epigram again, as it disturbs Dr. Jacobs, but I hope, Sir, that it will not be forgotten.—I am, etc.,

Cheam, Surrey, Nov. 20.

S. LYLE CUMMINS.

Hemiprostectomy for Unilateral Adenomatous Enlargement

SIR.—I was interested to read Mr. Sampson Handley's article on hemiprostectomy for unilateral adenomatous enlargement (November 15, p. 681). While admitting that hemiprostectomy should have a place in the operative treatment of benign prostatic enlargement, I do not agree with him when he states that in his opinion in about one case in five it may prove to be the operation of choice. In my opinion hemiprostectomy should be practised only in a really "bad risk" type of patient, much less often than Mr. Sampson Handley would seem to advocate. In my last 200 cases of simple enlargement of the prostate treated surgically I find I have performed hemiprostectomy four times.

Some of the disadvantages of the operation are: (1) Enlargement of the residual lobe may at a later date necessitate a

second operation. (2) The vesical outlet is not so large and therefore the outflow of urine is not so free as after complete prostatectomy, and as a consequence the suprapubic opening usually takes longer to heal. (3) Residual urine is more often present after hemiprostectomy than after the total operation. The disadvantages of the operation are very obvious, and must, therefore, be something present in the condition of the patient to make the complete operation very dangerous before hemiprostectomy is resorted to.

The following case on which I recently performed hemiprostectomy is typical of the class of patient for whom I should recommend this type of operation. A very stout man aged 66, about two months before consulting me, suffered from retention of urine; the retention was treated by catheterization and the insertion of a large de Pezzer tube. He suffered from bronchitis and cardiac disease, with oedema of the feet and legs. Sooner than continue with suprapubic drainage he decided to risk the second operation. He had an adenomatous enlargement of the right lobe, but no palpable enlargement of the left. I felt he would not stand the shock, etc., of a complete prostatectomy, and in consequence removed only the palpable enlargement on the right side. He made an uninterrupted recovery, and nineteen days after the operation the suprapubic opening was closed and he was passing urine without difficulty.—I am, etc.,

London, W.1, Nov. 20.

W. K. IRWIN.

National War Formulary

SIR.—Most of us will be pleased to have the new *National War Formulary*, but the way this is being introduced seems likely to cause unnecessary waste of drugs and expense for the chemists. Many of these have the old stock mixtures already made up and have laid in stocks of drugs for the winter. When the new *Formulary* is introduced on December 1 many of these stocks will lie idle or waste. It would seem wise to have a period during which doctors could order medicines according to the old *Formulary* or, if not in stock, according to the new, or, alternatively, for the chemist to be empowered to substitute equivalent mixtures according to the old *Formulary* in place of the new ones until his stocks are used up. The exact details may be difficult to arrange and may not satisfy the purist, but "needs must when the devil drives," and when it is necessary to economize drugs it seems wrong to allow existing stocks to be wasted.

I see that boric acid has finally come into official disfavour for external application, but before it is relegated to the limbo of the past it might be wise to remember what our fathers and grandfathers did with it in urinary infections. It was probably "the best drug ever" for the stinking urine of old people, now happily seldom seen or smelt. I have used most urinary antiseptics—hexamine, amphotropin, cytotropin, pyridium, neotropin, mandalates, and sulphonamides—and I still use boric acid. It is one of the surest drugs for rendering the urine acid, and when there is any residual urine an ounce or two of boric lotion, preferably with a little eucalyptus oil well diluted with water, will seldom cause any gastric irritation and will "keep the water sweet," as our forefathers used to say, better than anything else. When there is so much need to conserve the work of our chemical firms such a simple remedy should not be overlooked even though it is old-fashioned. It is especially useful where a patient is unwilling to adopt the special measures required for the successful wearing of the newer antiseptics, and, as should be in such cases, it is much cheaper.—I am, etc.,

Walsford, Cheshire, Nov. 17.

W. N. FISK.

Hyaluronidase

SIR.—I am extremely interested in the announcement of hyaluronidase (November 15, p. 699). Your account of the work of Chain and Duthie, K. Meyer, and D. McLean indicates clearly that in the process of septic inflammation a bacterial enzyme is formed capable of destroying at least part of the protective surrounding of normal cells—the hyaluronic acid. I think I am justified in claiming that this discovery goes some way to confirm the theory which I put forward last year ("Hypertonic Sodium Sulphate Treatment of Infected Wounds")

Lancet, February 3, 1940, p. 216) to explain the processes of septic inflammation and the effect of hypertonic saline applications—namely, that “the bacterial toxin . . . damages the cell wall; this becomes permeable to the osmotic pressure exerted between the slightly hypertonic cell protoplasm and the lymph outside, and immediately the cell begins to absorb water.” From this I deduced that all the signs of septic inflammation could be explained and the effect thereon of the application of hypertonic sodium sulphate.

The beneficial effects of such treatment are becoming generally recognized. Correspondence in the medical press and the inclusion in the new *National War Formulary* of a lotion containing 25% of sodium sulphate for the hypertonic treatment of war wounds and similar conditions are sufficient proof. But the theory which I put forward has also a certain practical value, particularly in relation to the treatment of burns. If I am correct, then the osmotic effect of the hypertonic solution is exerted not at the surface of the wound, where no semi-permeable membrane exists, but at the cell membranes in the tissues rendered semi-permeable by the enzymes of the bacteria. The diminution of cellular oedema resulting from this osmotic effect is then the cause of the reduction of the local excess of lymph among the tissues, not by removal towards the surface of the wound but by reabsorption along the lymph spaces and lymphatic capillaries, which had previously been choked by the cellular swelling. The importance of this will be at once recognized, because if this is true then it is correct to apply the hypertonic treatment even to large burns where the loss of lymph from the surface can be in itself serious, since such loss is diminished, not increased, by such applications; and this is, in fact, my own experience.—I am, etc.,

York, Nov. 16.

J. C. LYTH.

Myositis and Fibrositis

SIR.—“How long will both these terms [myositis and fibrositis] remain entirely devoid of pathological significance?” With all respect to the writer of your admirable leader on sciatic pain (November 15, p. 698), the answer seems to be: Until he is better acquainted with the literature on the subject.

Prof. Ralph Stockman, in his scholarly monograph *Rheumatism and Arthritis* (1920), says: “So far as I am aware it was William Balfour, an Edinburgh practitioner, who first described (1816) the occurrence of definite thickenings in chronic rheumatism, and thereby established the pathology of the condition.” During the next hundred years Balfour’s original observations were repeatedly confirmed, and the treatment which he advocated by “friction, percussion, and compression” is essentially the same as modern physiotherapy. In 1904 Gowers proposed the name “fibrositis” to describe the pathological condition responsible for lumbago; and in the same year Stockman published independently “a detailed account of the whole condition with a description of the histology and structure of the fibrous indurations, and showed that chronic rheumatism in all its forms depends on the presence of this chronically inflamed, pathological, new fibrous tissue.” It may well be that the application of modern histological technique will throw more light on the pathogenesis of chronic rheumatism, but it is certainly incorrect to imply that the subject has not yet been explored.—I am, etc.,

Bridge of Weir, Nov. 15.

STANLEY ALSTEAD.

Treatment of Hallux Valgus in Soldiers

SIR.—The various letters on this lesion will be read with interest by many of our profession, and as the lesion is all too common it is well that opinions should be expressed.

In my own experience excellent subjective, cosmetic, and functional results may be obtained in the large majority of these cases by any of the types of operation already mentioned. My failures, however, have led me to deal cautiously with certain cases. At one stage I adopted Keller’s operation unreservedly till I met with two disappointments. In one of these the patient was over 40 years of age and in the other under. The latter had an arthroplasty done, and yet in both cases a bridge of bone formed between the raw proximal end of the cut first phalanx and the excised exostosis on the metatarsal head. Both cases had been immobilized for three weeks. Just recently

in an over-40 case done two years ago I found extreme pain on walking localized to the base of the first toe. This is due to a large arthritic lip, which has grown laterally from the base of the first phalanx of the great toe. In this case the head of the first metatarsal bone only had been removed. I take it that the stimulus to this outgrowth is the undue strain placed on the lateral ligaments of the metatarso-phalangeal joint of the great toe, when that part was placed across in its more medial position. These ligaments were not tenotomized.

For some time now my personal view as to the operative treatment of hallux valgus has been to select the procedure that best suits each individual case, not forgetting that the frequent concomitant foot lesions must also receive appropriate attention. To complete certain cases and avoid bridges of bone, etc., may mean a two-stage operation. The final result must give no bunion, a painless and actively mobile great toe, and preserve the pillars of the transverse arch. Where I find it necessary to deal with the distal end of the first metatarsal bone in order to preserve the pillar, I incise the head so that the plantar end of the cut ends just where cartilage meets bone. This slanting cut allows for an easy 20 degrees of dorsiflexion as mentioned by Mr. Sayle Creer (*Journal*, November 15, p. 710).—I am, etc.,

Dundee, Nov. 14.

JOHN J. ROBB, M.B., F.R.C.S.E.

Testing Night Vision

SIR.—While Mr. N. Bishop Harman (November 1, p. 632) is correct in attributing my interest in dark adaptation to a vitamin motive, he will, I trust, allow that a requirement of the scientific approach to the problem is an investigation into methods of accurate measurement of dark adaptation, and my letter was concerned only with that aspect of the problem. In any case it is well established that the causes of faulty dark adaptation are many and varied.

During the investigation of many phenomena considerable modifications of view have resulted from refinement of instruments and techniques, and this has already held good for dark adaptation. Further knowledge of this phenomenon will depend upon our aiming at the highest accuracy, and it seems to us that a most useful development would be a sufficient standardization of methods and techniques (in the light of present knowledge) which will enable the results of different observers to be compared and correlated. In pursuit of this purpose there is considerable agreement that the following criteria of test conditions must be considered: previous light and dark adaptation; size and nature of test object, with control of illumination without alteration of spectral values; pupil diameter; fixation point; the data obtained to represent the whole or an appreciable part of the course of dark adaptation, and to be presented in a uniform manner.

In the light of the above we attempted to point out what seemed to be some of the limitations of Mr. Bishop Harman’s test. Mr. Bishop Harman says he could always reach his “normal” range in five minutes even when he came into the dark room from the bright sunshine. From this, and from the published figures of illumination used, it is clear that the whole test, in spite of the small variable range of illumination made possible by varying the distances, is carried out at a relatively high light intensity, far above the final rod threshold. This, of course, explains why improvement is not ascertainable upon retesting.

Regarding the accurate control of the test illumination, the “standard candle” has not been used as the standard of illumination since about 1900 for the reasons stated. We felt justified, therefore, in suggesting that the test should not be regarded as an accurate one.

The literature is now, of course, very extensive, but support of the above statements can be found in the following: “Dark Adaptation,” review of literature, D. Adams, *Medical Research Council*, 1929; “Review of Recent Literature,” Sloan, *Archives of Ophthalmology*, June, 1939, 21, 913; “Some Basic Principles of Dark Adaptation,” MacDonald, *Archives of Ophthalmology*, April, 1940, 23, 841; “Dark Adaptation,” Mandelbaum, *Archives of Ophthalmology*, August, 1941, 26, 203; “Rods, Cones, and the Chemical Basis of Vision,” Hacht, *Physiological Review*, April 17, 1937.—I am, etc.,

The Crookes Laboratories.

The Research Department, Nov. 18.

E. W. GODDING.

Staffing of Hospitals

SIR.—Critics of municipal hospitals have paid little attention to the gradual change in method of staffing all hospitals. The traditional staff of part-time consultants with resident house officers was first supplemented towards the close of last century by the appointment at teaching schools of full-time pathologists. Later, the clinical staffs were reinforced by the creation of registrars and resident surgical officers, and full-time anaesthetists followed.

In the years following the last war a number of London and Scottish schools altered the conditions of tenure of professorial chairs by restricting private practice and requiring more time to be devoted to hospital and teaching duties. About this time also a number of hospitals employed full-time radiologists. The most recent exhibition of this tendency is in regard to orthopaedic surgeons. "The results were often disastrous," says Mr. Watson Jones, "not because surgeons were lacking in skill, but because this skill was not available to the patient at the moment that it was most required." What is this but an argument in favour of the municipal method of staffing, and one, moreover, recently recognized in Birmingham by the establishment of an Accident Centre with a full-time director?

In view of this tendency enthusiasts for the voluntary system should pause before condemning the municipal, at any rate on the score of its method of staffing. It is also worthy of note that that favourite target—the medical superintendent—is not a recent municipal invention, but was begotten of the Scottish voluntary hospitals at a time when the consultants were "giants, but quarrelsome giants."—I am, etc.,

Burnley, Nov. 15

A. DUFF.

A Municipal Hospital

SIR.—The record of facts concerning the Redhill County Hospital, Edgware, as set out by its permanent staff (November 15, p. 711), looks quite Utopian on paper. With some experience of the scheme in practice there, I feel that the disadvantages should also be recorded.

1. That most pernicious of our national characteristics—the tendency to get into a complacent rut—is fostered by the security of tenure and financial security without private practice.

2. The two greatest stimulants to progress and initiative—namely, competition and the struggle for existence—are completely eliminated by this scheme.

The best-run, most progressive municipal hospital of my experience was presided over by a superintendent who may fairly be described as a benevolent tyrant. However, after many months under both systems, I am happy to be back in the voluntary hospital service.—I am, etc.,

Royal Infirmary, Preston, Nov. 16.

UNA M. WESTELL.

Diabetes and Chronic Nephritis

SIR.—Dr. Tadeusz Markowicz's letter on diabetes and chronic nephritis (November 8, p. 670) raises some interesting questions.

His letter does not display evidence of chronic nephritis in the case under consideration. Oedema can, I believe, be a feature of diabetes mellitus. No degenerative lesion of the kidney could be removed by an injection of mersalyl. The absence of albumin after the injection disproves the presence of a chronic kidney lesion. The functional disturbance to which albuminuria may be attributed is sufficient to account for a few epithelial cells and hyaline casts. Just what is the intimate mechanism which produces albuminuria is, so far as I know, unknown to medical science.

What was the action of the mersalyl and how did it produce its results? A possible explanation is that it altered the renal threshold. It was pointed out in these columns some years ago that a diabetic glucose-tolerance curve may be present without glycosuria. This must have been the situation five hours after the mersalyl, when the urine was sugar-free. The work done by the kidney in separating water and salts for excretion against the osmotic pull of a blood sugar of 226 mg. per 100 c.c.m. must be very great indeed. No theory of the physiology of the kidney can, so far as I can see, explain it.

None the less, the diuretic must be looked upon as responsible for the improvement in the general condition. The obvious suggestion is that the improvement of the water balance facil-

tated the function of the peripheral tissues, possibly increasing their capacity for using sugar.

The problem presented by the function of the kidney in diabetes calls to mind that the disease was first carried into the polyuria. The pituitary, which is now being introduced into our picture of the dysfunction of diabetes mellitus, is associated with another form of polyuria in diabetes insipidus. But whereas substitution therapy with posterior lobe extract will abate polyuria in insipidus, removal of the gland increases it in the diabetic animal. If we assume, as is reasonable, that pituitary extract acts on the kidney in cases of diabetes mellitus, thus we are at a loss in any attempt to envisage the nature of that action by reason of our ignorance of the intimate nature of kidney function. It is, however, to be noticed that in cases of diabetes insipidus the kidney is able to separate excess water from salts, an achievement similar to that required to explain the action of mersalyl in the present case.—I am, etc.,

Coventry, Nov. 18

K. E. BARTON.

The Nutritive Value of Bread

SIR.—May I ask for space to reply to the criticisms made by Dr. Margaret D. Wright (November 15, p. 689) of an experiment of mine in which comparison was made between the nutritive values of wholemeal and white flour to which extra vitamin B₁ was added (*Lancet*, October 26, 1940).

In my experiment two groups of litter-mate rats, 4 weeks old, received Diets 1 and 2 containing, respectively, 88% of white flour (73% extraction) and 82% of wholemeal (10% extraction). Both flours were obtained from the same wheat. In order to ensure optimum provision of protein and minerals both diets contained purified casein (6%) and salt mixture (2%); cotton-seed oil was also present (4%). All the rats received a daily dose of cod-liver oil to provide vitamins A and D, and those on Diet 1 also 10 µg. daily of pure vitamin B₁ to correct the deficiency in this vitamin. The rats on Diet 1 increased in weight (av. 12 g. weekly) at about one-half the rate of those on Diet 2 (av. 23 g. weekly); when after two weeks the diets were changed over, the relative growth rates changed correspondingly. The rats receiving Diet 2 ate more food but also made better use of it, the average weight of ingested food (2.3 g.) corresponding to a weight increase of 1 g., or only about 30% less than was the case with Diet 1 (3.1 g.). From this result the conclusion was drawn that white flour, even when extra vitamin B₁ is given and the defects in protein and minerals also corrected, is still inferior in nutritive value to wholemeal. The residual defect was held to be a relative lack of the B vitamins, and this conclusion has since been confirmed by work carried out in this Division by Miss A. M. Copping, who has shown white flour to be inferior to wholemeal in its content of riboflavin, vitamin B₂, and "filtrate factors."

Dr. Wright's chief criticisms may be summarized and answered as follows:

1. Dr. Wright considers that the rats receiving the whole flour diet increased in weight less rapidly because they ate less food and thus obtained less protein, the reason for the latter appetite being not that this diet was less nutritious but that it was less palatable than the corresponding one made with wholemeal. Whatever the diet, increase of weight in young rats depends on the amount of food intake. If there is no appetite, with corresponding increase of growth rate, is a rare occurrence when, for example, an essential vitamin is lacking in a diet in which it has been hitherto lacking. This is not the case of the enhanced nutritive value of the food, and occurs even when the vitamin is given as a minute dose of the pure vitamin, and can have no effect on the palatability of the ration as a whole. The rats receiving the wholemeal diet in the present experiment not only ate more of it but, as stated above, gained to better advantage than did those having the whole flour diet.

2. Dr. Wright states that the rats receiving the whole flour diet received less vitamin B₁ than those on the wholemeal diet. This may be true, but 10 µg. daily, which is the form of the vitamin has been found more than adequate for normal growth rates of the age and weight employed.

3. Dr. Wright also considers that the rats receiving the whole flour diet received less vitamin B₂ than those on the wholemeal diet, which contains the germ. Adequate vitamin B₂ was, however, supplied in both diets in the cotton-seed oil which was

In this laboratory rats have been reared for more than two generations on an artificial diet in which a small amount of cotton-seed oil was the only source of vitamin E.

4. The number of animals (nine in all) employed in my experiment is considered too small to enable satisfactory conclusions to be drawn. The results were, however, so clear-cut that I have no reason to doubt their significance. In my own experience, as much information may often be gained from nutritional trials on a few animals, individually observed and cared for, as from others involving large numbers.

One error in Dr. Wright's account of my work should be corrected—namely, the statement that my comparison was made between "a straight-run white flour (73% extraction)" and "wholemeal (82% extraction)." The "wholemeal" flour used by me contained, as the term signifies, 100% of the grain.—I am, etc.,

Division of Nutrition,
The Lister Institute, Nov. 23.

HARRIETTE CHICK.

Anglo-Soviet Medical Committee

SIR.—The Anglo-Soviet Medical Committee invites members of the medical and dental professions and students of these professions to give their support to the work of the Committee by becoming associate members. The aims of this body have already been published in medical and dental journals, but for those who did not see the original announcement they are as follows: (1) To form a liaison between the medical professions of both countries. (2) To exchange the latest clinical and scientific knowledge. (3) To facilitate visits of medical specialists between the two countries. (4) To give specialist advice on medical aid to the U.S.S.R.

It is proposed to make the minimum subscription for associate members 5s. per annum, the funds so raised to be used for the expenses of the Committee's work. A bulletin will be issued from time to time giving reports on the work accomplished by the Committee. A general meeting for members and associate members will be held early in the new year. Those who wish to become associate members should write to the hon. secretary, Anglo-Soviet Medical Committee, c/o the Royal Society of Medicine, 1, Wimpole Street, London, W.1. The Committee feels that there are many members of the medical and dental professions who would like to take this opportunity of contributing to the national effort and assisting our ally.—We are, etc.,

ALFRED WEBB-JOHNSON,

President.

H. HAROLD SCOTT,

Chairman of the Executive Committee.

PHILIP MANSON-BAHR.

JOHN A. RYLE.

Members of the Executive Committee.

Nov. 17.

Obituary

WILLIAM JAMES PENFOLD, M.B., C.M.Ed., B.Hy.
D.P.H.DURH.

The report of the death in Melbourne on October 27 of Dr. W. J. Penfold will be received with great regret by his former bacteriological confrères in this country, and by old colleagues who still retain a vivid memory of his personality and a very conscious appreciation of his scientific achievements during his eight years' sojourn (1908-16) at the Lister Institute, first as B.M.A. scholar and later as a member of the bacteriological staff.

Entering the research field as he did after some twelve years of medical practice it is remarkable that he so rapidly accommodated himself to the laboratory life and that he succeeded in producing in the short space of eight years work of such high quality and permanent value. All the time he was the thinker, tensely strung up until he could submit to experiment some idea that may have come to him overnight. At times, indeed, his fertile imagination presented him with ideas for experiment that in his own interest it seemed desirable to restrain him from exploiting, but throughout he proved him-

self a most acute observer, eminently judicious in drawing conclusions while determined to secure the last ounce of information from his data. In all he published some twenty-five papers during these eight years, the majority of which were concerned with the experimental study of variation and mutation in bacteria—a study which was then engaging the attention of many bacteriologists in this country and abroad. To this subject, particularly in connexion with the fermentative properties of *B. typhosum* and the coliform bacteria of the intestine, he made many significant and substantial contributions which cannot be detailed here, but I would stress that their significance was all the greater from the fact that with the co-operation of Harden and other biochemical colleagues he was able to throw light on the laws governing the variations studied and on the enzymic mechanisms possessed by the variant forms. On the subject of salvarsan fever, salt fever, and experimental fever following the introduction of bacterial pyroges he collaborated in a valuable series of papers with the late Dr. E. C. Hort. At the King George Hospital in the early years of the last war he collaborated with the writer in an investigation of typhoid, paratyphoid, and dysentery cases from the Dardanelles, and with Dr. Major Greenwood he carried out an inquiry into the possibilities of preventive inoculation against meningococcal infection during the prevalence of cerebrospinal meningitis in Salisbury.

In 1916 Penfold resigned his post at the Lister to take over the organization and control of what are now the Commonwealth Serum Laboratories in Melbourne, with their many additional responsibilities in the manufacture of biological products of all kinds. The success of this establishment in the intervening years is a great measure due to Penfold's administrative and organizing powers during its formative phase and to the energy he threw into the formidable task set him on his arrival in Australia. Of necessity but none the less regrettably the new sphere of work broke the continuity of the researches to which he was so wholeheartedly devoted in England, but soon problems of a different kind attracted his attention. For a time he was greatly intrigued with and strongly advocated the practice of "refusion," by which is understood the returning to the horse of the deposited red cells from a bleeding, thus assisting the animal, or so it was believed, to sustain the loss of much greater quantities of blood within a short interval.

In 1927 Penfold resigned his directorship of the Commonwealth Serum Laboratories to take up the newly created post of Director of the Baker and Shaw Medical Research Institute attached to the Alfred Hospital, for the pathological work of which it also catered. Here, attracted by the varied pathological material available, Penfold was able to resume in great measure his research activities, and between 1927 and 1938, when he retired, he contributed to the *Medical Journal of Australia*, with the co-operation of various colleagues and pupils, including his son, H. B. Penfold, a steady flow of papers on a great variety of subjects, the mere titles of which give ample evidence of his curious, versatile, and inventive mind. In 1935 he gave the Bancroft Memorial Lecture on medical research in Australia, and in the same year took a prominent part in the work of the Annual Meeting of the British Medical Association in Melbourne. His retirement in 1938 from the Baker Institute was followed by many tributes to his work for Australia since his arrival there in 1916. In Melbourne scientific circles he will, I feel sure, be greatly missed, for he was a doughty controversialist and a ready speaker in debate on any platform, scientific or political. By those with whom he worked in London some thirty years ago he will be remembered as a most amiable and stimulating colleague. *Ave atque vale.*

J. C. G. L.

The following well-known medical men have died abroad: Dr. F. KAPKA, director of the psychiatric clinic at Prague; Dr. ALEXANDER WESTPHAL, professor of neurology and psychiatry at Bonn; Dr. HEINRICH KLEIN, professor of neurology and psychiatry at Leipzig, aged 66; Dr. MAX AARON GOLDSTEIN, founder and editor of the *Laryngoscope* and past president of the American Academy of Ophthalmology and Oto-laryngology, aged 71; Dr. MEYER BODANSKY, professor of pathological chemistry at the University of Texas School of Medicine and author of *Introduction to Biological Chemistry*, aged 45; and Dr. JOHN PRICE CROZER GRIFFITH, eminent professor of paediatrics in the University of Pennsylvania and author of a well-known textbook on diseases of infants and children.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Diploma in Medical Radiology and Electrology

The University of Cambridge has decided that the regulations for the Diploma in Medical Radiology and Electrology will be reissued on October 31, 1942, and no examinations will be held and no diplomas granted after that date. The course which started in October, 1941, is therefore the last course that will be given for the diploma.

UNIVERSITY OF LONDON

LONDON HOSPITAL MEDICAL COLLEGE

Hutchinson Triennial Prize

The subject for the next Hutchinson Triennial Prize is "The Investigation and Treatment of Sciatic Pain," and dissertations must be delivered at the London Hospital by October 31, 1944. Full conditions may be obtained on application to the Dean of the London Hospital Medical College, Turner Street, Whitechapel, E.1.

UNIVERSITY OF SHEFFIELD

At a meeting of the University Council held on November 14 the following appointments were made:

Medical Tutors, Drs. H. P. Brody and J. Pemberton. *Surgical Tutors*, Messrs. A. W. Fawcett and H. Blacow Yates. *Obstetrical Tutor*, Dr. W. J. McCord. *Honorary Lecturer in Applied Anatomy*, Mr. J. T. Chesterman. *Research Assistant to the Department of Pathology and to the University Cancer Research Laboratories*, Dr. M. J. Pivawer. *Representatives on the Committee of Management of Sheffield Hospitals Council*, Profs. H. N. Green and E. J. Wayne.

UNIVERSITY OF WALES

WELSH NATIONAL SCHOOL OF MEDICINE

The following candidate has satisfied the examiners at the examination indicated:

M.B., B.Ch.—*Medicine*: A. A. Edwards.

The Services

HONORARY SURGEONS TO THE KING

Major-General G. Wilson, C.B.E., M.C., late R.A.M.C., and Colonel (temporary Brigadier) D. T. Richardson, M.C., late R.A.M.C., have been appointed Honorary Surgeons to the King in succession to Major-General A. D. Fraser, D.S.O., M.C., late R.A.M.C., retired, and Major-General F. Casement, D.S.O., late R.A.M.C., retired, respectively.

HOME GUARD AWARD

The M.B.E. has been awarded to Lieutenant George Dunlue Eccles, M.C., M.B., B.S., Home Guard (Dawlish), in recognition of conspicuous gallantry in carrying out hazardous work in a very brave manner.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Surgeon Lieut. FREDERICK BAGOT, R.N.V.R., is posted as "Missing, Presumed Killed," in an Admiralty Casualty List published on November 19. He was educated at the University of Manchester, where he graduated M.B., Ch.B. in 1932. He had held the post of house-surgeon at Ancoats Hospital and at St. Mary's Maternity Hospital, Manchester, and specialist house-surgeon at Manchester Royal Infirmary. Before the war he was in practice at Chorlton-cum-Hardy. He entered the R.N.V.R. as probationary surgeon lieutenant in October, 1938, and was confirmed in that rank one year later. In the *Journal* of July 12 (p. 72) we announced that Surgeon Lieut. Bagot had been mentioned in dispatches "for good services in the last six months or more of war." He was a member of the British Medical Association.

Wounded or Injured

Probationary Temporary Surgeon Lieut. Thomas McGowan Watt, R.N.V.R.

ROYAL ARMY MEDICAL CORPS

Captain WILLIAM DAVID MOORE, who died on November 12 as the result of a road accident, was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1927. He was in practice in Edinburgh until 1935, when he moved to Blackburn, and soon after the war broke out entered the

R.A.M.C. as lieutenant, being promoted to captain a year later. He was attached to the R.A.O.C. The funeral took place in Workshop on November 17.

ROYAL AIR FORCE

Flying Officer HAROLD SIDNEY MELLOWS, R.A.F.V.R., died on November, aged 31. He was the son of the late Alderman W. M. and Mrs. Mellows, and received his medical education at King's College Hospital, qualifying M.R.C.S., L.R.C.P. in 1935. He also took the Cambridge degrees of B.Chir. in 1936 and M.B. in 1937. After holding the post of house-surgeon at King's College Hospital he settled in practice at West Wadhurst, Kent. He entered the R.A.F.V.R. as flying officer in 1940.

Flying Officer ANTONY FLEMING BALDWIN, R.A.F., who was reported "missing but presumed to have lost his life" on active service in the Middle East, was the eldest son of Mrs. C. J. Baldwin and the late Captain C. F. Baldwin. He graduated M.B., B.S. of the University of London in 1940 and, after holding junior house posts at St. Bartholomew's Hospital, entered the R.A.F. as flying officer in the same year. He was a member of the British Medical Association.

Medical Notes in Parliament

Home Guard Medical Officers

Mr. GROVES asked on November 18 if the Secretary of State for War would raise the age of enlistment for Home Guard medical officers, since over-age doctors still in practice must necessarily be employed but could not benefit from classes of instruction, etc., unless they were actually enrolled in the Home Guard. Captain MARGESSON replied that cases of this kind were considered on their merits. In general the upper age limit was not strictly enforced in the case of medical practitioners wishing to enrol as medical officers in the Home Guard, provided that they were fit.

Mr. GROVES also asked whether it was the considered policy of his Department that some medical advisers of the Home Guard should be appointed from among the whole-time servants of local authorities; and, if so, whether he would give an assurance that such officers had sufficient time for the duties which would be imposed upon them. Captain MARGESSON said that to avoid undue interference with the medical organization of the locality it had been decided that no medical practitioner might be enrolled in the Home Guard unless previous permission had been given by the Local Medical War Committee, which was aware of the professional commitments of practitioners in its area. This should ensure that Home Guard appointments were not inconsistent with the fulfilment of a practitioner's existing obligations. Replying to another question, Captain MARGESSON said a course for Home Guard medical officers had been arranged for next month, and further courses would be held as found necessary. Instructions and information regarding such courses were issued through the normal military channels.

On the same day Mr. Groves asked the Minister of Health whether he was aware that in various parts of the country whole-time medical officers of health, already overworked by the addition of A.R.P. duties to those which they, as medical officers, were now assuming the duties of Home Guard medical officers, involving the training of men and a great deal of administrative work, and whether arrangements were being made for recognition of such services. Mr. FOSTER-BELL said: I understand that some medical officers of health have found it possible to undertake the duties of Home Guard medical officers in addition to their official duties, the appointments being on an honorary basis as in the case of Honorary Home Guard medical officers. I am sure that their action in so doing is greatly appreciated by the Secretary of State for War. When approving the appointment of these medical officers the Local Medical War Committee no doubt paid due regard to their other commitments.

American Doctors in the F.M.S.

On November 19 Sir Eustace Crofton-Little asked the Minister of Health to what services the medical practitioners coming from the United States of America to take up work in

this country were being allotted; to what body their original selection and ultimate distribution were entrusted; what remuneration was offered to them; and what remission of the rate of income-tax imposed on British subjects was accorded to them on the salaries paid to them in this country in respect of such service.

Mr. ERNEST BROWN replied: The doctors referred to are being allotted either to the E.M.S. or to the R.A.M.C. according to their own choice. The selection of the doctors, so far as their professional qualifications are concerned, is carried out in America through the National Research Council, the American Medical Association, and other professional bodies. Medical examinations and interviews are arranged in America on behalf of His Majesty's Government. Doctors who choose the E.M.S. are posted to hospitals by the Director-General E.M.S. The remuneration offered to them is the salary appropriate to the grade of medical officer in the E.M.S.—namely, £550 a year plus board and lodging or £100 a year in lieu thereof. I understand that this remuneration is subject to British income tax in the ordinary way, but the amount of the tax is repaid to the doctors by my Department, subject to the deduction of a sum equivalent to American income tax at current rates. The distribution and remuneration of those doctors who elect to serve in the R.A.M.C. are matters for the Secretary of State for War.

EPIDEMIOLOGICAL NOTES

Discussion of Table

A general rise in the incidence of infectious diseases, with the exception of paratyphoid and typhoid, occurred during the week in England and Wales. This increase contrasts sharply with the decline recorded in the preceding week. The increase in the notifications of diphtheria, 154 cases, was confined to the northern sections of the country; the largest increases were those of the north-western counties 54, and Wales 42. In London and the southern counties the incidence of diphtheria declined. The rise in the number of cases of scarlet fever, 162, was fairly general throughout the country, and so was the increased incidence of pneumonia, although this was greatest in the northern counties. The number of cases of measles was 123 in excess of the total for the preceding week. The increase was mainly contributed by the sharp outbreak in Kent, Easby R.D., where 94 cases were notified compared with 5 in the previous week.

In Scotland the number of notifications of diphtheria and scarlet fever declined, while the cases of whooping-cough and measles exceeded in number the total of the previous week.

Dysentery

No new outbreak of any size was reported during the week in England and Wales, the largest being that of Berkshire, Windsor R.D. 4. The rise in the notifications, 25 cases, was due to increased incidence in the local outbreaks reported in the preceding week. The chief of these were: London, Wandsworth 9; Surrey, Coulsdon and Purley U.D. 18; Staffordshire, Lichfield R.D. 17; Lancashire, Blackburn R.D. 17, and Whiston R.D. 5; Northumberland, Newcastle C.B. 5, and Gosforth U.D. 4. In Scotland the principal centres of infection were in the burghs of Greenock 10, Aberdeen 12, and Edinburgh 16.

Poliomyelitis

Thirty-three cases of poliomyelitis, an increase of 10, were notified during the week in England and Wales. The largest county totals returned were Kent 5 and Lancashire 4. Multiple cases occurred in the administrative areas of Berkshire, Wokingham R.D. 2; Kent, Crayford U.D. 3; Norfolk, St. Faith's and Aylsham R.D. 2; Wiltshire, Amesbury R.D. 2. One of the 2 cases reported in Scotland was recorded in Edinburgh: during the past four weeks 8 cases have been notified in this city.

Returns for the Week Ending November 15

The number of cases of infectious diseases notified during the week included scarlet fever 1,352, whooping-cough 2,066, diphtheria 1,043, measles 671, pneumonia 997, cerebrospinal fever 104, poliomyelitis 21, dysentery 204, paratyphoid 30, typhoid 9. Thirty-eight deaths were attributed to influenza.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 8.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (ad

Figures of: (a) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	113	6	24	2	9	137	8	28	2	3
Deaths ..	..	..	..	..	..	..	..	..	..	..
Diphtheria ..	1,069	43	275	28	32	1,410	51	477	19	47
Deaths ..	..	..	..	..	..	..	..	..	..	..
Dysentery ..	148	12	58	—	—	68	2	50	2	—
Deaths ..	..	..	..	..	..	..	..	..	..	..
Encephalitis lethargica, acute ..	3	—	1	—	—	4	—	1	—	—
Deaths ..	..	..	..	..	..	..	..	..	..	..
Enteric (typhoid and paratyphoid) fever ..	..	..	..	..	..	29	3	7	3	—
Deaths ..	..	..	..	..	..	..	..	..	..	..
Erysipelas ..	..	..	50	14	5	..	..	58	6	6
Deaths ..	..	..	..	..	..	..	..	..	..	..
Infective enteritis or diarrhoea under 2 years ..	41	2	16	16	8	29	3	8	5	4
Deaths ..	..	..	..	..	..	..	..	..	..	..
Measles ..	747	52	29	32	2	1,247	290	526	—	12
Deaths ..	..	..	..	..	..	..	..	..	..	..
Ophthalmia neonatorum ..	84	2	8	—	—	59	1	19	—	—
Deaths ..	..	..	..	..	..	..	..	..	..	..
Paratyphoid fever ..	31	4	2	—	—	..	..	..	..	..
Deaths ..	..	..	..	..	..	..	..	..	..	..
Pneumonia, influenza* ..	731	27	15	1	5	713	51	17	2	4
Deaths (from influenza) ..	..	..	..	..	..	..	..	..	..	..
Pneumonia, primary ..	..	..	214	5	9	..	..	146	15	9
Deaths ..	..	..	..	..	..	..	..	..	..	..
Poliomyelitis, acute ..	4	—	—	—	—	4	—	—	—	—
Deaths ..	..	..	..	..	..	..	..	..	..	..
Poliomyelitis, acute ..	33	2	2	4	1	42	—	4	—	—
Deaths ..	..	..	..	..	..	..	..	..	..	..
Puerperal fever ..	1	1	16	2	1	—	—	17	1	—
Deaths ..	..	..	..	..	..	..	..	..	..	..
Puerperal pyrexia ..	107	6	13	—	—	119	4	13	—	—
Deaths ..	..	..	..	..	..	..	..	..	..	..
Relapsing fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	..	..	..	..	..	..	..	..	..	..
Scarlet fever ..	1,366	36	229	51	30	1,792	104	267	73	52
Deaths ..	..	..	..	..	..	..	..	..	..	..
Small-pox ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	..	..	..	..	..	..	..	..	..	..
Typhoid fever ..	12	1	2	14	3	..	..	..	..	..
Deaths ..	..	..	..	..	..	..	..	..	..	..
Typhus fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	..	..	..	..	..	..	..	..	..	..
Whooping-cough ..	2,029	206	69	31	8	1,925	16	174	—	20
Deaths ..	..	..	..	..	..	..	..	..	..	..
Deaths (0-1 year) ..	332	32	51	41	26	326	25	52	30	13
Infant mortality rate (per 1,000 live births) ..	..	..	..	..	..	..	..	..	..	..
Deaths (excluding stillbirths) ..	4,296	602	564	211	140	5,281	1,078	629	190	133
Annual death rate (per 1,000 persons living) ..	..	..	..	..	..	..	..	..	..	..
Live births ..	4,840	462	719	271	213	4,878	400	652	303	200
Annual rate per 1,000 persons living ..	..	..	..	..	..	..	..	..	..	..
Stillbirths ..	164	13	33	..	..	199	21	29	..	..
Rate per 1,000 total births (including stillborn) ..	..	..	..	..	..	..	..	..	..	..

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Notification in certain administrative areas only.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

On December 1, 2, and 3 Dr. E. V. McCollum, Professor of Nutrition, School of Hygiene, Johns Hopkins University, Baltimore, U.S.A., will deliver, in Convocation Hall at the University of Toronto, Canada, the Harben Lectures for 1941 upon "Nutritional Science and Public Health." These lectures are delivered annually under the auspices of the Royal Institute of Public Health and Hygiene in accordance with the terms of the Harben Trust.

Sir Stewart Duke-Elder will deliver a lecture on "Ophthalmological Problems in War" at the Weston Hotel, Bath, on Thursday, December 4, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

A Chadwick Public Lecture on "Post-war Housing in the Light of Wartime Experience" will be given by Mrs. Blaise Gillie at the Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W.1, on Tuesday, December 9, at 2.30 p.m.

A joint meeting of the Society of Public Analysts and Other Analytical Chemists with the Food Group of the Society of Chemical Industry will be held at the Chemical Society's rooms, Burlington House, Piccadilly, W., on Wednesday, December 3. The meeting will be held in two sessions, beginning at 11.30 a.m. and 2.30 p.m. respectively, and the subject will be "The Fortification (Enrichment) of Human Foods by Addition of Specific Nutrients." The following papers will be read: at the morning session, "The Nutritional Bases for Fortification of Foods," by Mr. A. L. Baeharach, and "The Technological Aspect of Fortification," by Messrs. D. W. Kent-Jones and A. J. Amos; at the afternoon session, "The Machinery for the Enforcement of Standards for Fortified Foods," by Mr. H. E. Cox, D.Sc., and "Analysis of Fortified Foods," by Mr. H. E. Monk.

A joint meeting of the Sections of Laryngology and Otology of the Royal Society of Medicine will be held on Friday, December 5, at 10.30 a.m., when there will be a discussion on "The Effects of Flying on the Nose and Ear." Opening papers will be read by Wing Commander J. F. Simpson, Group Captain E. D. D. Dickson, and Squadron Leaders D. B. Fry, J. E. McGibbon, and R. H. Winfield.

The Ministry of Health has just issued a memorandum on Louse-borne Typhus Fever (Memo. 252/Med.). This briefly summarizes the principal facts about the disease and gives information which will aid local authorities in dealing with any occurrence that might arise.

Lieut.-Colonel R. Brooke, O.B.E., R.A.M.C. (Inner Temple); Major F. H. Blackburn, R.A.M.C., and Mr. E. A. Butterworth, F.R.C.S. (Middle Temple); and Dr. A. P. Ll. Cogswell (Gray's Inn) were called to the Bar on November 17.

Air Vice-Marshal Sir David Munro, Chief Medical Officer of the Ministry of Supply, will open the new medical department at the Longbridge Works of the Austin Motor Company, Ltd., on Wednesday, December 3, at 3 p.m.

The Ministry of Food, in co-operation with the Ministry of Health, has arranged for the free distribution from December 8 of fruit juices and cod-liver oil compound to all children born after January 1, 1940.

Dr. Zing-Yang Kuo, director of the Institute of Physiology and Psychology at Chungking, is on a visit to this country at the request of the Minister of Education for China and by invitation of the Universities' China Committee in London, his object being to promote closer and more effective cultural and educational co-operation between the two countries.

It has been decided not to award any Nobel Prize this year.

Mr. Ernest Brown, Minister of Health, stated recently that up to the end of September A.R.P. first-aid posts in the London region had dealt with 51,554 casualties.

Jewish doctors in Germany who have been authorized to practise again owing to the scarcity of "Aryan" doctors are not permitted to engage "Aryan" nurses to assist them, and Jewish nurses are not allowed to assist "Aryan" doctors.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* and unless the contrary be stated.

Authors desiring REPRINTS of their articles must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertising Manager (hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and subscriptions should be addressed to the Secretary. TELEPHONE NO.—B.M.A. and B.M.J.: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Antilog Westcent*, Lond. 1. SECRETARY, *Medisera Westcent*, London.

B.M.A. SCOTTISH OFFICE: 7, Drumshigh Gardens, Edinburgh.

QUERIES AND ANSWERS

Treatment of Chilblains

Dr. C. M. STEVENSON (Cambridge) writes in reply to D. P. Binnington (November 15, p. 716): May I suggest that the most satisfactory treatment is the intramuscular injection of sodium cacodylate. Twelve minims of a 10% solution in water, repeated if necessary in two weeks' time, will usually give relief for several months. It is simple, and troublesome to neither doctor nor patient.

Congested Hands, Brittle Nails, and Dental Sepsis

Dr. E. U. MACWILLIAM (Bexley, Kent) writes: In this connection the following case may be of interest. A man aged 54 has suffered from congested hands (as described by "Status," October 14, p. 568) since childhood. About five years ago the finger-nails began to become thin and brittle, and since then most of the nails at one time or another became partially detached from the bed. As a rule the condition came on gradually, in some cases affecting almost the whole of the nail, and disappeared in a similar manner. Eight weeks ago, when the mouth was cleared of teeth, several of which were obviously infected, four nails of one hand and three of the other were affected as described. To-day all nails are practically normal. There is also a slight improvement in the congestive condition.

LETTERS, NOTES, ETC.

District Nurse for Home Guard Casualties

Major J. L. FORMAN BULL, medical officer, 5th Montgomery Battalion, Home Guard, writes: In the *Journal of Nursing* (p. 630) you quote the Editor of the *Nursing Mirror* as suggesting that the local district nurses should be utilized to organize casualty collecting posts, especially in isolated country districts. In the Home Guard battalion area, thanks to the energy and foresight of the W.V.S., this scheme has been in existence for some time and has been amplified. The area covers about 200 square miles and is sparsely populated. In the larger centres of population there are first-aid points in charge either of the local district nurse or, where there is no district nurse, of a retired nurse. Each post has a voluntary staff of women who have had a course of training in home nursing and first aid, and is well equipped to deal with casualties even if they have to be retained in the post for four, six, or more hours. In addition there are sub-post points in isolated areas in charge of women who have had a short course of nursing experience or have taken a course of home nursing and first aid. A supply of dressings, etc., is kept in their possession, and they can be used as temporary casualty collecting posts. These points have a notice displayed, "First Aid Point," and the points are organized in time of peace. All other first-aid points are being organized in time of peace. The Home Guard battalion area where fighting may occur. As the district nurse may not always be available a second-aid point, which is preferably an ex-nurse, is appointed for each district and post.

Paper Salvage

Dr. A. R. NEWMAN (Bristol) writes: The *Journal* is a most useful and carefully edited paper. It is a pity that it is not more widely read, and that it is not more widely used as a source of information. I am sure that it is a most valuable asset to the medical profession.

OBSERVATIONS ON SOME NORMAL AND INJURIOUS EFFECTS OF COLD UPON THE SKIN AND UNDERLYING TISSUES

I. REACTIONS TO COLD, AND INJURY OF NORMAL SKIN*

BY

SIR THOMAS LEWIS, M.D., F.R.C.P., F.R.S.

Physician to University College Hospital

The need to understand the reactions of the human skin and underlying tissues to cold increases with time. Men ascend to greater heights on mountain and in air; they go down to work deeper beneath the surface of the sea; and in these ascents and descents they become more exposed to the influence of cold. They work in the artificial coldness of storage chambers. And in wartime many are exposed to the cold of wet trenches or to the icy waters of the sea for long periods. Women, for their part, reduce to vanishing-point the clothing which long experience has taught us it is wise to wear on the limbs in wintry weather. It is my purpose in these lectures briefly to review work relevant to the injurious effects of cold, work that has occupied the attention of my co-workers and myself from time to time for a number of years.

Cooling and its Effects on Blood Flow to the Skin

If a person who is comfortably warm—that is to say, with skin temperature everywhere within a few degrees of blood heat—enters and sits at rest in a cold room the temperature of the skin begins to fall. In the absence of an obvious source of radiant heat, a room temperature of 16° C. (61° F.) will cause progressive cooling in most people; in many it will take place at 18° C. (64° F.); in some it will occur at 20° C. (68° F.). This progressive cooling is shown chiefly by certain parts of the body, where it will continue until the temperature approaches that of the surrounding air. Parts of the body so affected are those presenting a surface that is large in relation to their mass. The extremities of the limbs, and especially the digits, cool fastest and most. Of the face, the ears and nose cool most rapidly, for they, too, have relatively large surfaces; but they do not cool as fast or as far as the digits (Lewis, 1931). The rate and degree of cooling are usually displayed in the order: fingers (and toes), ears, and nose. These are the only parts of the body in which cooling is usually profound in the circumstances described, and fingers and toes are the only parts in which cooling often occurs down nearly to room temperature. Such cooling takes half an hour or more. The presence of clothing naturally influences the result, especially if the air of the room is in motion, for clothing holds a layer of warmer air on the skin's surface. Out of doors in a cold wind, if the subject is walking, the feet will be kept warm by the friction and by increased blood flow to the working muscles of the limb. The fingers and ears in such conditions will cool most, and the fingers more than the ears if the former are uncovered. There will be variations, according to the precise circumstances of exposure and

from subject to subject. Immersion in water brings the skin near to the temperature of its surroundings in a very few minutes, and much faster than exposure to cold air, though again more rapidly and more completely in parts that, like the digits, have large surfaces.

Effect on Blood Flow.—When the body surface is exposed to cold the vessels of the skin normally contract, blood flow is reduced, and heat loss from the skin is diminished. This vasoconstriction is a complex response; indeed, it comprises three separate reactions. First, there is a direct and persistent response of the superficial vessels to cold; they contract locally. Secondly, cold when applied to any part of the skin causes an immediate general vasoconstriction by reflex action through the central nervous system. This reflex, however, is only transient. It is succeeded and replaced by the third response. Cold venous blood returning from the cooled skin joins and lowers the temperature of the blood in the general circulation. This blood travels to, and acts upon, a central nervous mechanism, which is very sensitive to cold and responds by calling forth a general vasoconstriction, which is persistent. The second reaction is easily displayed; for if a limb is cooled while the circulation to it is cut off there is an immediate and transient general vasoconstriction; but the third reaction takes place only when the circulation to the cooled limb is restored (Pickering, 1932). In these vasoconstrictions, whether brought about locally or generally, all surface vessels—arteries, arterioles, capillaries, venules, and veins—participate.

All blood passing through the capillaries of the skin must come to the surface and enter the dense networks of the subpapillary venule plexuses, the blood in which gives colour to the skin. These plexuses act as efficient radiators when blood flows rapidly through them. There is, too, in certain parts of the skin an additional apparatus for heat dispersal—namely, the arteriolo-venous anastomoses, which, situated mainly at the very extremities of the limbs or digits, are able to convey a torrent of blood close to the surface. These additional radiators also respond to cold both directly, and indirectly through the nervous system, and so by closing form part of the mechanism of heat conservation (Grant, 1930; Grant and Bland, 1931; Grant and Pearson, 1938). Briefly, the skin is a most important organ in the regulation of body temperature; for, while it can rapidly dissipate heat when the body should be rid of it, it can conserve heat when the body should retain it.

The complex mechanism here briefly described constitutes a general defence of the body against cold; but, in thus acting, those parts which contain the radiators are

* The first of three Holme lectures delivered at University College Hospital. Lectures II and III will appear in our next two issues.

sacrificed. For a closing-down of the limb vessels, while safeguarding against excessive fall of body temperature, simultaneously ensures a fall of limb temperature. Moreover, the cooling of the limb, with its contained vessels, brings as it proceeds a greater closure of these same vessels in its train. Thus, locally, a vicious circle is established, which gradually carries the temperature of the limb closer and closer to that of its surroundings.

A fall of temperature to 10° C. (50° F.) or lower always benumbs the skin after a time, so that fine touch sense, and ultimately all touch and pain sense, is lost; it weakens the muscles of the limbs, and particularly those of the hand, by cooling them and their motor nerves; it no doubt interferes with the local proprioceptor mechanism and with fine control of movement, which depends on this. Thus the limb, and especially its extremity, in virtue of its sacrifice becomes a relatively inefficient member. But the sacrifice does not end here; there is abundant evidence, presently to be reviewed, that cooling beyond certain points injures the skin. The skin possesses its own local mechanism, which to a point meets this danger.

The Skin's Local Defence

If a finger is dipped into and held in a mixture of ice and water its surface temperature rapidly falls until it is not far above freezing-point; the deep parts of the skin cool almost as much, and the whole process occupies but a few minutes. When the finger is thus robbed of its natural heat it becomes the seat of pain, and this continues as long as the finger is maintained in its cold surroundings. But in five to twenty minutes the pain lessens; the finger feels comfortable, it no longer feels even cold, and observation shows that its temperature is rising. It becomes the seat of a local vasodilatation (Lewis, 1930). This vasodilatation is short-lived, but while it lasts it is intense enough to raise the temperature of the still-immersed finger 5° C. (9° F.) or even as much as 8° C. (14° F.); and it is sufficiently intense to bring the temperature of the cooled finger—if this is withdrawn from the water—well above that of the uncooled fingers of the same hand. This response of the cooled finger does not persist; for vasodilatation, with its warmth, is succeeded by a swing back towards a more usual vascular tone, and at once the temperature of the immersed finger begins to fall again and, cooling sufficiently, the whole process is repeated. Thus the temperature of the immersed finger rises and falls periodically; but as a result its mean temperature is very appreciably raised.

This vascular response of the skin happens not only when digits (fingers or toes) are immersed but when skin of the face, notably that of the ears, chin, and nose, is cooled excessively either by immersion in cold water or by exposure in cold air or wind (Lewis, 1930, 1931). It is a response which is far less in evidence in the skin of the rest of the body. It depends upon a local or axon reflex, for it does not occur in fingers the cutaneous nerves of which have degenerated; it is lost six to ten days after such nerves are cut—namely, at the time at which degeneration happens (Lewis, 1930; Lewis and Pickering, 1936). It returns when these nerves regenerate. The persistent coldness of fingers which have lost their nerve supply is in large part due to the absence of this reflex; and persistent coldness is thought to be responsible for much of the pathological change which is apt to occur in such fingers (Lewis, 1930; Lewis and Pickering, 1936).

The defensive reaction of the skin described is vigorous when cooling proceeds near to the freezing-point of water; but careful observation shows that it begins to be recognizable at temperatures as high as 15° C. (59° F.) or occa-

sionally even 18° C. (64° F.). Thus it happens at temperatures which skin of digits often experiences out of doors during winter months in this country; and the reaction has been shown actually to occur in such circumstances. It is very notable in the hands after snow has been much handled. The response undoubtedly constitutes an important defence against cold, though it will be understood that the defence is incomplete. It appears when cold begins to produce effects on the skin which independent evidence suggests may result from injury. The defensive response to excessive cooling which we are discussing is almost certainly an actual reaction to injury, and related in its degree to the extent of injury.

Evidence that Cold Injures Normal Skin

It is important fully to realize that cold affects the normal skin in two distinct ways. It may damage the skin by direct action or by causing it to freeze. These two effects have often been confused; both have often been described under the term "frost-bite." To avoid such confusion I shall limit that term strictly to effects which follow freezing of the skin, and shall defer consideration of this subject until later. Here I propose first to discuss experimental evidence that normal skin can be injured by reduction of its temperature and without the intervention of a mechanical injury to the cells such as inevitably happens when ice crystals form in the skin. The evidence in question is derived from a number of different sources.

Axon Reflex.—It has been stated already that the skin reacts when cooled to low temperatures. It reacts by producing a local vasodilatation through a local or axon reflex. Now, this reflex is known to be called into play in a large number of other skin reactions: these involve injury of the skin, such as cutting, pricking, burning, freezing, etc., all of which are believed to release histamine-like substance or substances from the skin cells; or the reaction occurs when extracts of skin, or histamine itself, is introduced into the skin. The appearance of a similar vasodilatation on cooling the skin may not be conclusive, but it is suggestive evidence of H-substance release, and to this extent supports the idea of injury (Lewis, 1930).

Local Pain and Tenderness.—Experience would seem to show that in general the production of pain in skin involves damage to the skin. Thus, if heat is applied to skin the earliest evidence of injury, as displayed by vascular reactions, appears at about 42° C. (Lewis and Love, 1926) or very close to the lowest temperature at which the sense of warmth is replaced or supplemented by sense of pain; this temperature is approximately 43° C. (109° F.). Similarly, cold objects give a pure sense of coldness, until as the testing temperature is lowered an element of "sting" or pain is introduced. This new element in the sensory response begins to be detectable very close to the point at which an application of cold to the skin brings the axon reflex response just described—namely, about 15° C. (59° F.).

If a finger is immersed in ice-cold water, pain in it shortly becomes severe enough to be disagreeable, and a finger that has been so treated for a period of, say, ten minutes is subsequently tender and may remain so for many hours (Lewis, 1933). Sometimes in the finger that has been cooled severe burning pain is felt after it has been withdrawn from the ice-cold water; that is so if it is allowed to warm up again too quickly. This pain of recovery can be avoided by re-warming the finger very gradually. The tenderness referred to is unrelated to the pain of re-warming; it appears equally in fingers that are re-warmed slowly and painlessly.

Local Redness.—Two small cubes of ice are laid flat upon the forearms for five minutes; the ice is then removed and both forearms are plunged into water at 30° C. (86° F.), the circulation to one arm being stopped by means of a pneumatic armlet distended on the upper arm. The cooled area on the arm to which the circulation is free becomes red, and this sharply outlined redness disappears gradually in the space of about ten minutes. If now the circulation to the second arm

is released the patch of redness presently becomes defined; this redness disappears in about two minutes after the circulation is released. Thus the reddening of the cooled forearm is not a direct response of the vessels to cold, for it can persist long after the skin has become warm again. It is due, so it is suggested, to the release of vasodilator substance or substances in the skin as a result of cellular damage; this substance is held *in situ* in the one arm, and its effects begin to decline only when, the circulation being restored, the substance begins to be removed (Lewis,* 1930).

Supercooling.—The skin, as will be described later in more detail, can be cooled below its freezing-point without freezing. It occasionally happens that such supercooling is followed by the formation of an acute wheal and flare on the skin (Lewis and Love, 1926). Such a reaction, were it a usual phenomenon, would in itself form conclusive evidence that the normal skin is directly injured by cold; for the reaction typifies the response to injury. But it is not a usual, it is an exceptional, phenomenon, depending on conditions that are still undefined. For that reason no further conclusion can be drawn from this evidence than that in subjects who display this conspicuous reaction cold can directly injure the skin.

Sensitivity to Cold.—A similar limitation applies to evidence derived from those who show extraordinary sensitivity to cold. In these a piece of ice laid on the skin for a minute is followed by conspicuous whealing. These subjects are rare; some of them suffer simultaneously from paroxysmal haemoglobinuria. The sensitivity of these skins to cold can be reproduced in other subjects by infiltrating the skin of the latter with serum from the original patient (Harris, Lewis, and Vaughan, 1929). The cases are remarkable in that whealing may be produced by temperatures as high as 18° C. (64° F.) or even, as in one case recently seen, as high as 25° C. (77° F.). I hesitate to use these two exceptional instances in evidence of the injurious effects of cold upon skins in general, in that they are not sufficiently understood and may be irrelevant; nevertheless, it is necessary here briefly to describe them, for it is also clearly possible that one or both may be no more than exaggerations of normal reactions.

Prolonged Cooling.—In recent observations I have found that if a normal hand or foot is immersed in water at 5° C. (41° F.) for a period of two hours, at the end of this time the reddened member is quite definitely swollen. The skin is less mobile; when thrown into folds these folds are broad; fine crinkling of the skin cannot be produced by manipulating it. The fingers may be swollen enough to prevent complete or easy flexion of the phalanges—either active or passive flexion. The pulps of the fingers are tender than usual. The backs of the hands may pit perceptibly; sometimes they pit to an extent that makes it clear that not only skin but subcutaneous tissue is involved. This swelling, which may amount to as much as 15% increase of volume, gradually subsides in a few hours. It is not the simple result of imbibition of water by the skin, though some imbibition by the horny layer undoubtedly occurs, for it happens in a hand protected by grease or by the wearing of a loose rubber glove. It can occur recognizably in hands immersed in water for periods of hours at temperatures as high as 10° or 15° C. (50° or 59° F.). This effect is attributed to an injury by cold; presumably the reaction, as is customary in injury, involves the release of H-substance, which in turn acts on the blood vessels. Here it should be stated that histamine (1 c.cm. of 1 in 30,000 base) injected into the skin of the forearm, deep to the skin, is followed by obvious subcutaneous swelling. If several such swellings are made near to each other, distinct pitting of the arm occurs with firm pressure. Thus release of a histamine-like substance would account for swelling both of skin and of subcutaneous tissue.

In the swelling of a hand to cold, as much as 50 c.cm. increase of volume may be found. It is obvious, therefore, that if several of the limbs become cold for a period of hours, as when immersed in sea water or when submitted to other comparable exposure, a very substantial amount of fluid might be lost from the circulation. Perhaps this reaction may account for or con-

tribute to a state of circulatory collapse in wounded or unwounded men exposed to severe cold.

The observations upon human skin here referred to are all such as arise soon after cooling, and are in the nature of acute reactions of the skin; the reactions illustrate the simplest forms of inflammation, characterized by heat, redness, and swelling. There are in addition a number of conditions associated with more prolonged actions of cold and with more prolonged reactions. These will be considered separately in the next lecture.

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FAILURE OF IN VITRO TESTS AS A GUIDE TO THE VALUE OF STORED BLOOD

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Many different solutions are still in use for the preservation of blood during storage. This state of affairs seems to be due mainly to the different criteria that are accepted for the comparison of one solution with another. It will be generally admitted, first, that the value of stored blood, contrasted with that of stored plasma or serum, lies chiefly in its content of erythrocytes, and, secondly, that the real worth of these stored erythrocytes must lie in their ability to survive in the recipient's blood stream after transfusion. Nevertheless, most workers have accepted changes occurring in the erythrocytes *in vitro* as an indication of the value of a given method of preservation—in some cases, at least, assuming that such changes are correlated with *in vivo* survival. The changes most commonly measured are alterations in the osmotic fragility of the erythrocytes and the rate at which spontaneous haemolysis occurs during storage.

Criterion of Positive Value of Preservatives

The power to inhibit haemolysis during storage is certainly a desirable property in any preservative solution, since there are limits to the amount of haemolysed blood that may be safely injected into the blood stream. This, however, is a negative property, correlated with safety but not necessarily with value. The only procedure which seems to us to provide a criterion of the positive value of a given preservative solution is to follow the fate of the transfused erythrocytes in the recipient's blood stream. The *in vivo* survival may be measured by the differential agglutination method originally described by Ashby (1919). In brief, this consists in the transfusion of cells of Group O (IV) to a recipient of Group A (II). After transfusion the recipient's blood contains two types of cells, O and A. The A cells can be "removed" with anti-A serum and the free (O) cells counted. Actually a small fraction of the A cells are not agglutinated, and constitute a "blank" value to be deducted from the total of free cells. By counting the number of donor cells surviving at different intervals of

* Correcting the interpretation of an earlier observation (Lewis and Love, 1926).

time after transfusion, a sufficiently accurate picture may be formed of the survival of the donor cells in the recipient's blood stream.

Using this method, we have tested eighteen different preservatives in a series of over 100 transfusions of stored blood of various ages. In each case the commonly accepted *in vitro* tests were also applied to the blood immediately before transfusion. Data are presented here which emphasize that these *in vitro* qualities are unsound guides to the actual survival of the same erythrocytes when transfused.

In Table I is set out the constitution of three different preservative solutions. In Table II observations on blood stored for varying lengths of time with these solutions are recorded. The *in vitro* properties of the erythrocytes of a given sample and the corresponding *in vivo* survival of the erythrocytes from the same sample are tabulated.

TABLE I.—Constitution of the Three Preservatives

(I) Citrate - Glucose (Rous - Turner):					c.cm.
3.8% sodium citrate	..	..	..	..	400
5.4% glucose	..	..	..	..	1,000
Blood..	..	..	..	..	600
(II) Citrate - Glucose:†					c.cm.
3% sodium citrate	..	..	..	..	100
30% glucose	..	..	..	..	10
Blood..	..	..	..	..	430
(III) Citrate - Sucrose (Wilbrandt, 1940):					c.cm.
10% sodium citrate	..	..	..	..	63
10.3% sucrose	..	..	..	..	375
Blood..	..	..	..	..	500

TABLE II.—Findings with the Three Preservatives described in Table I: (1) *In vitro* Tests. (2) *In vivo* Survival of Cells from the Same Sample. All the Recipients were Women suffering from a Secondary Anaemia

Time of Storage (Days)	1. In Vitro Tests			Recipient's Age (Years)	2. Survival In Vivo			
	Spontaneous Haemolysis (% Total)	Mechanical Fragility (% Free lib after Shaking)	Osmotic Fragility (M.C.F.) (% NaCl)		Percentage Survival at Various Intervals of Time			
					4-8 hours (%)	24 hours (%)	1 week (%)	1 month (%)
<i>Blood Stored in Preservative I</i>								
16	0.2	25	0.64	22	99	101	87	70
18	0.4	15	0.74	30	—	96	89	58
21	0.1	29	0.67	28	105	99	94	69
24	0.6	32	0.76	35	85	66	76	52
27	0.3	34	0.72	29	111	84	73	44
28	1.2	34	0.80	38	—	88	65	42
34	0.9	50	0.78	31	84	54	0	0
<i>Blood Stored in Preservative II</i>								
12	0.1	18	0.47	45	112	93	100	71
18	0.2	22	0.51	38	122	88	67	46
19	0.7	32	0.62	30	89	76	73	36
23	2.2	34	0.64	22	—	62	39	13
29	3.0	40	0.68	30	84	39	32	0
<i>Blood Stored in Preservative III</i>								
7	0.3	20	0.27	33	90	93	83	66
9	0.1	28	0.28	73	82	91	75	49
12	0.5	37	0.29	55	80	76	54	0
14	0.6	38	0.37	28	92	32	—	—
16	0.7	40	0.37	—	88	29	—	—

Explanation of Methods and of the Terms used in Table II

On the day of transfusion the stored blood to be tested was carefully removed from the refrigerator. The bulk of the supernatant plasma was siphoned off and the remaining cells from two or more bottles of identical age were pooled.

* DeGowin, Harris, and Plass (1940) have pointed out that Rous and Turner used a different salt of sodium citrate from that in present use. The solution employed by us contains a higher percentage of sodium citrate than the original mixture.

† This is a minor modification of the preservative solution recommended in the Medical Research Council's War Memorandum No. 1.

A sample of this concentrated cell suspension was kept for the performance of *in vitro* tests, and the rest was used for transfusion. Three *in vitro* properties were measured:

1. The Degree of Spontaneous Haemolysis—i.e., the amount of free haemoglobin in the plasma expressed as a percentage of the total haemoglobin content of the sample.

2. The Increase in Haemolysis following a Standard Amount of Shaking in the Presence of Glass Beads.—The figures in Table II express the percentage of haemoglobin (Haldane) found in the plasma after shaking a sample of standard concentration. Previous workers have pointed out that the fragility of erythrocytes to shaking increases during storage, but the relationship of this increasing "mechanical fragility" to subsequent *in vivo* survival of stored erythrocytes has not previously been studied. It is interesting to note that Rous and Turner pointed out in 1916 that there is no constant relation between the mechanical and osmotic fragilities of erythrocytes.

3. Fragility to Hypotonic Saline.—In the table only the mean corpuscular fragility (M.C.F.) is recorded—i.e., the percentage NaCl in which 50% of the cells lyse (Dacie and Vaughan, 1938).

After the preliminary withdrawal of a sample of blood from the recipient the transfusion was begun, and was usually completed in two hours or less. A second venous sample was obtained five to ten minutes after the end of the transfusion. Further samples were taken four to eight hours after the transfusion, at twenty-four hours, and thereafter at suitable intervals.

The number of donor cells found in the first sample after transfusion was taken as 100% survival. Subsequent counts were expressed as percentages of this figure. To take this figure as 100% is, of course, not strictly accurate. If the

transfusion causes an increase in blood volume, and this is subsequently readjusted (i.e., after the collection of the first sample), the number of donor cells will appear to increase. Conversely, if destruction of erythrocytes has already occurred by the time that this sample is taken, to reckon as 100% the figure found makes survival seem better than it really is. From Table II it will be seen that a sample obtained four to eight hours after the transfusion often shows a relative increase of surviving cells compared with the number found immediately after transfusion and that destruction is dominant with the older bloods only. It may

be assumed from this initial relative increase that considerable destruction does not occur during the first few hours after transfusion, except with the older bloods, and the influence of this factor is therefore small.

A further check upon the actual number of donor cells found in the recipient's circulation was made by counting the red cells and measuring the volume of the blood transfused; then, by taking a figure for the recipient's blood volume based on the known height and weight, the expected concentration of donor cells in the recipient's blood stream could be calculated. In this way it could be demonstrated that approximately the expected number of donor cells appeared in the recipient's blood stream.

Results

The findings set out in Table II are representative of the larger number of samples that have been studied. In order to facilitate comparison the *in vitro* qualities of four samples stored with each of these preservatives have been averaged and set against the average *in vivo* survival of the same samples (arbitrarily taken at one month after transfusion) (see Table III). The ages of the samples stored with

TABLE III

Preservatives	In Vitro Tests			Survival In Vivo
	Spontaneous Haemolysis (% Total)	Mechanical Fragility (% Total)	Osmotic Fragility (M.C.F.) (% NaCl)	Percentage Survival at One Month
I. Citrate-Glucose (Rous-Turner) ..	0.5	38	0.74	54
II. Citrate-Glucose (usual) ..	1.5	43	0.61	24
III. Citrate-Sucrose (Wilbrandt) ..	0.6	51	0.34	0

In the above table average figures for *in vitro* findings are compared with *in vivo* survival. For this comparison 4 examples of storage with Preservative I (at 18, 21, 24, and 28 days) have been contrasted with 4 examples with Preservative II (at 18, 19, 23, and 29 days). In the case of Preservative III, with which survival is so much inferior, 3 younger samples (12, 14, and 16 days) were chosen for comparison.

Preservatives I and II are comparable, but in the case of Preservative III younger samples have been chosen because of the much poorer survival. Since the cases are representative of a larger series that has been studied, the following conclusions seem justified:

The survival of transfused cells is better after a given period of storage with Preservative I than with Preservative II and is much less good with Preservative III.

The osmotic fragility of stored erythrocytes is no guide to their subsequent *in vivo* survival. It might appear from this small series that there is even an inverse correlation between osmotic fragility and survival; findings with other preservatives, however, show that there is no constant relation.

A small amount of haemolysis in a given sample does not necessarily imply good *in vivo* survival—e.g., Preservative III.

Fragility to mechanical trauma is only a very approximate guide to survival.

Other Preservatives

Other anticoagulant solutions studied in this way include heparin, sodium citrate with and without glucose in different concentrations and dilutions, "I.H.T.,"* citrate-dextrin, and combinations of sucrose, glucose, and sodium citrate; defibrinated blood was also tested. The findings with these other systems support the contention that fragility to hypotonic saline is no guide, and other commonly measured *in vitro* properties are at best a poor guide, to subsequent survival.

* "I.H.T." is the name given to an anticoagulant solution containing 0.5% sodium citrate, 0.7% NaCl, and traces of other salts; this solution has been much used in Russia (Bagdassarov, 1937).

On the basis of *in vivo* survival tests the preservative solutions used fall into two main groups: (1) systems containing no glucose; (2) systems containing glucose.

1. The first group includes heparinized blood, defibrinated blood, blood stored with "I.H.T.," with sodium citrate, and with citrate-sucrose and citrate-dextrin mixtures. After the transfusion of blood previously stored with any of these anticoagulant solutions for less than seven days the erythrocytes are found to survive extremely well—i.e., virtually as well as those of fresh blood. (After a fresh-blood transfusion it is found that the donor cells are slowly and steadily eliminated over a period of approximately 100 days—i.e., about one-third are eliminated during each month after transfusion (Ashby, 1919; Martinet, 1938).) Subsequently deterioration is rapid; and after two weeks' storage the majority of the transfused cells are usually eliminated from the recipient's circulation within twenty-four hours of the transfusion. To particularize, blood stored with a large relative volume of 3% sodium citrate falls below the average for this group, whereas blood stored with dextrin survives a little better than the average.

2. In general, blood stored with glucose survives extremely well after transfusion—i.e., virtually as well as fresh blood—when it has been stored for less than fourteen days. (This is a slightly more conservative estimate than one previously made with a similar type of anticoagulant solution (Mollison and Young, 1940).) There is a progressive deterioration during the third week of storage, but blood stored with glucose for three weeks is usually not completely eliminated from the recipient's circulation for more than a month after transfusion. These remarks apply to citrate-glucose mixtures in which the volume of preservative solution is small compared with the volume of blood (e.g., Preservative II). Survival was not found to be improved by increasing the concentration of glucose in the same relative volume of preservative solution. By adding a relatively greater volume of 5.4% glucose, however, survival is improved, and when the proportions of Preservative I are reached a clear-cut superiority is demonstrable. Thus after three weeks' storage with Preservative I survival is still almost as good as if the erythrocytes were fresh. It might appear from this that dilution is one of the factors responsible for the superiority of the Rous-Turner preservative solution. However, in the absence of large amounts of glucose, dilution was found to have an unfavourable effect upon survival, and it therefore seems that the problem requires further investigation.

The addition of sucrose to various citrate-glucose preservative solutions has a favourable effect upon the osmotic fragility of the stored erythrocytes but does not significantly influence their subsequent *in vivo* survival.

Practical Application of these Results

Owing to the low protein content of plasma obtained from blood stored with Preservative I it is not expected that this type of preservative will come into general use. In any case, the solution has to be modified if it is to be used directly for transfusion, because of the large amount of citrate it contains. DeGowin and Hardin (1940) have reported very satisfactory results from such a modification. Storage of blood with Preservative II gives adequate preservation for two weeks and has the advantage of providing plasma with a protein content of approximately 5 grammes %. This preservative solution is virtually the same as that at present in use at the Medical Research Council's Blood Supply Depots, and, as has been mentioned above, it does not seem to be improved by increasing the concentration of glucose.

It may be well to call attention to a few instances from the literature in which fallacious conclusions have been

STORED BLOOD: FAILURE OF IN VITRO TESTS AS GUIDE

BRITISH
MEDICAL JOURNAL

drawn from *in vitro* tests, and to emphasize that some of the solutions that have been recommended are not in fact the best for preservation. Thus Rous and Turner (1916) concluded that sucrose was practically as good a preservative as glucose for human erythrocytes because of its power to inhibit haemolysis during storage. As we have shown, sucrose is an inferior preservative, judged by its failure to improve *in vivo* survival. Maizels and Whittaker (1939) suggested the use of dextrin because it, too, inhibits the haemolysis of blood during storage. *In vivo* survival tests show that the use of dextrin during storage has only a very slight effect on the survival of the subsequently transfused erythrocytes.

In the selection of the optimal citrate-glucose preservative solution, osmotic fragility tests are, as we have shown, positively misleading. Nevertheless, such tests have been adopted as the main criterion of value by many workers (Bushby, Marriott, Kekwick, and Whitby, 1940; Denstedt, Osborne, Roche, and Stansfield, 1941; Dubash, Clegg, and Vaughan, 1940); the preservative solutions recommended by these authors therefore contain only small amounts of glucose.

It is clear that no new preservative solution should be recommended until its effect on the subsequent *in vivo* survival of the erythrocytes has been determined.

Fate of "Fragile" Cells after Transfusion

A corollary of the view that the osmotic fragility of stored erythrocytes is an indication of their ability to survive *in vivo* must be that cells with an increased osmotic fragility soon rupture when introduced into the recipient's blood stream. Such a view has been expressed by Denstedt *et al.* (1941), for example. If this were true there would be two possible findings immediately after the transfusion of blood with a raised osmotic fragility. Either the recipient's blood stream would contain numerous fragile erythrocytes, in which case the osmotic fragility curve of the recipient would be found to be altered, or, if the donor cells had already ruptured, there would be free haemoglobin in the recipient's plasma and *in vivo* survival tests would show far less than the expected number of donor erythrocytes.

In practice neither of these possibilities is observed. On the contrary, first, transfusion of blood with an increased osmotic fragility does not affect the fragility curve of the recipient; secondly, following the transfusion of such blood, haemoglobinaemia is not observed; and, further, the expected number of donor cells is found, at least temporarily, in the recipient's blood stream. From this one can only conclude that the osmotic fragility of the donor cells has undergone a considerable change.

The above statement is based upon observations with preservatives containing glucose. For example, when blood that had been stored for twenty-one days in Preservative I was transfused, the curve of osmotic fragility of erythrocytes taken from the recipient, both before and after the transfusion, was estimated. Although the M.C.F. of the donor erythrocytes had been found to be very high (i.e., 0.78% NaCl) immediately before being used for transfusion, the osmotic fragility curve of samples taken from the recipient before and after the transfusion showed no difference. The transfusion occupied approximately forty-five minutes, and the sample was obtained about five minutes after the transfusion had been completed. Both before and after transfusion, in estimating the osmotic fragility, it was found that haemolysis began in 0.46% saline and that 50% of the cells lysed in 0.39% saline.

The *in vivo* survival test showed that the recipient's blood stream contained approximately 560,000 donor cells per c.mm. (the expected number) immediately after the trans-

fusion, and thus the only possible conclusion is that the donor cells must have undergone a change in osmotic fragility.

This reversal of changes in osmotic fragility may also be studied *in vitro*. For instance, in the case referred to above a sample of the donor cells was placed in fresh compatible plasma for one hour and its osmotic fragility was then re-estimated. It was found that the M.C.F. of the cells had practically reverted to normal (actually 0.45% NaCl). This effect was found to be constant with this particular preservative. It should be pointed out that although the majority of the cells in a given sample succeed in re-acquiring an approximately normal resistance to hypotonic saline, a few may rupture. The most likely explanation of this reversal in osmotic fragility is that glucose is washed out of the cells when they are placed in a solution of relatively high tonicity at room temperature.

Reversal of osmotic fragility was not found to occur with blood stored in certain other preservatives. For instance, when erythrocytes that had been stored with Preservative III were placed in fresh plasma their mean corpuscular fragility did not appear to be affected. This is probably because alterations in the base content of the erythrocytes have occurred and because base is not so mobile as glucose. Nevertheless, the fact that the M.C.F. of stored erythrocytes can be altered in certain circumstances by allowing them to stand in fresh plasma is a further reason for regarding the osmotic fragility, as usually measured, as being an artificial criterion of value.

Summary

The *in vivo* survival of the erythrocytes of stored blood following transfusion cannot be predicted from a knowledge of the results of the commonly accepted *in vitro* tests made up the sample. The results of work based upon such *in vitro* tests may therefore be completely fallacious.

Many different preservative solutions have been tested for their effect on the *in vivo* survival of the subsequently transfused erythrocytes. Some details of results obtained with three of these solutions are given and results with the rest are summarized.

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The American Film Centre, 45, Rockefeller Plaza, New York City, has established a section on films in health education and medicine under the charge of Dr. Adolf Nichtenhauser. The new section will be a clearing-house and information centre on the use and production of technical films of this character. From it the centre will evaluate existing health films in collaboration with health experts and publish lists of recommended films. Attention will also be paid to the technical medical film, especially with regard to its use in medical schools. The American Film Centre is an educational organization established three years ago and supported by the Rockefeller Foundation, which has now made a three-year grant towards the Section on Health and Medical Films.

"WOUND PHAGEDAENA"**REPORT OF TWO CASES**

BY

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AND

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The term "phagedaena" suggests to the modern student of surgery a sloughing condition of the male external genitalia arising in connexion with a venereal infection and caused by anaerobic organisms. For many past generations of surgeons, however, it had a much wider application, and was one of the varieties of "hospital gangrene"—that dreaded miscellany of septic infections now happily almost unknown. For the reasons stated later we consider that the following two cases may be fitly described under this title.

Case Reports

Case 1.—A man aged 46 had appendicectomy performed (A. C.) for acute appendicitis on December 8, 1939. His illness was of seven days' duration and the appendix was perforated, so that it was considered advisable to drain both the abdomen and the wound. The wound discharged, but the temperature remained normal until the eleventh day, when a rapidly spreading inflammation of the edges became apparent. The temperature became irregular (about 101°) and later intermittent with a maximum of 100°, and there was pain in the wound region. By the eighteenth day three-quarters of the area of the abdomen was involved, the skin and subcutaneous tissue having disappeared entirely, leaving the muscle exposed. A further area around was swollen and purple, and discharged pus at many separate points: this area was very tender. Pus taken from the wound on the eighteenth day was examined (Dr. A. Beck) and showed streptococci, Gram-positive diplococci, and *B. proteus*. The streptococci were non-haemolytic, and grew both aerobically and anaerobically. In view of this report and of Meleney's work, dressing with a zinc peroxide cream was tried, but the condition spread very rapidly and the patient died on the twenty-first day after operation.

Case 2.—A man aged 54 had had an empyema operation in 1933, and discharge from the scar had recurred annually ever since. Two weeks before admission he had had incision and drainage at another hospital; the wound was still discharging. On examination on September 7, 1939, two soundly healed scars were seen over the left posterior axillary line. A little further back there was a granulating area about two inches in diameter and apparently healthy; still further back was a small ulcerated area with sloughing edges. X-ray examination (Dr. J. Grieve) showed neither residual empyema nor sequestra in the resected rib. There was no evidence of gas in the tissues. A tentative diagnosis of post-operative cutaneous gangrene was made. Under a general anaesthetic the edges of the ulcer were excised (A. D.). No trace could be found of any sinus leading into the chest.

After the operation a slow painful inflammatory process with much sloughing continued to spread, through the skin and subcutaneous tissues of the back. Treatment with uleron, and later with sulphamildic, had no effect; local application of orthoform appeared to lessen the pain, which was severe. In a few weeks the condition had reached the stage shown in the accompanying illustration. The whole of the area originally involved had healed, but the inflammation had spread at the same time in a radiating manner across the back. The appearance was that of an immense carbuncle—patches of purple skin riddled with discharging spots and in places undermined. There was no special tenderness at the edges, but severe pain was felt in the affected area. A moderate secondary anaemia, a leucocyte count of 7,200, and a negative Wassermann reaction were observed.

The pus was examined (Dr. G. A. Cary Lynch) on September 28. Aerobic culture yielded *B. proteus* and other organisms,

but no haemolytic streptococci. Anaerobic culture gave a free growth of non-haemolytic streptococci. On repetition a week later, *B. proteus*, diphtheroid bacilli, and non-haemolytic streptococci were found on aerobic culture, with a feeble growth of streptococci only on anaerobic culture.

Under treatment with zinc peroxide considerable healing resulted, but the inflammatory process was never abolished at all places at once. A serpiginous ulceration continued for months, the patient's condition gradually deteriorating. There were only occasional slight rises of temperature. Copious sputum developed: this was found to contain streptococci and numerous other organisms but no tubercle bacilli. The streptococci were not strictly anaerobic, but grew better aerobically.

By April, 1940, the patient's condition was very low. On account, no doubt, of the long-continued pain and toxæmia, symptoms of confusional insanity appeared, and it was obvious



Photograph of Case 2, showing healed area, area of active ulceration, and surrounding purple area of skin.

that any measure which held out a hope of cure was justified. A very wide excision of the two remaining active areas was carried out (A. D.). Each area was the size of the palm of the hand; all tissue down to muscle was removed, and the excision was carried well beyond the surrounding reddened area of skin. Improvement was very rapid, the mental symptoms disappeared, and the patient was discharged three months later practically healed. He was seen on June 29, 1941, and was then completely healed and back at work. The scar covered the whole left half of the back, was pliable and healthy, and gave him no trouble.

Discussion

Somewhat similar cases have been described by Meleney (1935) under the title of "post-operative progressive bacterial synergistic infective gangrene of skin," by Langston (1938) as "progressive streptococcal ulceration," and by Mitchiner and Cowell (1939) as "spreading subcutaneous or cutaneous gangrene." The last-named authors identify the condition with "hospital gangrene."

Clinical Features.—The articles referred to all give such clear accounts of the clinical features that these need only

be summarized briefly here. The time of onset is from a few days to two weeks after an operation for an infective condition, or the process may arise at any time in connexion with a discharging sinus. The edges of the wound and surrounding area quickly assume the appearance of a large carbuncle. Although suppuration is profuse there is little general reaction. Great tenderness of the inflamed area is usual, unremitting pain is characteristic, and there is severe secondary anaemia.

Course.—The condition may be acute or chronic. Case 1 was so rapidly progressive as to be almost inevitably fatal. Chronic cases are characterized by the slow progress of the lesion and the tendency to heal at one area while spreading at another. Meleney (1935) reports one case of spontaneous healing after twenty-six months. Usually, however, the patient is worn out mentally and physically by pain and toxæmia. Fraser (1919) remarks that in gas gangrene the mind remains acute to the end, in striking contrast to the mental confusion in Case 2.

Prognosis.—There are not enough data to enable us to make an accurate estimate of the mortality, but published accounts leave an impression that it is about 50% whatever treatment is adopted.

Bacteriology.—In our cases non-haemolytic anaerobic streptococci with *B. proteus* were the significant organisms. The streptococci became aerobic later—a tendency noted by Douglas, Fleming, and Colebrook (1920). These workers found that practically all streptococci in infected wounds were anaerobic at first, and emphasize the necessity for anaerobic culture in all such cases. Milian (1930) and Nativelle (1930) found a bacillus of the *proteus* group with streptococci in cases of cutaneous gangrene. They consider that streptococci facilitate the action of the *B. proteus*. Diphtheroid bacilli were reported by Meleney and in our Case 2, while virulent diphtheria bacilli were present in Langston's. Douglas, Fleming, and Colebrook (1920) reported true diphtheria bacilli in 4 of 61 infected wounds, while Fleming (1919) found that they had a powerful stimulating action on streptococci. While, therefore, various organisms and combinations of organisms may be responsible, both our cases were due to an association of non-haemolytic streptococci with *B. proteus*. The diphtheroid bacilli were not an essential part of the infection, being absent in Case 1 and present only in the later stages in Case 2.

Ætiology.—The reasons for the establishment of this particular variety of infective process are obscure. The organisms were probably present in the original infection, and M.R.C. War Memorandum, 1940, No. 2 (p. 2), draws attention to the importance of the presence of necrotic material or foreign bodies in the establishment of anaerobic infections. Cross-infection may be excluded, since the cases were treated by us separately in different hospitals and without any other similar cases occurring in either.

Investigation.—This concerns the surgeon in so far as he provides the bacteriologist with his original material. The recent memorandum recommends the swab, and this was used in the present cases. Since the process spreads centrifugally and not deeply, the advice given to take material from the deepest part scarcely applies. The spreading edge is the most suitable site for obtaining a specimen. The memorandum makes no mention of examination of excised tissue such as was performed by Meleney. It appears to us that such examination might enable the bacteriologist to distinguish between contaminants and organisms actively invading the tissues.

Diagnosis

We consider that these two cases are examples of a well-defined clinical entity whose essential features are: (1) it

arises in connexion with an infected wound; (2) anaerobic streptococci, later becoming aerobic, and *B. proteus*, are present; (3) the lesion spreads through skin and subcutaneous tissues, but not deeper. These considerations enable it to be distinguished from most of the other conditions mentioned by Stewart-Wallace (1935)—namely, common wound infection, erysipelas, ecthyma gangraenousum, specific infections, amoebiasis cutis, and fusospirochaetal infections.

Gas Gangrene.—Although two Medical Research Council reports (1919, No. 39; 1920, No. 57) on anaerobic wound infections were published after the last war, one detailing 65 cases, the condition was not clearly differentiated from gas gangrene. Fraser describes "localized anaerobic infection in wounds" and "slowly spreading anaerobic infections," but regards these as mild varieties of gas gangrene; he does not give a separate description such as would identify them with the present cases.

Progressive Post-operative Gangrene of Skin.—This seems to be the condition most closely allied to our cases. The clinical features of Stewart-Wallace's case—a spreading carbuncular process—were in so many respects like those in our second case as to leave little doubt that these were examples of the same condition. Unfortunately the cultural characteristics of the streptococci in his case were not mentioned. Cox (1936), in a case described under the same title, found a streptococcus that was both aerobic and anaerobic, but states that the lesion was strictly confined to the skin. Langston states emphatically that his case was not one of gangrene, but the organism appears to have produced a lesion in the abdominal walls of guinea-pigs very similar to that in our first case. It appears to us that "post-operative progressive bacterial synergistic gangrene of skin" (Meleney), "spreading subcutaneous or cutaneous gangrene" (Mitchiner and Cowell), and probably "progressive streptococcal ulceration" (Langston) are all conditions essentially similar to those of our patients, and closely allied to one of the varieties of "hospital gangrene." We suggest "wound phagedaena" as a more suitable and concise term than any of the above, including all these conditions and yet excluding the others mentioned in the previous section.

Treatment

Though Meleney and Langston have had success with local application of zinc peroxide, this was unavailing in our cases, as were both uleron and sulphanilamide internally. Incomplete excision is useless, but it is to be noted that the first, evidently incomplete, excision in Case 2 did not accelerate the infective process as it might have been expected to do.

We entirely agree with Stewart-Wallace that there is no doubt at all that the correct treatment is wide excision. Probably with diathermy excision there would be less risk of leaving behind an area of tissue still containing active organisms. In view of the recent activity in research into the chemotherapy of wound infections this opinion may have to be revised soon, but any alternative treatment would have to be well founded in view of the excellent results of a well-planned excision.

Summary

Two cases are reported of a spreading infection of skin and subcutaneous tissues arising from an infected wound or sinus.

The condition appears to be one manifestation of a clinical entity, including "post-operative cutaneous gangrene" and some other similar conditions, closely related to the "phagedaena" of former times.

The infecting agent in each case was an anaerobic streptococcus associated with *B. proteus*.

One case was hopeless from the start; in the other a cure was effected by a wide excision of the lesion.

"Wound phagedaena" is suggested as a suitable name for the condition.

We have to thank our colleagues mentioned in the text for their special examinations and reports: Dr. D. C. Lamont, M.O.H. Burnley, for permission to publish Case 2; and Mr. H. Lawrie, B.Sc., for the clinical photograph.

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ENURESIS IN ADOLESCENTS

BY

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The Subjects and their Surroundings

The subjects of these observations were boys whose ages ranged from 14 to 20 years. They were members of a farm training colony, some 300 strong, to which they had been sent by the Public Assistance Committees of England and Wales. Most of them had been brought up in institutions, and many of them had been "problem cases." In general the boys were of poor type and intelligence, inclined to lack discipline and to show anti-social traits. Many of them had started life with the adverse bias of illegitimacy, separated parents, or an unkind step-parent. The boys at the colony received training to fit them for farm, gardening, or domestic work or boot-repairing. Positions were found for them in one of these spheres at the completion of their course. They played organized games daily, with swimming in the summer, and went to the pictures once a week, on Saturdays. A few of them had started model aeroplane and fretwork clubs. The colony was run rather along Public School lines, being divided up into several houses, with the usual system of internal government. Everything was done to kindle a feeling of responsibility and public spirit, and much of the government of the colony was in the hands of the boys themselves.

Twenty-one per cent. of them were bed-wetters: this high figure is explained by the fact that the colony is one of the few in England admitting such boys, who thus tend to gravitate there. Most were intractable cases who still wet their beds when admitted to hospital in different and possibly happier surroundings. Occasionally some went home, but the trouble nearly always persisted. It was the custom to segregate the enuretic boys in a separate dormitory with beds equipped with rubber sheets. In an effort to avoid a wet bed later in the night, they were waked two hours after going to bed and made to pass water. Thus it was probable that the conditions tended to encourage

enuresis rather than otherwise, in view of the segregation at night and the constant reminder, in being called, that the worst might happen. Alongside this camp there happened to be a colony of forty Jewish refugee boys of similar ages. They were mostly the sons of Austrian artisans and small shopkeepers. These boys were of good intelligence and physique, and when competing in the sports against the boys in the colony had won all the cups and prizes. Enuresis among them was unknown.

Description of Cases more fully Investigated

Twelve boys from the colony together with one from an external source were admitted to hospital for a more detailed investigation. In addition to careful histories and physical examinations, perianal swabs were taken for threadworms, the lumbar spines were radiographed for spina bifida, and an investigation was made to determine whether the boys passed an abnormal volume of urine by day or night. Intravenous pyelography was performed, and each boy was sent for interview by a psychologist. The method employed to determine whether they passed an abnormal volume of urine consisted, at first, in weighing the bed-clothes before and after sleep. This was found to be not very satisfactory, and eventually a comfortable bag for collecting urine was fitted on before they settled for the night. Ten of the boys had enuresis in hospital.

The average age of the subjects was 17, the youngest being 14 and the oldest 20. Ten of them had unsatisfactory family histories, such as the early death of the parents, a broken home, or a father who suffered from "shell shock." There was a family history of enuresis in only one case. All but one were dull, and even this boy was emotionally immature. This dullness was quite obvious on simple conversational contact, and required no special test for its demonstration. All the boys, except one whose development was retarded, were physically normal. Threadworms were found in three of them. There was no significant chemical or cytological abnormality in their urine, of which they passed a normal volume both by day and by night. Intravenous pyelograms showed normal urinary tracts in every case. Radiographs of the lumbar and sacral spines demonstrated some abnormality in nine out of the thirteen boys. This was frank spina bifida occulta in seven, but a congenital abnormality of the first piece of the sacrum was reported in one, and flattened vertebral bodies in another. The incidence of congenital abnormalities is greater than even the most generous estimates for healthy people.

Common factors in the histories and examinations that were noted, among others, were: (1) an unsatisfactory family history, often with some disruption of the home; (2) poor intelligence; (3) normal physique; and (4) a congenital spinal abnormality.

Spontaneous Course of the Disorder

A record of the number of wet beds caused by each of three boys was kept for a period of rather more than two years, during which they were untreated. This is shown in Fig. 1. It will be seen that the disease follows an irregular course, being slightly less troublesome in midsummer. In the case of boys C. and M. there was an exacerbation in the early part of 1940 corresponding to the intense cold at that time. Boy W., however, seemed to be unaffected by this. The course of the illness is not unlike that of epilepsy, a similarity which fits in with the low level of intelligence of most of the boys. The frequency of spina bifida occulta further suggests some abnormality in the central nervous system. The demonstration of spontaneous remissions naturally raises the question of any treatment used. If a

* With a grant from the Medical Research Council.

spontaneous remission coincides with the administration of a particular drug or treatment, improvement may be wrongly attributed to the latter.

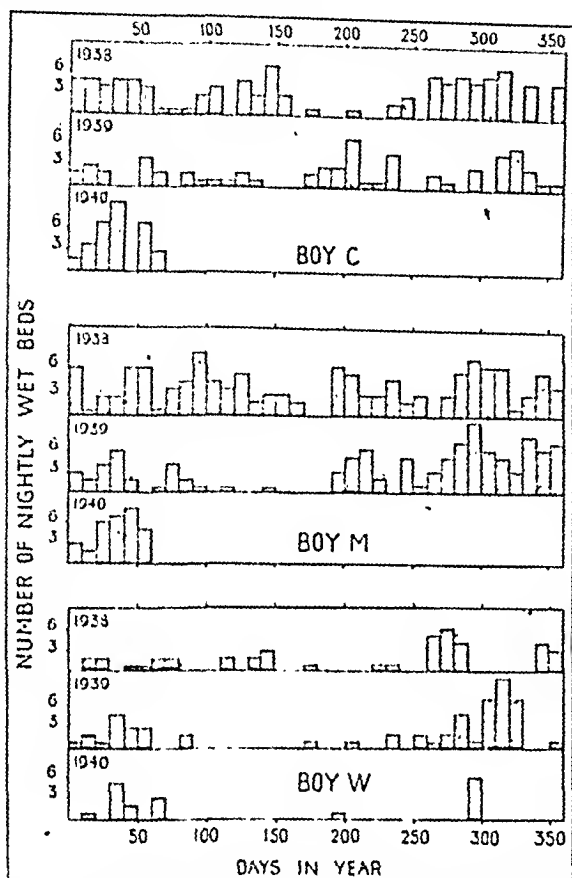


FIG. 1.—Spontaneous course of enuresis in three adolescent boys. The uprights represent the number of nights the boy wetted the bed during each ten-day period.

Effect of Various Drugs

Two groups of six boys sleeping on opposite sides of the same dormitory were investigated. The weekly number of wet beds was collected and expressed as a percentage of the total possible number, assuming each boy had wet his bed every night. The two groups were studied continuously for a year. At night before going to bed each group was given a drug alternately, the other having inert control tablets similar in size, shape, and colour. At the end of the week the conditions were reversed. Occasionally no drugs or control tablets were given either group of boys. One of the masters or prefects at the colony gave the drugs. Once when it was suspected that they were not being administered, methylene-blue tablets were given, and a random boy chosen who urinated in our presence. The colour of his urine showed that the suspicion had been groundless. The drugs were given in doses which are the maximum or above the maximum of those in common use (see Table).

Fig. 2 shows the number of wet beds throughout the experimental time, for both treated and control groups; the mean weekly temperature is included in the graph. Just

as with the three individual boys, it seems as if the disease runs an irregularly rhythmic course with no apparent relation to drug therapy, and is only slightly affected by the temperature of the weather at the time. The number of wet beds in both groups was nearly equal, the control group having 45% of the total possible, and the group receiving supposedly active drugs 46%. None of the drugs given had

Table showing Effect of Drugs upon a Group of Six Enuretic Boys

Drug	Dosage in Grammes	Better Weeks	Worse Weeks	Weeks Administered, Inclusive
Trasentin (Ciba)	0.075-0.225	3	3	2nd to 7th
Ephed. sulph.	0.06-0.24	3	2	8th to 12th
Ext. bellad. succ.	0.06-0.24	2	2	13th to 18th
Ext. bellad. succ. 0.06 gm. and ephed. hydrochlor. 0.06 gm.	1-4 tablets	2	1	19th to 21st
Phedracin (Ciba)	0.4-0.6	0	3	22nd to 24th
Methylatropin. nit. (eumydrin, Bayer)	0.003-0.005	2	1	26th to 28th
Physostig. salicyl.	0.0013-0.0026	1	1	29th and 30th
Theophyll. mono-ethanolamin. (theamin, Lilly)	0.2-0.4	3	1	31st and 32nd, and 34th and 35th
Mersalyl 0.08 gm. and theophyll. 0.04 gm.	2 tablets	1	1	36th and 37th
Methylthionin. chlor.	0.3	1	1	38th and 39th
Barbitone soluble	0.6	1	1	40th and 41st
Sod. diphenylhydantoin (solanatoin, Glaxo)	0.2	2	1	42nd to 44th

a definite action on the enuresis. This was most strikingly shown in the case of belladonna, in spite of its reputation in this disease; for when the drug was given in the massive dose of 4 grains the treated group became worse whereas the control group improved. During that week one of the treated boys showed symptoms of atropinism and became manic. The table shows these results and indicates the weeks in which each drug was given. In addition to the drugs mentioned in the table, amitil (Lilly), prominal (Bayer), pseudo-ephedrine (Burroughs Wellcome), and torantil (Bayer) were also tried without success.

Two diuretics were administered—theamin, a xanthine derivative, and mersalyl, an organic mercury compound combined with a xanthine derivative. The absurd result was obtained that improvement occurred in three out of four weeks when mersalyl was given, deterioration taking place during the other week.

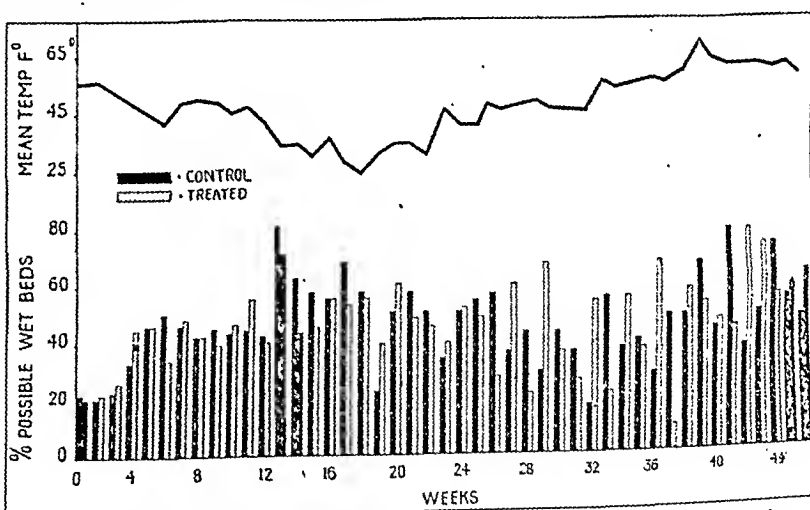


FIG. 2.—Frequency of enuresis in treated and untreated subjects. The boys given drugs wetted the bed just as often as the controls. There was no close correlation between frequency of enuresis and mean temperature.

Summary

Enuresis in a group of adolescents in a farm training colony was usually accompanied by unfortunate home conditions, poor intelligence, a normal physique, and a high incidence of occult spinal deformities.

The disease followed a rhythmic but irregular course; it was more frequent in cold weather, but the correlation was not close.

In a controlled therapeutic experiment on a group of twelve boys a series of drugs, including belladonna and ephedrine, was tried. None had any effect on the enuresis.

We are indebted to Lieut.-Col. R. C. Grant for generously assisting us with the records of these cases.

A CASE OF COMBINED INTRA-UTERINE AND EXTRA-UTERINE PREGNANCY

BY

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The following case of combined intra-uterine and extra-uterine pregnancy is reported because of the rarity of the occurrence.

Case History

The patient comes from a village some forty miles away where we have one of our district maternity centres. I visit this centre every fortnight to hold a general clinic and examine any abnormal obstetric cases, which the trained African midwife collects for me in her routine ante-natal examinations. In this way I had the good fortune to examine the patient three times before she finally came into hospital here, though on none of these occasions did I suspect the true diagnosis.

Ante-natal Observations.—She was an African woman aged about 30, who had had three normal pregnancies and labours, the last some eighteen months previously. I first saw her on September 5, 1940, and diagnosed a pregnancy of four months' duration, though she said she was still having short periods at that time. I was next asked to see her on February 20, 1941, and found on abdominal examination a uterus of about nine months' gestation with swellings somewhat resembling a foetal head on each side of it. I considered the possibility of twins, but the findings did not really support this diagnosis; so, remembering the clinical axiom that common conditions commonly occur, I made the provisional diagnosis of fibroids, though I was puzzled at not having recorded any suspicion of them at my previous examination. I advised her to come into hospital a little later.

From Delivery to Laparotomy.—She went into labour on March 5, and was delivered in the maternity centre by the midwife after a normal labour; the baby was a fully developed boy weighing 5½ lb. I saw her, however, on March 6, and found the para-uterine swellings still present; I still thought they might be fibroids, but regret that I made no more than a perfunctory examination, as all seemed well. The next day the patient began complaining of abdominal pain, which slowly increased but was not severe enough to prevent her being discharged from the maternity centre a week later. The pain continued to grow worse, and she came into the central hospital here on account of it on March 27. The baby was somewhat under-nourished, as no breast milk had come in. On examination the woman was obviously ill and in pain. There was a fair pulse and some pallor. On palpation of the abdomen and vaginal examination I could come to no other conclusion but that there was an intraperitoneal extra-uterine foetus present, and I was almost convinced that I heard a foetal heart. I left her to recuperate from the journey, and performed a laparotomy the next day.

Findings at Operation.—The peritoneal cavity was filled with straw-coloured clear fluid containing large fibrinous clots. Much of the peritoneum and the whole of the great omentum were covered in a thick jelly-like material. A foetus was lying free among the coils of intestine and there was a fair pulsation in the cord. I delivered the baby, and found the ruptured sac arising from the placenta, which was attached by what amounted to little more than a thick pedicle; this sprang from the right broad ligament just behind the fimbria in the position of the ovary, there being no direct connexion with the Fallopian tube. There were also two thick bands of adhesions running

from the great omentum to the sac and ending in two subsidiary placentae near the main one. The uterus appeared to be involuting normally. Removal of the sac and placentae was not difficult, and the patient is now making a good recovery. The baby was a boy weighing 6 lb., and was without evident abnormality save for clots of what seemed to be fibrin adherent to the skin in places. It breathed weakly for about half an hour, but all the usual care could not maintain life.

Commentary

The frequency of extra-uterine pregnancy is not easy to ascertain, but Schumann (1921) calculated the frequency for one year in one town to be one in every 303 pregnancies. Mall (1915) further calculates that 1% of extra-uterine pregnancies go to full term, and notes that the foetus in these cases is especially liable to maldevelopment. Cases of extra-uterine associated with intra-uterine pregnancy—referred to by Parry (1876) as combined pregnancy—have been reported a number of times, 306 having been traced by Subodh Mitra (1940); but only ten of these (according to Novak, 1926) have resulted in the birth of both children alive.

Although no ovarian tissue was found by the pathologist in the wall of the amniotic sac, the position of the placental site in this case suggested strongly that the pregnancy originated in the ovary. Ovarian pregnancy is the least common type of extra-uterine gestation, only forty-one recorded cases having been traced by Lockyer (1917); but Williams (1923) considers that a higher proportion of ovarian pregnancies go to full term than do pregnancies of tubal origin. It is of interest to note, too, that no long period of sterility preceded this pregnancy; this perhaps suggests that the mechanism believed to be largely responsible for tubal gestation—namely, some form of obstruction in the tube—did not come into play.

I can offer no special explanation of the fact that the patient had short periods up to within six months of delivery of full-term children, but have an impression that slight menstruation may continue after conception more often than in England, although histories here are very unreliable.

It seems likely that the amniotic sac of the extra-uterine foetus ruptured when the abdominal pain began, two days after the delivery of the uterine pregnancy. It was probably due to some sudden abdominal strain by the patient, or possibly even to an abdominal examination. The action of the amniotic fluid within the peritoneal cavity—that of a mild irritant—is of interest.

The breasts secreted very little milk even after the delivery of the second baby, owing perhaps to the general debility of the patient, so that no deduction can be drawn as to the inhibitory action of the extra-uterine gestation on lactation.

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R. M. Greenhalgh (*Wisconsin med. J.*, 1941, 40, 25), who reviews the literature and records his observations on 100 cases, comes to the conclusion that the disease called "roseola infantum" by Zahorly in 1910 and "exanthema subitum" by Veecher and Hempelmann in 1921 is a clinical entity. It affects children during the first two years of life and seems to confer immunity. Its characteristic features are a febrile period of three days, and after the temperature has become normal a rash lasting about two days. The blood shows a relative lymphocytosis and often a lymphopenia. There are no complications or sequelae. The aetiology is unknown. The incubation period is about ten days.

UNUSUAL RETICULOCYTOSIS IN AN UNTREATED CASE OF PERNICIOUS ANAEMIA

BY

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The following case caused some difficulty in diagnosis owing to the finding of reticulocytosis of more than 30% in the presence of severe anaemia and a recent history of jaundice.

Case Report

Mrs. X., aged 30, had always been perfectly well until February, 1939, when she complained of feeling run down, with loss of appetite and energy. She had also lost some weight. Her private doctor, having treated her symptomatically with an iron mixture without response, referred her to hospital. There, no history could be elicited to account for her symptoms, while it was noted that she looked sallow and pale, although her mucous membranes were of a good colour. There was also marked pyorrhoea. Radiographs of her chest were normal, while a blood count showed a moderate anaemia: red cells, 2,570,000; Hb, 49%; colour index, 0.95; white cells, 12,000—polymorphs 72%, eosinophils 1.5%, lymphocytes 24.5%, mononuclears 2.5%. The red cells showed some anisocytosis and poikilocytosis. On account of these findings and because there had been no response to iron therapy, hepamult was prescribed in addition, and she was advised to have her teeth extracted. This was done, and she next attended the hospital two months later, feeling very much better. A blood count on this occasion showed: red cells, 4,600,000; white cells, 9,600; Hb, 92%; colour index, 1.

Shortly after this she married and moved to the Birmingham district, where she was well until March, 1940, when she again became pale and nauseated. She improved with some medicine from her doctor, but again relapsed at the beginning of July. She then became very nauseated and developed epigastric pain and jaundice—so much so that the jaundice was commented upon by her friends. She lost weight again and a great deal of energy. Headaches were very severe. She had had no haematemesis and no upset in her menstrual functions, but some slight bleeding from the rectum had occurred. There was no family history of any blood disorder. She was referred to the General Hospital for further advice one month after the onset of her most recent attack.

She was there noted to be very pale—on first appearances suggestive of a patient with a bleeding duodenal ulcer. She had a smooth tongue, a marked haemic murmur, and slight tenderness in the epigastrium. Vaginal and rectal examinations were negative. Investigations showed a macrocytic type of anaemia with 42% haemoglobin and a positive indirect and slight direct van den Bergh test (serum bilirubin, 1 unit). She was therefore admitted to the Queen Elizabeth Hospital (August 6) for further investigation. Physical examination was essentially the same as that in the out-patient department, although there was divergence of opinion as to the presence of splenic enlargement. Her faeces were benzidine-negative.

The blood examination on admission showed marked reticulocytosis (red cells, 1,420,000; reticulocytes, 33.4%; Hb, 34%; colour index, 1.21; white cells, 4,600—polymorphonuclears 21.25%, eosinophils 1.25%, lymphocytes 74.5%, monocytes 2.7%, neutrophil myelocytes 5.25%), while the stained films revealed great anisocytosis, slight poikilocytosis, and marked polychromasia, the platelets appearing normal.

Inquiry into her dietetic habits disclosed that she did not eat excessive amounts of meat, that she was accustomed to have liver regularly once a week, and that she had had no liver therapy from her doctor. A diagnosis of chronic haemolytic anaemia appeared probable, and Dr. T. W. Lloyd was asked to carry out investigations with this in view. On August 9 his examination with heparinized blood gave the following results:

Red cells	2,110,000
Haemoglobin	51%
Colour index	1.2
Haematocrit	21.7%
Mean cell volume	103 cubic microns
Mean cell haemoglobin concentration	32.4%
Reticulocytes	31%
White cells	1,900 per c.mm.
Polymorph neutrophils	25.5%
Eosinophils	0.5%
Premycocytes	1%
Lymphocytes	72%
Monocytes	1%
Normoblasts	2%

A striking feature of the neutropenia, which in itself was unusual in the presence of such active red cell regeneration, was the absence of non-segmented forms, all the polymorphs being heavily segmented.

The fragility began in 0.45% and was complete in 0.25% saline, a slight increase as compared with normal. The lecithin resistance was greatly increased, thus:

Concentration of Lysocleithin	Haemolysis of Patient's Cells	Haemolysis of Control Cells
1/32	100%	100%
1/64	52%	100%
1/128	0	15%
1/256	0	0

This test was considered to exclude acholuric family jaundice. The Price-Jones curve (250 cells) showed very marked macrocytosis, mean diameter 8.78 μ . It was a homogeneous curve, and when decomposed by the method of Mogenes the main component had a mean diameter of 8.75 μ and contained 100% of the cells drawn.

The serum was examined for haematin (methaemalbumin) by Schumm's method and by spectroscopic analysis. Tests that proved to be negative were also carried out by the method of Damashek for the presence of isohaemolysins. The Donath-Landsteiner test for paroxysmal (cold) haemoglobinuria was also negative.

In the meantime the patient was improving on a normal hospital diet without any medication. A fractional test meal showed the presence of achlorhydria, and a laevulose-tolerance test gave a normal result. On admission the van den Bergh test had shown a positive biphasic reaction and a positive indirect reaction with an icterus index of 10. One month later the indirect test was still faintly positive with the icterus index at 7.4 units, while eight weeks after admission both the direct and indirect tests were negative.

In view of these findings the diagnosis of pernicious anaemia was put forward. Accordingly a test dose of liver extract

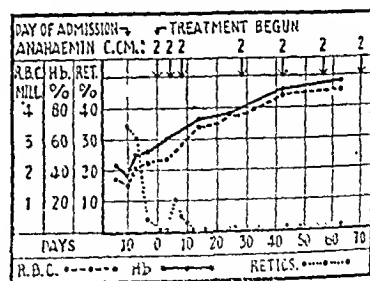


Chart showing the blood counts during stay in hospital and the response to liver therapy

(anaheim 2 c.cm. intramuscularly) was given when the red cells were 2,300,000 and the reticulocytes had fallen to less than 1%. A reticulocyte response of 10% was obtained on the sixth day following, falling to normal six days later. The achlorhydria was shown to be absolute, no HCl being secreted in response to 1.5 mg. of histamine. Liver extract was continued with complete relief of her symptoms and restoration of the blood picture to normal (see Chart).

The patient has maintained good health for fourteen months on a fortnightly dose of 2 c.cm. of anaheim. The most recent blood count showed: red cells 4,640,000, Hb 98%, and colour

index 1.05; the van den Bergh test was negative. The Price-Jones curve is now within normal limits, with a mean diameter of 7.014 μ .

Discussion

The striking feature of this case was the persistence of a reticulocytosis of over 30% for at least forty-eight hours in a patient who had received no treatment and the difficulty in diagnosis that this finding caused. Such a reticulocytosis, taken in conjunction with the apparently rapid onset and a history of other attacks and of jaundice, seemed to indicate haemolytic anaemia. Against this the presence of glossitis was one small point, but the negative findings of the special investigations and the subsequent findings of complete achlorhydria threw further doubt on the original diagnosis. Finally, the reticulocyte response to a test dose of liver extract associated with a rise of red cell content indicated an absence of haemopoietic factor. Such a response would be exceptional in any of the haemolytic types of anaemia. In fact, all the findings seem to indicate a diagnosis of pernicious anaemia in spite of such an unusual reticulocytosis.

Little mention is made in the literature regarding the number of reticulocytes present during the relapse phase. Sturgis and Isaacs (1938) state that spontaneous crises are sometimes seen with 7 to 8% of reticulocytes. Whitby and Britton (1939) note that occasionally pronounced reticulocytosis is present, but do not give figures. A rapid survey of other relevant publications failed to throw any light on the problem. The marked reticulocytosis in this case, following a submaximal dose of the intrinsic factor, should be due to the reaction of a young and comparatively healthy bone marrow, which has not yet become exhausted in the effort to keep up the supply of corpuscles from inadequate material. The same amount in an older person would, no doubt, only have given the reticulocytosis that is usually noted during remissions (7 to 10%).

It is interesting to speculate on the reason why this patient, accustomed to a regular and adequate diet, should suddenly relapse and with apparently equal rapidity begin to regenerate her red blood corpuscles. While we know that absence of the intrinsic factor leads to the development of pernicious anaemia, there is no definite knowledge as to the factors that lead to its disappearance. It is frequently suggested that the stomach in persons completely achlorhydric is especially disposed to gastritis, which will eventually lead to the suppression of the intrinsic factor. The history in this case supports such an idea. Dental sepsis, often put forward as an aetiological factor in earlier days, no doubt caused some degree of gastritis to initiate the first relapse. The last relapse, ushered in as it was by nausea, vomiting, epigastric pain, and jaundice, is very suggestive of gastritis with an associated "duodenitis." The relapses would then be due to a suppression of the intrinsic factor and the remissions be due to improvement in the gastritis, with a consequent return to a more normal diet and the reappearance of a small amount of intrinsic factor (cf. pernicious anaemia of pregnancy). The diagnosis of gastritis is not altogether unjustified, as for a short period after starting liver therapy the patient had nausea, vomiting, and epigastric discomfort which were relieved by a simple bismuth mixture, and also on one or two occasions since her discharge from hospital she has had short bouts of epigastric discomfort.

Summary

A case of pernicious anaemia in a young married woman aged 30 is reported. The patient presented the unusual feature of reticulocytosis of 33.4% in the absence of any previous treatment.

Administration of liver extract gave complete relief of symptoms and restored the blood picture to normal.

Good health has been maintained on a fortnightly dose of 2 c.cm. of anahaemin.

I wish to thank Prof. W. H. Wynn for permission to report this case and for his criticism and advice in preparing the manuscript; also Dr. T. W. Lloyd and Dr. A. L. Peeney for their detailed blood examinations and help in the diagnosis of this case.

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Medical Memoranda

Acquired Immunity to Blood Transfusion Reactions: A New Phenomenon

Reactions occurring during the transfusion of blood are for clinical purposes commonly divided into two main groups: haemolytic and non-haemolytic. The onset of the reactions is similar, but as a rule the former becomes progressively worse for hours or days, and often ends fatally; while the latter, alarming though it may appear, usually expends itself within an hour, leaving no observable evidence of permanent damage. It is with the latter type that this paper is concerned.

It has been our experience that the recipient, having suffered this reaction, is for some time immune to further reaction to the same blood. Hence the transfusion may with complete safety be resumed soon after subsidence of the response.

FIRST OBSERVATIONS

Our first observation of this kind was made on a male Hindu aged 18 to whom a transfusion was given following amputation of a leg after a crush injury. Fifty c.cm. or so of 5% glucose solution alone was first used, and then the blood was started at the rate of about 50 drops a minute. When 150 c.cm. of blood had run in, the patient developed a severe chill, the pulse became rapid and thready, and there was marked pallor. The transfusion was discontinued promptly, the foot of the bed was elevated on shock-blocks, and hot-water bags and blankets were applied. One c.cm. of adrenaline was injected intramuscularly. The reaction, which was most violent, ran its course and subsided completely within an hour. A careful check was made of the blood, but no error was found either in the grouping or in the cross-agglutination tests. Also, the citrate solution had to be considered, although our intravenous solutions had produced no such symptoms in some hundreds of administrations. Accordingly, 50 c.cm. of the glucose-saline solution was given by vein to each of three otherwise healthy fracture patients, and 20 c.cm. of 3.8% citrate solution was injected intravenously in two other afebrile individuals. None of these subjects developed chills or fever, nor was there any significant variation in the pulse rate as a result of the injections. The reaction observed in our patient was therefore purely from the blood, and was characteristic of the non-haemolytic type, being in general essentially the same as the others of this type which we had seen here and elsewhere.

THE HYPOTHESIS OF ANAPHYLAXIS

Because of its typical character this case was chosen to test a hypothesis which had occurred to us: that the reaction is anaphylactic in nature. If this were an anaphylactic response the patient had very likely become desensitized, and it should be possible, therefore, to continue the transfusion without further response. Accordingly, some five hours after the patient's recovery the transfusion was resumed, the blood being run into the vein very slowly, while careful watch was kept for any untoward symptoms. The transfusion was completed without the slightest reaction.

With this as a precedent, in every other case of transfusion shock since then—twelve in all—we have merely interrupted the transfusion long enough to permit complete recovery from the reaction and to check the cross-matching. In all cases the readministration of blood to a total of about 500 c.cm. proceeded without event.

The following table summarizes the essential details of the cases:

Case	Age	Sex	Group	Amount of blood before Reaction	Interval between Transfusion
1	18	M	B (III)	c.cm. 150	hours 5½
2	55	M	B	25	3½
3	18	M	B	70	15
4	28	M	B	70	3
5	27	M	B	400	5
6	22	M	B	350	21
7	17	M	B	200	5½
8	10	M	B	120	5½
9	28	M	B	150	22
10	35	M	B	150	7½
11	31	M	O (IV)	70	22
12	37	M	B	250	8

CONCLUSIONS

We can find in the literature no satisfactory explanation for the non-haemolytic reactions—that is, where, as here, fresh blood is used. Impurities in the rubber tubing, particles of old blood left in the needle, the use of blood from a donor in the post-prandial period, are among some of the explanations given. Such reasons seem inadequate, for we do not observe reactions from saline and glucose injections when the same apparatus as that used for blood transfusions is employed, and our blood donors were all drawn from the local prison, where the rule prohibiting the taking of food before the giving of blood is strictly enforced.

The symptoms of this type of reaction to blood transfusion are certainly very similar to those of anaphylactic shock in general. And our finding that soon after recovery the transfusion could be resumed without response suggests to us that these reactions are indeed anaphylactic in nature. Accordingly, the reaction is to be considered a process of desensitization. We do not venture to guess the nature of the antigenic substance.

Of the twelve cases reported, eleven belonged to Group B (III), and all the patients were males. (Our patients are limited to this sex entirely.) The predominance of Group B in the transfusion reactions here seems to be only a coincidence. Five Group B patients not mentioned had no reaction at all to transfusion. There have been reactions of this kind in only two cases belonging to Group O (IV), one of which is reported here (Case 11). In the other case a direct transfusion was given and was not repeated, so no mention of it is made above.

The practical importance of this phenomenon is self-evident. Blood which has caused such reactions need not be discarded, our experience showing that after checking the cross-agglutination the transfusion may be resumed safely soon after the recipient has recovered from the reaction.

We are indebted to Dr. C. M. Van Allen, chief surgeon of the Bikaner State Hospital, for his guidance and kind criticism.

J. J. WOLFE, M.D.

C. E. DAS GUPTA, L.C.P.S.

Bikaner, Rajputana

Bikaner State Hospital.

M. J. Reuter and R. Nomland (*Wisconsin med. J.*, 1941, 40, 196), who record three personal cases in women aged 52, 56, and 72, state that cutaneous metastatic cancer may be associated with inflammatory signs. The clinical features are closely allied to the inflammation of erysipelas, but there is no chill, fever, prostration, or leucocytosis. The diagnosis is difficult and a biopsy is usually required. As inflammatory metastatic carcinoma secondary to primary cancer of the breast is common, any inflammatory lesion of the skin of or about the breast which does not subside in two or three weeks warrants a biopsy for diagnosis. Histologically the inflammatory signs are due to extensive lymphatic blockage by cancer cells which causes oedema.

Reviews

PLANNING FOR HEALTH

National Health Services and Preventive Methods for Improving National Health. By Dame Janet Campbell, M.D., and H. M. Vernon, M.D. (Pp. 46. 9d.) London: British Association for Labour Legislation.

In his introduction to this pamphlet of the British Association for Labour Legislation its chairman, Mr. H. Graham White, M.P., says: "We must prepare for a real extension of national health insurance (including dependants of the insured), a reorganization of our hospital system, and a change in the position of the medical profession in the community." As to the first two of these aims there is a considerable measure of agreement; what the third means is not at all clear. In the first of his *Collected Addresses* the late Wilfred Trotter, comparing the profession of medicine with those of the Church and the Law, describes it as having, unlike them, "had no direct influence in the work of government. It has therefore had to submit to its duties being piled up as occasion arose with no resource for securing a due compensation of privilege and immunity. . . . The result is that it finds itself of all professions the least in command of social prestige, the least privileged, the most exposed, and the hardest worked. I do not think it is to be deplored. It has put medicine in the very small class of professions in which it is possible for men and women to pursue the dying ideal that an occupation for adults should allow of intellectual freedom, should give character, as much chance as cleverness, and should be subject to the tonic of difficulty and the spice of danger." A profession of which this could be said by one of the wisest of its members may well be watchful of proposals ostensibly intended to change its position in the community; and his statement affords criteria by which the desirability of any profound changes may well be tested.

The pamphlet under review is definitely designed to promote some such changes. It is not a joint production of its authors in the ordinary sense, but consists of two independent essays—one by Dame Janet Campbell on "National Health Services," the other by Dr. H. M. Vernon on "Preventive Methods for Improving National Health." The latter is a useful contribution, setting out clearly a number of facts relative to social and industrial health, and showing that "there are at our disposal many simple preventive measures, not dependent on medical aid, which, if adopted, will cause a considerable rise in the average standard of health and physique in the nation." The facts will probably be familiar to a majority of readers, but it is to be hoped that there will be others to whom they will afford a fresh stimulus to action. Two opinions expressed are particularly noteworthy: that "occupational environment is not nearly so important a factor in controlling the health of the nation as social environment"; and that "of all the social conditions met with in the home maternal care comes next in importance to nutrition and counts for more than the standard of the housing." If to these be added a third—that every responsible individual can largely determine his own environment—we have some valuable guides towards reform.

Dame Janet Campbell's essay has a more direct bearing upon the position of the medical profession. Here again the facts of the situation are set out clearly, though they are now quite familiar to most readers. So are the defects of the present medical provision. But in this connexion the author is not quite accurate or fair. She underestimates both the curative and preventive work of the general practitioner, though admitting his potentialities for good; and it

is both inadequate and misleading to say of insurance practice that "its scope is strictly limited and confined in the main to minor diseases, many of which are treated at the surgery with a bottle of medicine. . . . The hurried work of the busy private surgery makes it impracticable for the most conscientious doctor to give the full time and attention needed by many of his patients." It is evidently difficult for one whose main professional work has been that of a departmental official to envisage the actual extent and efficiency of the work of general practitioners as a class.

The main change advocated by Dame Janet Campbell is apparently the general establishment of "health centres" where practitioners, all on a whole-time salaried basis as officers of the local authority or central department, would be jointly responsible for medical attendance, an attempt being made to maintain an individual relationship between doctor and patient so far as possible. There may be densely populated and very poor urban areas where such an arrangement would prove convenient and help the amenities of medical residence and practice; but, even so, why the whole-time salaried basis of remuneration? And are not areas of this character to be eliminated after the war? A little reflection must show that such an arrangement would be unnecessary, inconvenient, unacceptable, or quite impracticable in most residential and in almost all rural areas. Moreover, it would inevitably alter the traditional relationship between patient and doctor. The atmosphere of the consulting-room would tend to change from that of a purely private, confidential, friendly interview to that of a less sympathetic investigation by a public official sharing his duties with others and having only a minor interest in the individual. There is no hint in the pamphlet that there are other solutions, but it is to be hoped that all who read it will not be content without a wider knowledge of these.

H. B. B.

STATISTICAL LITERATURE

The Second Yearbook of Research and Statistical Methodology. Books and Reviews. Edited by Oscar Krisen Buros. (Pp. 344. 55.00.) New Jersey: The Gyphon Press. 1941.

The primary object of this handsome volume is to help students and teachers of statistics to discriminate between good and bad statistical books. To that end the editor has reprinted reviews of statistical books published in one or more of 283 American or British journals. The books reviewed are arranged alphabetically by author's name and cover a wide field—elementary textbooks, volumes of mathematical tables, monographs, and books like Prof. Bernal's *The Social Function of Science*, which deals with social relations. A subject index enables the reader to turn to the reviews of books on topics in which he is interested. We have no doubt that any statistician would find this volume interesting and instructive, and not much doubt that, if those for whom it is designed would use it, they would learn a good deal, although, as the editor points out, the reviews vary in competence and a beginner can hardly discriminate between competent and incompetent criticisms.

The aim of the editor is praiseworthy, but we doubt whether the scale is not too large. The reviews, although restricted to books written in or translated into English, cover more than 350 large pages. It might be better to restrict the connotation of the term "statistical" more narrowly (it is, for instance, hard to see what on earth Mr. Otto Eisenschimi's paper on the alleged crimes of historical critics, a review of which occupies almost a page, has to do with statistics, however defined) and to select the reviews printed. We realize the difficulty of this. If, for instance, one printed the reviews of a book intended for medical readers which appeared in medical journals and

no others, some important criticism by a mathematical writer might be lost. But an editorial committee should be able to guard against that risk and, without quite drastic curtailment, the undertaking will, we think, prove beyond human powers.

TECHNIQUE FOR THE THEATRE

Instruments, Appliances, and Theatre Technique. By Evelyn Pearce, Senior Sister Tutor, Middlesex Hospital. (Pp. 226; illustrated. 6s. net.) London: Faber and Faber, Ltd. 1941.

Instruments, Appliances, and Theatre Technique is the title of a small, well-illustrated book by Miss Evelyn Pearce, who has already written several textbooks which have made her name well known to the members of the nursing profession. Her latest work has been produced to meet a demand on the part of those engaged in teaching and training probationer nurses, assistant nurses, nursing auxiliaries, and orderlies in hospitals both in this country and with our Forces over-seas. As Miss Pearce tells us, the instruments employed in surgery are numerous and many are highly specialized, so that too wide a field could not be covered. Nevertheless the field so covered is a fairly representative one and well up to date, and includes examples of recent types of blood transfusion apparatus. Some obsolete appliances could, with advantage, be omitted from a second edition, particularly Cline's, Neville's, and Marshall's ham splint, Liston's knee splint, and the jointed arm and hollowed, angular, wooden arm splints. There is nothing to be gained by overloading the minds of tired nurses with the names and details of such pieces of apparatus, which are at present merely of historical interest. The same remark applies to certain little-used instruments such as Mosley's fascia forceps, Liston's naevus needle, Doyen's needle, etc. On the whole, however, the selection of material, always a difficult matter in a book such as this, has been good. Special apparatus for ear, nose, and throat and ophthalmic surgery, anaesthesia, lumbar puncture, etc., is included. The text is adequate, well printed, and clear, the illustrations are good, and the book is of convenient size. It should have a wide appeal to all who may be called upon to form part of the team of an operating theatre here or abroad, in civil life or in the Services. As a guide to such it can be strongly recommended. Miss Pearce is to be congratulated on thus providing for the needs of a large number who are in training at present and who will in time be succeeded by numerous others.

PLASTIC SURGERY

Chirurgie Réparatrice et Correctrice des Téguments et des Formes. By L. Dufourmentiel. (Pp. 408; illustrated; paper cover. 53.00.) Paris: Masson et Cie.

The author was a pupil of Prof. Pierre Sebileau, who contributes a preface to this work, and was one of the most active of the French plastic surgeons during and after the war of 1914-18. He defines "reparative surgery" as the art of reconstituting tissues or organs which are missing or have been accidentally destroyed, while "corrective surgery" is the art of giving a normal aspect to malformed or accidentally deformed organs. The author points out that these terms must necessarily overlap to some extent. The first chapters are devoted to general methods, among which is included a section on emergency plastic surgery. The contents of the other chapters are well indicated by their titles: corrective surgery of the skin, reparative surgery of the skin, corrective surgery of the nose, reparative surgery of the nose, fronto-orbital reparative surgery, corrective surgery of the maxillae, reparative surgery of the maxillae, corrective surgery of the auricle, reparative surgery of the auricle, treatment of hare-lip, corrective surgery of the breast, reparative surgery of

the breast, and plastic surgery of other regions. As would be expected, particular attention is given to the technique of facial surgery.

The book is well printed and illustrated, appears to be fully documented, and is of interest as the fruit of twenty-five years of practice by a leading French exponent of the art of plastic surgery.

Notes on Books

In welcoming the first edition of E. B. SPAETH'S *Principles and Practice of Ophthalmic Surgery* attention was drawn to the fact that this is an exposition of the surgical pathology of the eye as well as a textbook on operative surgery, and that a number of procedures advocated by the author were not widely practised in this country. The new edition (Kimpton, 48s.) retains the character of the original text, and the individuality of the book is rather more obvious than before. It has now become an imposing tome, and, while little fault can be found with the exposition as a whole, there is still room, as was pointed out in our previous review, for the elimination of redundancy. Of topical interest are the excellent chapters on plastic surgery. This is a field to which the author has contributed extensively, and his guidance towards the principles underlying modern plastic surgery is of great help to procedures with which most ophthalmologists are relatively but little acquainted. The illustrations are well chosen, though more use could perhaps be made of sketches indicating steps to be followed. Such sketches are of greater help to the operating surgeon than photographs showing the initial and end stages seen in particular patients. In spite of minor defects the present volume is likely to establish itself as a standard work in English on the surgery of the eye.

The original edition of J. G. CROWTHER'S *British Scientists of the Nineteenth Century* came out in 1935 and contained descriptions of the discoveries and the life histories of Sir Humphry Davy, Michael Faraday, James Prescott Joule, Lord Kelvin (William Thomson), and James Clerk Maxwell. It was commended in these columns for the author's vivid character sketches and the very complete enumeration and description of the discoveries of the five physicists which formed the main part of his book. The work has now been republished in two small volumes of the sixpenny Pelican series. Vol. I comprises Davy, Faraday, and Joule; vol. II the lives of Kelvin and Clerk Maxwell, and also a life of William Henry Perkin, specially written for this edition. Perkin was the creator of modern chemical industry, which has so profoundly influenced the destiny of nations. It was in 1856 that Perkin began, at the age of 18, the systematic invention of new dyes from substances without dyeing properties. It led to the invention of new drugs, perfumes, flavouring matters, textiles, explosives, and other additions to human means. The industry he created was imitated in Germany and brought to such a pitch there that it has become the core of the scientific part of the German war effort. Mr. Crowther examines Perkin's work in relation to his own character and social environment, in order to throw light on why the growth of chemistry has been so different in Britain and Germany and to illustrate some of the scientific factors that have become an essential part in the power of modern nations.

To be faced with 320 pages on *Worry in Women* in close print on poor paper was daunting to the reviewer. But AMBER BLANCO WHITE early engages one's sympathy by her confession that the book has been extremely difficult to write. She hoped to help women to deal with their tendency to worry. First her book was too anecdotal; then too theoretical. This is the third draft. Unfortunately one has to own that it still attempts too much. Mrs. White shows her wide knowledge of women's mental processes, but the causes of illegitimate worry are inadequately differentiated from those of serious origin. She looks at worry in a sympathetic, friendly spirit through confessedly Freudian spectacles. Practical common sense based on psychological instruction is the method of help. Feelings of guilt and inferiority are faithfully dealt with; morality seems to be repre-

sented as purely human, and wisdom to be within the limits of self-knowledge. Worry connected with husbands and children is treated thoughtfully but, probably in an effort to meet too many cases, with confusing fullness. The book is a sincere effort to treat the disease of worrying; for greater accuracy of aim, suppression and subdivision are suggested. It is published by Gollancz at 12s. 6d.

The Year Book of the Royal Society of Tropical Medicine and Hygiene for the year 1942 has now been issued from Manson House, 26, Portland Place, W.1, at 5s. It gives full information about the work and personnel of the Society, which during the war has still managed to publish the usual six numbers of its *Transactions*. In view of war conditions and the number of Fellows on active service, it was decided to postpone the election, due this year, of a new Council and officers; and that the President, Sir Rickard Christophers, the vice-presidents, council, and officers elected in 1939 should be asked to remain in office for the time being.

In our notice of the second edition of Miss K. C. Clark's *Positioning in Radiography* (November 8, p. 654) we erroneously stated that the number of illustrations is the same as in the first edition. In all 125 new illustrations have been added, though this is rather disguised by the fact that Messrs. Ilford Ltd. have retained the original numbers, making the additional figures a, b, c, as the case might be.

Preparations and Appliances

A SELF-FITTING SLING

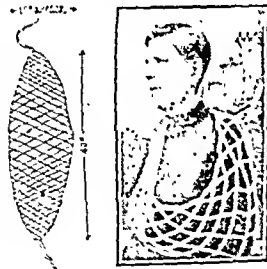
Miss M. M. BATE (a member of the St. John Ambulance Brigade No. 9 Nursing Division, and Instructor at two gas cleansing stations) writes:

The sling here described and illustrated has been designed and made with a view to its use primarily for cases of injury to the upper limb in gas-contaminated casualties. It is made of a strong soft cotton yarn, skilfully designed to take a limb comfortably, and at the same time allows free access to the skin for gas cleansing purposes. It will stand up to washing and boiling. The details of construction are as follows:

The "self-fitting sling" is made of cotton yarn, or other soft material which may be crocheted. It is hammock-shaped and in the form of a wide mesh, and is so constructed that it adapts itself to any position of the arm. This result is obtained because the centre part is made of the largest mesh, decreasing gradually towards the ends. A decrease in stitches at the edges, in the middle of the sling, in relation to the increase in the centre, brings about the snug fit which supports the arm and keeps it in position, and also causes the edges to be strengthened by what amounts to a double line when taut.

It is primarily intended for use in gas cleansing stations for those who, in addition to being contaminated, have received injuries necessitating the support of the upper limb. The sling can also take the place of a large or small arm sling or a St. John sling in circumstance of injury where no gas contamination exists. The special advantages are (1) simplicity, (2) speed of adjustment, and (3) the mesh allows the injured part to be cleansed with soap and water in contaminated cases while the sling is on.

The design has obtained a provisional patent. It is to be hoped that the sling could be widely adopted, as it is easy to make, cheap, and can be utilized in other ways than for gas cleansing stations.



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ROUTE OF INFECTION IN POLIOMYELITIS

The occurrence of an outbreak of poliomyelitis in Berkshire, the closing of schools, and the barring of children from cinemas are all facts which serve to emphasize how little is actually known about the disease, despite the intensive studies of the past thirty years. Why should poliomyelitis be rare in Great Britain? It is common enough in the Scandinavian countries, in Canada and the U.S.A., and, at the other end of the world, in Australia. Is the disease transmitted as a droplet infection? If it is, then why should its greatest prevalence be in the summer and autumn months when other droplet infections are at their lowest ebb? Is the disease transmitted by infected food or water? If it is, then our efforts should be directed to a study of fingers, faeces, food, and flies, and to a discovery of possible carriers. If poliomyelitis is akin to dysentery or typhoid, it is curious that Egypt and the Middle East are untroubled by epidemics of the disease, despite the fact that the earliest indication of poliomyelitis is to be found in Egypt on a stela of the Nineteenth or Twentieth Dynasty, about 1300-1200 B.C.

An effort to solve some of these conundrums has now been made by Toomey.¹ By correlating pathological changes and clinical symptoms in man he attempts to reach definite conclusions about the portal of entry of the virus into the human body, and, as a corollary, to lay down the steps necessary to prevent the spread of the disease. Toomey's arguments may be briefly summarized. It is taken as axiomatic that the cerebral cortex is not a favourable site for either the development or preservation of the virus; nevertheless, as the name poliomyelitis (from *polio*, grey) implies, the virus has an almost obligate affinity for the grey matter of the cord. Bodian and Howe,² in fact, suggest that the virus is not only neurotropic in that it has a predilection for nervous tissues, but is neuronotropic in that it has a selective affinity for, and probably is dependent for its growth upon, living nerve cells of certain types. To reach the nerve cells the virus must establish contact with axis cylinders by means of which it passes from the exterior of the body, from the skin or mucous membrane. In the skin, however, the non-medullated nerve endings are protected from the exterior by a thickened horny layer, with the result, as might be expected, that intact and untraumatized skin is experimentally a poor portal of entry, though when the virus is injected intradermally infection readily develops. A flap cut in the skin of an experimental animal, no less than the extraction of a tooth or the removal of a tonsil in man, provides a field where virus and non-medullated nerve endings can meet and hence where infection can occur.

There are, however, certain regions in the body where the same thing can take place apart from trauma—the olfactory mucosa, around the taste buds in the tongue, the tonsillo-pharyngeal area, the intestinal mucosa, and possibly the bladder wall and the respiratory tract. Can any of these portals of entry be correlated with the fact that in man the paralyses are usually segmental in type and in most cases involve the lumbar, cervical, and bulbar enlargements in the order named, pathological changes being practically restricted to these areas? Up to a short time ago attention was focused on the olfactory tract as the most important, if not the sole, portal of entry of the virus. It was always difficult, however, to explain the presence in man of extensive lesions in the lumbar and few or no changes in the bulbar and cervical enlargements if the virus entered by the olfactory mucosa. Entry by this portal fails also to explain the rarity of lesions in the thalamus, even in those who die with bulbar symptoms, or the lack of definite signs of involvement of the spino-thalamic tract, which carries pain and temperature sense fibres in the lateral column and touch and pressure sense fibres in the ventral branch. When in rhesus monkeys the first and thirteenth cranial nerves are disconnected from the brain and virus is injected intravenously the animals still develop the disease, thus showing that an intact olfactory tract is not essential for the production of poliomyelitis. Finally, in human post-mortem material there is no evidence of pathological involvement of the olfactory bulbs. Clinical and pathological evidence in man, as well as experimental evidence in monkeys, thus gives no support to the view that the olfactory mucosa is the normal portal of entry of the virus.

What evidence, on the other hand, can be brought forward in favour of the gastro-intestinal tract as the portal of entry, a view put forward as long ago as 1907 by Harbitz and Scheel?³ In the gastro-intestinal tract there is no thick epidermal layer, as there is in the skin, and virus should thus have no difficulty in coming into contact with non-medullated fibres of the sympathetic and parasympathetic nervous system, provided there is sufficient time for absorption. When the virus is placed in the intestine of the rhesus monkey poliomyelitis does not occur, probably because virus is swept through the intestine by rapid peristalsis. If, however, the intestines are mechanically dilated the disease is easily produced, the paralysis being segmental, as in man. This is presumably because the virus has time to come in contact with non-medullated nerves and to be absorbed by axis fibres. The exact route by which the virus passes from the intestine to the cord in man is, however, not quite clear: for Toomey it is by way of the sympathetic fibres and the somatic nerves of those segments lacking white rami communicantes: it would thus first reach the lumbar cord, and (as is well known) the lower extremities in man are usually first affected. With greater susceptibility on the part of the patient, or a more poisonous strain of virus, there might be spread along the sympathetic collateral chain to the other segments that lack white rami communicantes—in other words the cervical area. In this connexion Howe and Bodian⁴ have found that after transection of

¹ *J. Pediatr.*, 1941, 19, 103.² *Johns Hopk. Hosp. Bull.*, 1941, 63, 58.³ *Deutsch. med. Wochschr.*, 1907, 33, 1992.⁴ *Johns Hopk. Hosp. Bull.*, 1941, 63, 86.

the cord in monkeys the virus may pass from the cord via the sympathetic fibres to the paravertebral chains and, after ascending in them, re-enter the cord; or in the absence of intact sympathetic chains it may continue to the wall of the gut, where in Meissner's and Auerbach's plexuses it comes into contact with the pre-ganglionic fibres of the vagus and ascends to the brain. The isolation of virus from the coeliac ganglion of one patient with bulbar symptoms by Sabin and Ward,² and from two other patients by Toomey, strongly suggests the sympathetic nerves as a route for infection; but the evidence is not entirely conclusive, for lesions in the coeliac ganglia of chimpanzees have been found in instances where the primary point of infection is known to have been the olfactory bulbs (Howe and Bodian³). Physiological considerations are thought by Toomey⁴ to suggest absorption from the alimentary tract, for the reflex changes seen in early cases of poliomyelitis in man are very like those in typhoid. Experimentally poliomyelitis can be transmitted to *Cercopithecus* monkeys by feeding, and has been produced in the chimpanzee by way of the gastro-intestinal tract, while in man the virus has been isolated from the faeces and in epidemic areas from the sewage. Epidemiologically Aycock and Eaton⁵ have shown that the peak of incidence of poliomyelitis occurs at the same time as that of typhoid. Further evidence of the similarity of poliomyelitis and typhoid is to be found in the isolation of poliomyelitis virus from flies caught in the neighbourhood of infected cases in Connecticut and Alabama by Paul, Trask, Bishop, Melnick, and Casey.⁶ The exact species in which the virus was present is uncertain, for the injections into monkeys were made with a mixed bag of greenbottle flies, *Lucilia sericata*, *L. caesar*, and *L. sylvorum*, together with the blow-fly *Phormia regina*, the house-fly *Musca domestica*, and a few *Muscina stabulans*, *Sarcophaga haemorrhoidalis*, *Ophyra leucostoma*, *Protocalliphora*, and *Stomoxys*. These findings thus confirm experiments made some years ago, when Flexner and Clark⁷ showed that house-flies contaminated artificially will carry the virus of poliomyelitis for several days, while occasional attempts to transmit the experimental disease by the stable-fly *Stomoxys calcitrans* were also successful. Thus the combined evidence suggests that the gastro-intestinal is the most common portal of entry of the poliomyelitis virus. Toomey, however, argues that the virus is not the only factor in the pathogenesis of poliomyelitis in man, but that certain toxins formed in the gastro-intestinal tract act synergically with the virus.

Many workers, brought up on the theory that poliomyelitis arises by infection through the olfactory tract, may not agree with all Toomey's *obiter dicta*; nevertheless, experiments in which the olfactory or intracerebral areas have been used as portals of entry must obviously be repeated with the gastro-intestinal tract as point of entry. The question of the portal of entry is not purely academic: the evidence already available is sufficient to warrant an extension of the public health measures against poliomyelitis. In the past efforts to

control poliomyelitis as if it were a droplet infection have not been too successful; in the future it would be well to investigate and control each epidemic of the disease as if it were an outbreak of typhoid rather than of influenza.

REHABILITATION OF THE INJURED

A comprehensive national service for the rehabilitation of the injured must achieve two main objectives: first, it must ensure the maximum possible physical rehabilitation of every case; and, secondly, it must ensure that those who on reaching this stage are still unfit to return to their former jobs can be retrained and settled in some alternative work suited to their residual disabilities. Of these measures the first is undoubtedly of greater urgency and importance, for on its success or failure will depend the need for the second. This has been proved by the work of the Miners' Rehabilitation Centre at Berry Hill Hall in the Midland coalfield. This centre deals only with the most difficult and resistant cases from a number of organized fracture clinics over a very wide area, yet 95% of the patients are successfully reinstated in their industry, which is one of the hardest in the world, by physical rehabilitation alone.

The Ministry of Labour and National Service has recently announced a scheme for the retraining and settlement of disabled persons, so it is opportune to consider this in relation to the schemes already inaugurated by the Ministry of Health for the earlier treatment of these cases. Undoubtedly fractures constitute the most fertile single source of permanent disability; great importance hence attaches to the E.M.S. organization for dealing with these cases. The original scheme provided for eighteen orthopaedic centres to which certain difficult cases were to be transferred, but neglected to take into account the important fact that the treatment carried out before transfer is practicable usually determines the whole future of the case. For example, in compound fractures the most important single step in the whole treatment—excision of the wound, reduction, and closed plaster—must be carried out at the earliest possible moment. Under the original scheme there was plenty of organization for dealing with the complications resulting from bad initial treatment, but no organization for preventing such complications. It seemed almost as if, having prepared for the worst, we were determined not to interfere with a steady supply of clinical material.

This system has now been supplemented by one which provides a wide network of hospitals possessing the requisite specialized staff and equipment to deal with fractures, and distributed in such a way that every case should be assured of efficient primary treatment. Of these hospitals those in non-vulnerable areas (Class A) subsequently collect from those in adjacent vulnerable areas (Class B) all the longer-term cases, and it is therefore in these Class A fracture hospitals that the facilities for completion of physical rehabilitation must be developed. A great deal yet remains to be done in this direction; but if the scheme is made to work, in practice as it appears on paper, the

¹ J. Hyg., 1941, 51, 49.

² Johns Hopk. Hosp. Bull., 1941, 69, 149.

³ Science, 1941, 93, 395.

⁴ J. Amer. med. Ass., 1911, 56, 1717.

orthopaedic centres should be relieved of a small army of patients suffering from the complications of inadequate primary treatment, and Mr. Bevin should be relieved of a small army of chronically disabled persons in need of retraining. But, however perfect any such organization may be, there will inevitably remain a small number who will require retraining, and the Ministry of Labour's scheme provides for these. It will be operated through local officials, attached to groups of hospitals. These officials will make contact with the patient towards the completion of his treatment, and by discussion with him and with the surgeon will arrange for a suitable course of retraining after his discharge.

The Ministry's existing schemes for training normal persons in various classes of munition work will be utilized, because much of this work is readily adaptable to disabled persons. In addition there will be special training centres for more difficult cases on the lines of the existing vocational training centres at Oswestry, Exeter, and Leatherhead, which did such valuable work for cripples in peacetime. All these training schemes will be carried out under medical supervision, and the trainees will receive adequate allowances during their period of training, which is expected in average cases to last about six months. So far as possible the training will be undertaken within daily travelling distance of the patient's own home, and this is a very important point. Many disabled persons will readily take advantage of a scheme which allows them to remain at home, but will think twice or even three times before they decide to go away into lodgings. With this in mind the Ministry has arranged for training to be undertaken in technical colleges and employers' works.

The present scheme is frankly regarded as being of an interim nature, and will be developed in the future according to experience. For the present the chief training will be for various war industries, but later on there is to be a resettlement of these persons into our permanent peacetime economy. This is a problem for the future. One of the greatest tragedies of the last war was the large army of unemployed and unemployable cripples who remained as a not always silent reproach to the politicians of those days. The two schemes discussed above show that the present Government has learned a lesson from its predecessors, and is determined that, for once, history shall not repeat itself.

WAR AND THE COMMON HEALTH: A PARADOX

Only three Presidents of the Society of Medical Officers of Health have hailed from north of the Tweed. The third of them, Sir Alexander Macgregor, medical officer of health for Glasgow, delivered his presidential address the other day. It was a comprehensive deliverance, surveying the whole field of public health service in wartime, from the standpoint of Glasgow experience but with applications to the whole of Great Britain. It is a mere commonplace now that the public health service has been subjected to immense strain: new demands have been made upon it; it has acquired previously unforeseen functions, it has widened its outlook and methods, and has gained new experience which will be of surpassing value in the post-war situation. The medical officer of health has had no release from his

normal duties, which indeed have acquired a new urgency from the war; to these have been added the oversight of the new emergency services, and, as though this were not enough, post-war problems are now knocking at the door of every town and city hall in the kingdom.

Sir Alexander Macgregor was not speaking only for the West of Scotland when he said that the health of the people had been better than was expected, in spite of the many influences which might have told to the contrary—new dispositions of population, overcrowding, and the depressing effect of the black-out, to mention only three. It is true that there have been certain movements of sickness and mortality—a wave of diphtheria, for example—but these, in Sir Alexander's opinion, owe little or nothing to the war. The increased incidence of pulmonary tuberculosis, which has been causing concern in Glasgow as well as in other places, is a different story. It is possible that with the entry of large numbers of young people into employment an infection which would have been resisted in normal times has gained the upper hand. But the sharp initial rise in Glasgow in 1940 slowed down in 1941. As for the feeding of the people, Sir Alexander expressed the hope that the Ministry of Food, regarded by many people as an infliction, may continue in being after the war as an essential health service. No doubt he was thinking of it not as exercising control over imports and traders but as a means of ensuring the ideal rationing—that is to say, making available the right kind of food for those who need it most, and, above all, educating the people in dietetics. He believes that the manner in which the food situation is being handled by Lord Woolton's Ministry is making a deep impression on the attitude of the people towards the common articles of diet. What he calls a "milk psychology" has been created by the National Milk Scheme. As a Scotsman he welcomes the return of porridge to favour (but how will that be affected by the recent cut in milk supplies?) and the demand for the nutritious herring. The position with regard to health in the schools is also reassuring. School children have lost none of the physical gain that has been registered in recent years, though standards of cleanliness are still too low. Infant life has suffered from the two cold spells of the early months of 1940 and of 1941, and from the whooping-cough epidemic of a year ago. Here again the war can hardly be indicted. It is otherwise with the considerable rise in the number of deaths due to premature birth. Many of these may be of psychological origin in the pregnant woman, owing to shock and anxiety arising out of the war.

It appears obvious from such a survey as Sir Alexander Macgregor, with the background of his sixteen years' experience as medical officer of health for Great Britain's second city, gave to his society that the war has accelerated progress in the field of public health—exactly the reverse of what a superficial observer would have predicted. Perhaps after all the evils and distempers from which we at present suffer have been released from Pandora's box, the treasure lying at the bottom will be found to be an advanced public health and social medicine.

PRESERVATIVES FOR STORED BLOOD

It has hitherto been customary to assess the value of any solution as a preservative for stored red cells by *in vitro* tests: changes in osmotic fragility of the erythrocytes and the rate at which spontaneous haemolysis occurs during storage have been usually accepted as satisfactory criteria of the effect of any preservative. Dr. P. L. Mollison and Miss I. M. Young in our current issue produce strong evidence which suggests that the *in vivo* survival of the erythrocytes of stored blood after transfusion cannot be pre-

dicted from such *in vitro* tests. The result of *in vitro* tests may, indeed, be completely fallacious. They studied *in vivo* survival of stored red cells by the differential agglutination method of Ashby.¹ In brief, this consists of the transfusion of cells of Group O to a recipient of Group A. After the transfusion the recipient's blood therefore contains two types of cells—O and A. The A cells can be removed with anti-A serum and the free O cells counted. The survival rate of the transfused O cells may be estimated by counting them at intervals after the transfusion. Using this method, Mollison and Young have tested eighteen different preservatives in a series of over 100 transfusions of stored blood, to which *in vitro* tests were also applied. The *in vitro* tests used were: (1) the degree of spontaneous haemolysis; (2) the increase in haemolysis after a standard amount of shaking with glass beads; (3) fragility to hypotonic saline. With a group of preservatives which contained no glucose—that is, heparinized blood, defibrinated blood, blood stored with I.H.T., with sodium citrate, and with citrate-sucrose and citrate-dextrin mixtures—the survival rate of red cells stored for less than one week was satisfactory. Subsequently deterioration was rapid. In general, blood containing glucose survives as well as fresh blood when stored for less than fourteen days. During the third week of storage there is progressive deterioration. The best survival rate was obtained with the Rous-Turner mixture, which contains 400 c.cm. of 3.8% sodium citrate, 1,000 c.cm. of 5.4% glucose, and only 600 c.cm. of blood. This considerable dilution, leading to a plasma of low protein content, is a practical point against the use of Rous-Turner preservative under conditions when stored blood is often converted to plasma. The glucose-citrate solution used by the Medical Research Council gives adequate survival up to fourteen days, and also provides plasma with a reasonable protein content. Certain preservatives shown to have excellent *in vitro* results had disastrous survival rates. For instance, though sucrose inhibits haemolysis during storage it gave a bad survival rate. The same was true of dextrin.

A further interesting result is recorded in this paper—namely, that changes in osmotic fragility may occur. When extremely fragile cells were transfused no increase in mean corpuscular fragility was observed in the recipient's blood or in the shape of the fragility curve. Further, when the fragile red cells were put into fresh plasma *in vitro* the mean corpuscular fragility reverted to normal. The most likely explanation of this reversal in osmotic fragility is that glucose is washed out of the cells when they are placed in a solution of relatively high tonicity at room temperature. This observation again emphasizes the importance of remembering that the red cell is an extraordinarily labile object, apt to change its size, shape, and characteristics rapidly. It must not be regarded, as is often done, as unchanging. It is clear from this interesting study that no preservative solution for red cells should be recommended until its effect upon the subsequent *in vivo* survival of the erythrocytes has been determined.

RADIUM THERAPY IN WARTIME

A pamphlet on air-raid precautions to be taken by holders and users of radium was recently issued by the Ministry of Home Security in conjunction with the Ministry of Health to county councils and county borough councils for circulation to those concerned.² The Commission wishes to re-emphasize that the object of the precautions (which are those it considers necessary) is not to restrict but to promote the use of radium under conditions of reasonable safety. It is an urgent necessity that radium

therapy should be resumed and increased by recognized centres throughout the country, so that all patients in need of this treatment can obtain it under safe conditions with the least possible delay. The Commission therefore hopes to hear from national and regional radium centres that they have now made arrangements to put into full use the whole of the national radium on loan to them. If any centre finds itself unable to do this, the Commission should be informed, so that the radium may be withdrawn and issued to other institutions where it may be needed. It has been decided that all national radium containers requiring return to the National Physical Laboratory, for repair or any other purpose, must be brought by a representative of the centre to the Commission office at Westminster Hospital, due notice having been given, as at present, to the National Physical Laboratory and the office secretary. Detailed instructions as to procedure have been given to the responsible authorities.

LUNGWORMS AND THE SWINE INFLUENZA VIRUS

When asked where flies go in the winter-time the biologist should be able to give a reasonably complete answer; the medical man, if asked where influenza viruses go when they are not producing influenza, would find it hard to know what to reply. Shope,¹ however, has now brought forward evidence to show at least where the swine influenza virus goes when it is not actually giving the pig influenza. In order to induce swine influenza it is necessary, it will be remembered, to inject the pig not only with the swine influenza virus but also with the bacillus *Haemophilus influenzae suis*. Of the two agents which thus act in concert to cause the clinical disease the bacterial component is capable, on injection, of eliciting an immune response that affords only partial protection against the disease. A swine influenza virus vaccine, on the other hand, confers a complete immunity to swine influenza. In the course of further experiments on the effect of multiple injections of *H. influenzae suis* in pigs a curious phenomenon came to light. Apparently normal pigs which had been given three injections of killed bacilli showed a mild febrile reaction exactly like that which follows infection with the swine influenza virus. After three injections of the living bacilli the pigs developed a disease exactly like that resulting from infection with both the components necessary to induce the clinical symptoms of typical swine influenza. The most likely explanation of the phenomenon seemed to be that the pigs, though apparently healthy and susceptible to swine influenza, harboured the virus in some unknown manner. Various experiments eventually showed that the swine lungworm can serve as an intermediate host in transmitting swine influenza virus to pigs. The virus is, however, present in a masked non-infective form in the lungworm, and to induce infection the virus must be rendered active by the application of a provocative stimulus to the swine it infects. Multiple intramuscular injections of *H. influenzae suis* furnish such a means of provoking infection. Swine influenza infections can be provoked in properly prepared swine during the autumn, winter, and spring. Although the phenomenon is not regularly reproducible, it occurs in well over half the experiments conducted in other seasons than the summer. Why the summer should be a refractory period is at present unexplained. The virus, it seems, can persist in its lungworm intermediate host for at least two years. Swine infected with swine influenza virus by way of the lungworm intermediate host show a more pronounced pneumonic process in the posterior lobes of the lungs than do animals infected intranasally with virus, but the situation of the worms providing the virus will

¹ *J. exp. Med.*, 1919, 29, 267.

² See *British Medical Journal*, Nov. 3, 1941, p. 673.

¹ *J. exp. Med.*, 1941, 74, 41, 42.

account for this. Occasionally, swine infested with lungworms carrying influenza virus fail to become clinically ill after injections of *H. influenzae suis*, but become immune instead. In these it is believed that lungworms containing the virus are localized outside the respiratory tract at the time of provocation.

The question naturally arises whether other viruses may not remain latent in parasitic worms. In a single experiment performed by Sbope, swine lungworms failed to transmit hog cholera virus; but Stein, Lucker, Osteen, and Gochenour² have found that strongylus worms collected from horses suffering from infectious anaemia harbour this virus: the virus of infectious anaemia was not found in *Cylicostomes* or bots derived from infected horses. Whether worms play any part in the life-history of the virus of infectious anaemia of horses requires further investigation; so far the virus has not been found in either eggs or larvae in the faeces of infected horses.

CO-OPERATIVE THERAPEUTIC RESEARCH

A group of leading manufacturers of medicinal products in this country has formed an organization for the more effective prosecution of research in their industry. It will be known as the Therapeutic Research Corporation of Great Britain Ltd., and the five constituent founder companies are Boots Pure Drug Company, Ltd., the British Drug Houses Ltd., Glaxo Laboratories Ltd., May and Baker Ltd., and the Wellcome Foundation Ltd. The registered offices for the time being are 183, Euston Road, London, N.W.1. This is not a merger or amalgamation of the companies concerned; each of them retains complete freedom of action in its special fields, and, while contributing to a new research pool, forfeits none of its special characteristics. Plans for research will be drawn up from time to time by a research panel comprising the heads of research from the several constituent companies and having power to co-opt or consult with other scientific workers when special problems arise. Products evolved as a result of research thus sponsored will be marketed and sold by the constituent companies under a common name, and in this connexion we note with approval that the Corporation undertakes to assist wherever practicable in simplifying the nomenclature of new medicinal substances. The directors of this organization are Lord Trent, chairman and managing director of Boots, Mr. C. A. Hill, chairman and managing director of British Drug Houses, Mr. H. Jephcott, managing director of Glaxo Laboratories, Mr. T. B. Maxwell, managing director of May and Baker, and Mr. T. R. G. Bennett, chairman and managing director of the Wellcome Foundation.

PREVENTION OF LIVER DAMAGE

The interventions of the surgeon are, in one respect at least, more damaging than those of a malevolent enemy: the latter affect healthy men; but the patient facing operation is, physiologically speaking, seldom at its best, either by reason of his disease or because of those antecedent conditions which produced the infirmity. Although seldom as dramatic as surgical intervention, the administration of drugs may be equally hazardous, and here, too, the risk is often increased by the poor health of the subject. Much work has been done with the object of improving this state of affairs. But whereas assessment of the effects of treatment in man is often difficult, that of the benefits of pre-therapy—that is, treatment preparatory to treatment—

is doubly so, for the simple reason that in most patients therapeutic agents are seldom used in strengths sufficient to cause damage. Recourse has therefore been made to animal experiment. By this means, for instance, we have learnt almost all we know of the protection of the liver against such drugs as chloroform and arsphenamine. It is now well recognized, through the work of Ravdin and his associates³ and Miller and Whipple,⁴ that a high protein intake affords even better protection than carbohydrate, and, conversely, that depletion of body protein predisposes to liver damage by these drugs. Analysing this protective action of protein further, the latter authors³ found that methionine and, to a lesser degree, cysteine gave a very high degree of protection, whereas other non-sulphur-containing amino-acids did not. The sulphhydryl group of these compounds is commonly conjugated by the liver with certain foreign substances, which are thereby "detoxified" and excreted as mercapturic acid: such, Miller and Whipple suggest, may be its action here (though in preliminary experiments no such compound has been found).

A further interesting discovery is the protective effect of the injection of various diverse substances whose only common action is that of producing an inflammatory reaction. Ravdin and his associates³ believe that this is attributable to the increased breakdown of tissue protein which occurs with any inflammatory process. The biochemical aspects of inflammation are too little understood for it to be certain how much of this proteolysis is generalized (if any), and how much is due to the local source entirely. Menkin⁵ suggests that local inflammatory proteolysis is responsible for the enhanced gluconeogenesis seen in diabetic subjects with superadded infection. It would be rashly teleological to conclude that this protective action of inflammatory proteolysis was evolved to combat the evil effects of chloroform addiction in the starved. It seems, however, at least possible that there may be other and more natural processes—for example, burns—which produce similar effects on the liver and in which this protective action may be concerned. The natural objection to the comparison of such animal experiments with similar therapeutic trauma in man is that the animal is previously healthy, whereas the patient is not; a better comparison is that pointed out above between the subjects of surgical trauma and those of enemy action. The results might, therefore, be expected to be more favourable in the animal than in the human recipient of drugs. However, from the work discussed above it is possible that the reverse may often be true, and that the subjects with infection may be in a more favourable condition to withstand further insults than those without.

A general meeting of Fellows of the Royal Society of Medicine will be held on Friday, December 12, at 2.30 p.m., when Sir Almroth Wright will read a paper on "The Need for Abandoning Much in Immunology that has been Accepted as True."

The next annual general meeting of the British Orthopaedic Association will take place in Oxford on January 2 and 3, 1942. The scientific sessions will be held in the lecture theatre of the Department of Human Anatomy at 9.30 a.m. on both days. The programme includes an address by the president, Prof. T. P. McMurray, on "Conservatism in Orthopaedic Surgery," and a paper by Prof. Philip Wilson (New York) on "Arthroplasty."

¹ *J. clin. Invest.*, 1939, 18, 277.

² *Amer. J. med. Sci.*, 1940, 159, 204.

³ *Ibid.*, 1940, 200, 739.

⁴ *J. clin. Invest.*, 1939, 18, 633.

⁵ *Science*, 1941, 93, 456.

¹ *J. Amer. vet. med. Ass.*, 1939, 95, 526.

IMPRESSIONS OF A REGIMENTAL MEDICAL OFFICER

BY

R. C. L'E. BURGESS, M.B.

After reading Major J. T. Robinson's article on the army medical officer (*Journal*, October 18, p. 555), it seems opportune to put on record certain impressions gained during two years as regimental medical officer to a training depot.

Having worked for twelve years in a mixed general practice, the first point to strike me forcibly was the similarity between the men attending daily sick parade and those attending the civilian surgery; the only real difference was that a soldier has to attend for minor ailments which he would not dream of reporting to his civilian doctor. This is not the soldier's fault, but is rendered necessary because of the rule which insists that no man may be excused all or part of his drills without a supporting medical certificate. It is quite unnecessary, and often not desirable, that every man who reports sick should be given a thorough physical examination. Any practitioner who has been used to busy surgeries will easily pick out those who require a detailed examination and those who can rapidly be dismissed with a placebo or, if necessary, an admonition.

An introductory address was always given to each new intake of recruits, in the course of which it was emphasized that the R.M.O. was in point of fact their panel doctor. This was invariably appreciated by the audience, 99% of whom were panel patients in civil life, and had had in the main a fair deal from their doctor. A brief description of the methods by which a soldier could see his M.O. was then given, and in order to overcome the somewhat stilted atmosphere of the daily sick parade—for which the sick were first paraded at the regimental office, then marched up to the medical inspection hut or room by the sick and defaulters orderly (an unfortunate combination of terms)—it was suggested that whenever possible men should report sick after duty. An informal sick parade was held between 5.30 and 6 p.m.; this proved very helpful in getting to know the men, and also in discovering and segregating those who had started a feverish condition during the day and who in the normal course of events would not have reported sick till the morning, thereby being in close contact with their fellow soldiers during what is probably the period of greatest infectivity.

A recruit probably makes more appearances on sick parade during his first month in the Army than during the next twelve months. This is partly due to change of environment and to the breaking in of new boots, with accompanying sore feet, but more often it is due to the results of inoculations, particularly primary vaccinations.

A satisfactory contact with the men having been made, the R.M.O. should endeavour to be equally successful in his dealings with the Commanding Officer. One point which no R.M.O. should ever forget is that he is an expert employed in an advisory capacity, and that once he has convinced his C.O. that his medical knowledge and judgment are sound, it should rarely be necessary for the A.D.M.S. to exercise more than a benevolent supervision over the medical arrangements of the regiment.

Diagnoses on sick reports should so far as possible be couched in simple language. Claw-foot and crabs mean much more to the lay mind than *pes cavius* or *pediculosis pubis*.

All cases of sickness having a direct connexion with the cooking or the sanitary arrangements of the regiment should be investigated at once; for any C.O. who notices that several cases of diarrhoea are recorded on the sick report will make immediate inquiry of the M.O., and it is obviously to the credit of the latter if he has a satisfactory answer ready.

Functional cases require a considerable amount of time and patience, and it is important that every case of neurosis should be thoroughly investigated by the R.M.O. before being sent to the psychiatrist. These cases may be divided into the following groups:

1. *Dull and Backward*.—These are usually straightforward cases; the common symptoms of headache and insomnia are brought about largely because recruits of dull mentality are unable to assimilate new technical details. These invariably obtain a C— in the F.H.3 educational test.

2. *Anxiety Neurosis and Hysteria*.—Some of these patients are dull, and the abrupt change in their lives has upset their mental balance. Often this upset is temporary, and they rapidly become normal on return to their homes and to civil employment. Others become unbalanced because of personal reasons—for example, dislike of a particular job, getting at cross-purposes with a superior, and often domestic trouble at home. It is very necessary for the M.O. to gain the confidence of these men, for it is not easy to get a soldier to tell of his unhappy personal difficulties.

There is a third group, fortunately a small one, of men who seem determined not to soldier, and ultimately it is necessary for the medical profession to decide whether these are psychopathic cases or not. In the few cases of this type that passed through my hands I was not always convinced that the recommendation for discharge made by the psychiatrist was the correct one. I have attended several informal talks between the psychiatrist and the commanding officer of a training regiment, and I know that the arguments raised by the psychiatrist have failed to convince the lay mind. It would be preferable if cases recommended for discharge were transferred to a psychological depot, where they could be kept under continuous observation before finally being boarded out of the Army.

Conclusions

A medical officer should not be posted to a regiment unless he has spent at least six months in general practice.

The preliminary R.A.M.C. course should be followed by a fortnight's duty under an experienced R.M.O., possibly in a training camp. This would help the newly joined medical officer to put into practice the theoretical knowledge he has learnt at the depot.

It is important that the R.M.O. should be a good mixer, and be respected by both officers and men. He should be fair and unbiased in his approach to the various problems that will arise.

Just as in civil life some doctors are quite unsuited to general practice, so in the R.A.M.C. there are men unsuited to regimental practice. These should, if possible, be sorted out in the initial training and be sent to other branches of the Service.

It is recognized by many A.D.M.S. that on the efficiency of the R.M.O.s depends the health of their Divisions, and it seems a pity that it is not possible for proved experts in regimental medical duties to be granted increased responsibilities in their own sphere. The present unit of 800 to 1,000 men scarcely provides enough work for an experienced M.O., and he could look after double that number without being overworked.

The reception stations in this country give an increased chance for an R.M.O. to carry out better medical work, and every facility should be given to enable medical officers to do duty in them.

Short spells in hospital would be welcomed by all M.O.s, as would postgraduate courses arranged in conjunction with the various teaching hospitals.

According to the *Deutsche Medizinische Wochenschrift* (March 28, 1941), a new order for combating trachoma in the Eastern Territories (Poland) has been issued by the Governor-General. The order stresses the responsibility of the patient, his parent or guardian, and the doctor with regard to the disease in order to impress on the population the necessity for treating it. In co-operation with the Trachoma Research Institute in Cracow, the Children's Trachoma Hospital in Witkowicz, and a network of mobile units now to be put into operation, a start has been made to combat this disease. A special trachoma hospital has been equipped in Litzmannstadt. It is calculated that there are about 100,000 cases of trachoma in Poland.

LOUSE-BORNE TYPHUS FEVER

As briefly announced last week, the Ministry of Health has issued a note on this subject (Memo. 252/Med.) summarizing the principal facts and giving guidance on diagnosis and administrative control. The existence of louse-borne typhus fever in Europe and North Africa at the present time makes it advisable to take precautions in case the disease should reach this country through refugees, prisoners of war, or returned travellers. This memorandum deals only with the louse-borne type of typhus as it may occur in this country, but it must not be forgotten that the varieties of typhus fever carried by the tick and the flea have in the past been introduced into Great Britain. The form of typhus under consideration is carried by body lice and probably by head lice. It may occur with typical severity in a perfectly well-nourished person; mild cases may occur and are liable to be missed.

Clinical Features

Louse-borne typhus fever is an acute infectious disease lasting from twelve to sixteen days. It is characterized by a general maculo-papular rash which may become haemorrhagic and which is invariably absent from the face. Toxaemia and nervous manifestations are severe. The incubation period is usually between eight and twelve days and most commonly about ten; exceptionally it may range between five and twenty-three days. The onset is sudden, but may be preceded by malaise. Common initial symptoms are rigors, headache, pain in the limbs and back, vomiting, and epistaxis. The temperature generally rises rapidly to 103° F. or more. The patient soon develops a dull and heavy expression with flushed and congested face, swollen eyelids, and injected conjunctivae. Delirium begins very early and bronchitis is common. The tongue is furred and later tremulous, with limited power of protrusion. The patient gradually drifts into the "typhoid state," which is fully established between the third and fifth days. There may be either maniacal manifestations or mental torpor. Bronchopneumonia is a common complication. Cardiac dilatation and weakness are almost invariable and heart failure is frequent.

The rash begins on the fourth or fifth day as small red papules in the axillae, on the abdomen and chest and back, later spreading to the extremities. For a day or two the papules fade on pressure, after which they fail to do so and become dull red. They may resemble closely the eruption of typhoid fever, but in general are more numerous, and fresh crops do not appear. In some cases subcuticular lesions, which may be as large as a shilling, appear between the papules and give the effect of marbling. Ecchymoses may form upon the skin of dependent parts. In children especially the rash may be absent or may be confined to a few papules on the chest. When haemorrhagic it closely mimics that of haemorrhagic small-pox, and may be accompanied by haematemesis, haematuria, and melæna.

The temperature, after its rapid rise, remains fairly steady throughout the illness, begins to fall about the twelfth day, and returns to normal by a rapid lysis. Though some patients remain in torpor throughout, others go through a phase of nervous excitation lasting some days. The patient then either passes into a "typhoid state" or dies. The special features of this state in typhus are nightmare dreams and a tendency for the tongue to shrivel, become nearly black, tremulous, and incapable of protrusion. In the "typhoid state" the patient may succumb, or he may rapidly pass into the stage of defervescence.

Diagnosis of Typhus

Clinically the diagnosis rests on the sudden onset with high temperature; the occurrence on the fourth or fifth day of the characteristic rash, typically absent from the face; and the striking mental condition.

About the end of the first week, and often earlier, the patient's serum develops the power of agglutinating the so-called Proteus X strains (Weil-Felix reaction). Samples of blood serum should be sent (1) in the London area—to any

sector pathologist of the Emergency Medical Service; (2) outside the London area—to any laboratory of the Emergency Public Health Laboratory Service, or to the bacteriological laboratory of the nearest university.

In the matter of differential diagnosis, fevers of the enteric group can be eliminated by the results of blood culture, cultures from the faeces and urine, and agglutination tests; cerebro-spinal fever may be very difficult to distinguish from typhus clinically, and reliance has to be placed on the results of examination of the cerebrospinal fluid and the Weil-Felix reaction; encephalitis may be distinguished from typhus by the gradual onset, absence of rash, the paralysis, and the absence of the Weil-Felix reaction; the prodromal rashes of small-pox may resemble those of typhus, and for some time the differential diagnosis may be difficult.

Administrative Control

Typhus fever is compulsorily notifiable to the M.O.H., who must report every case immediately to the Ministry of Health. The probability being that the disease would first be introduced into the larger aggregations of population, a number of the principal towns have been asked to organize teams for dealing with an outbreak, the personnel being provided with protective clothing and offered preventive inoculation. An illustrated description of a type of protective clothing found valuable in practice is appended to the memorandum. In view of the difficulty of diagnosis the M.O.H. is advised to arrange for the services of a medical officer conversant with the disease, resort being made to the medical staff of the Ministry of Health, or, in London, to that of the L.C.C. On application to the Ministry a mobile team from the Harvard Field Hospital Unit of the American Red Cross will be available for help in diagnosis and control in any part of England and Wales. The M.O.H. should without delay go into the question of providing hospital accommodation for cases of typhus. During the admission of a patient to hospital the staff engaged are particularly exposed to the danger of contracting the disease. Precise details are given on this important matter so that all lice may be destroyed. A special ward must be set aside for typhus patients and accommodation provided for the staff at risk.

Every effort must be made to trace the origin of the infection, and all persons who may have been exposed to risk must be freed from lice and kept under surveillance for three weeks. It may be necessary to delouse heavily infested persons a second time after an interval of ten days, to ensure the destruction of lice hatched from eggs that have survived the first delousing. Lastly, where the possibility of typhus exists every effort should be made to lessen the amount of louse infestation among the population generally. Apart from known contacts a vigorous campaign of cleaning-up of infested persons should at once be undertaken by the health authority. The powers with regard to disinfection are set out in an appendix to the memorandum.

GALLANTRY IN CIVIL DEFENCE

The award of the M.B.E. (Civil Division) to Dr. LESLIE FREDERICK WILSON, medical officer, Civil Defence First Aid Post Service, Kingston-upon-Hull, is announced in a *Supplement* to the *London Gazette* dated November 21. The announcement reads as follows: "Dr. Wilson has spared no pains in training the staff of his first-aid post, and the high standard of duty maintained by them has been largely due to his splendid example. On one occasion, when his post was isolated by fires and blocked roads, Dr. Wilson improvised temporary hospital accommodation for a number of seriously wounded patients and treated them until they could be removed by ambulance the following day. His coolness and devotion to duty during heavy raids have inspired all with whom he has come in contact."

Dr. KATHLEEN EVELYN SLANEY (Mrs. William Bullock), medical officer, Civil Defence First Aid Post Service, Southampton, has been commended for brave conduct in civil defence.

HERMAPHRODITISM: A HISTORICAL APPROACH

VICARY LECTURE BY DR. CAWADIAS

The Thomas Vicary Lecture of the Royal College of Surgeons of England was delivered before the President and Council on November 26 by Dr. A. P. CAWADIAS, whose subject was "Hermaphroditism."

Beginning with a definition of terms, Dr. Cawadias said that hermaphroditism should be taken as synonymous with intersexualism. It was a constitutional condition, or disease, characterized by the presence of male and female features in the same individual. There were three classes of hermaphrodites or intersexual beings: (1) the male hermaphrodite, the feminized man, in whom the male sex predominated; (2) the female hermaphrodite, the virilized woman, in whom the female sex predominated; and (3) the complete hermaphrodite or bisexual being, with complete sexual organs, both male and female. The textbooks notwithstanding, this last condition did not exist in humans.

The Greeks and Earlier

The ancient Eastern peoples, the Assyrians and others, imagined a bisexual deity or perfect being, a mystical image through which they tried to solve the problem of the sexes and the phenomenon of fertility. The cult of bisexual deities was taken over by the Greeks, whose bisexual deity was Hermaphroditus, but between the Greek god type of grace and charm, the harmonious blending of feminine beauty and adolescent virility, and the colossal, ugly, terrifying Oriental bisexual deities there was an immense difference.

It was during the Hellenic period that the really scientific view of human intersex began to be formed. The Greeks regarded the human being as a whole, a biological unit reacting to its environment. They observed accurately, reasoned close to the facts, and rejected all mystical and supernatural explanations. The ancient Greek physicians gave the first description of the two great classes of intersexualism. Hippocrates described both androgynoidism, or male intersex, in his "Disease of the Scyths"—what was known to-day as eunuchoid feminism—and gynandroidism, or female intersex, in his "Epidemics," and studied what was now described as the Cushing syndrome. The Greeks also described incomplete forms, *formes frustes*, of intersexualism. Aristotle pointed out the feminine nature of hypospadias, saying of such patients that they seemed to have the nature of man and woman at the same time. The male intersexualism of the Scyths was attributed by Hippocrates to the destruction of the semen through various diseases due to excessive horse-riding and their ill-considered treatment. For female intersexualism Hippocrates accepted the predominant role of ovarian dysfunction, and wrote, "We had the impression that if we could bring back the menstruation the symptoms would retrocede." Intersexualism was considered by the Greeks as a disease, a natural phenomenon, not a manifestation of divine wrath or a fitting indication for the cruelty shown by the Romans or at the Renaissance.

Succeeded by the Dark Ages

After the brilliant Greek period came the "period of fables," the dark ages of the history of intersex, beginning with Pliny in the first century, but continuing until the end of the eighteenth. Instead of accurate observations the physicians accepted tales in a remarkably uncritical spirit and persisted in superstition. The authors of this period described females turning into males; they did not accept the transformation of males into females, believing Nature to be progressive, from the imperfect to the perfect, from the female to the male. Ambroise Paré, a great surgeon but just as credulous as his contemporaries, reported the case of a "girl" who at the age of 15, on jumping over a stream, discovered to her horror male genital organs appearing at her perineum, no doubt to be explained as a case of cryptorchidism.

The greatest error of the physicians of this period was the notion of complete hermaphroditism among human beings. Some of the physicians who followed Pliny pretended to have seen such beings. In the works of Arnaud, a French surgeon established in London in the eighteenth century, there was an

account of two hermaphrodites of Valencia who married each other and both became pregnant through mutual ministrations. These physicians even believed in bisexual beings capable of self-fertilization, of which there was an echo in the theory of Langerhans, who explained the genesis of testicular teratomata by postulating that an isolated ovarian element became fertilized in the testicle.

In this period hermaphrodites were maltreated as expressions of divine anger. Not only the monsters but their parents were put to death, and that as late as the seventeenth century. Even when superstition began to wane, cruelty persisted. Hermaphrodites were allowed to choose their own sex, or a sex was imposed upon them, but to that they had to adhere and were punished terribly if they used the prerogatives of a sex which was not theirs.

The Mechanistic Physiological Period

The lecturer next came to the period which, although it began with Sydenham and Harvey, centred principally in the nineteenth century. The first clinical advance in this period was the description of the two genuine classes of intersexes as introduced into science by the Greeks. This fuller and more accurate clinical study was rendered possible by John Hunter and later by Charles Darwin in their conception of primary and secondary characters, the former comprising the organs effecting reproduction, and the latter the other features characterizing sex but not involved in reproduction. Dr. Cawadias himself gave a clinical grouping of sexual features: gonadal, genital, morphological, mental, and vocal.

A second line of advance in clinical knowledge was the isolation and description of incomplete forms, *formes frustes*, of intersexualism. Masochism and travestism—the latter, in the male, a love of feminine dress and adornment—had been so described, as had certain cases of male homosexuality, and there were similar *formes frustes* in female intersexualism, a female sadistic form, and so on. The third and most recent advance in clinical study of the intersex in this period related to physiopathological forms, of which adrenal gynandroidism—a female intersexualism depending on hyperfunction or dysfunction of the adrenal cortex—was the best known.

Although this period marked distinct progress, it fell short of the Hellenic period by its acceptance of complete hermaphroditism. Klebs, who was mainly responsible for the propagation of this erroneous conception, maintained the existence of complete hermaphroditism on the ground that some individuals possessed both ovary and testicle. In all cases of "complete" hermaphroditism described even to-day the testis or the ovary was rudimentary and not functioning. Bisexualism could not be accepted on such slender evidence. Was there a normal woman who did not possess in her ovarian medulla testicular rudiments, or a normal woman who did not secrete testosterone? According to Klebs's criterion all normal women should be considered true hermaphrodites.

The lecturer next traced the rise of the study of the endocrine mechanism of intersexualism, especially through the painstaking work which began with Brown-Séquard, demonstrating the masculinizing influence of the testis through its hormone, testosterone, and the feminizing influence of the ovary through its oestrogenic hormone. Subsequent work had shown the masculinizing influence of other endocrine glands, mainly of the adrenal cortex, and the feminizing influence of the thyroid. Intersex had been shown to originate in a disturbance of balance between the opposing hormones. Speaking of endocrinotherapy in this sphere Dr. Cawadias said: "I know of no fact more capable of increasing our faith in internal medicine than the complete transformation of repulsively feminized boys into normal virile adolescents, thanks to a few hormonal injections, or the change into beautiful and complete womanhood of girls with hairy faces and bodies and thick and acne-ridden skin, thanks to oestrogenic hormone therapy." But these almost magical results certainly did not justify the orgy of glandular injections given at random, often by men ignorant of the complicated physiology of the internal secretions.

The Biological Period

Coming to the contemporary period of medicine, which he described as the biological, Dr. Cawadias said that it was

characterized by the consideration of the living being as an integrated unit. The biological thinking of Hunter and Darwin had been carried on by such physiologists as Gaskell, Sherrington, Haldane, and the "clinicians of the whole man," maintaining in medicine the Hippocratic spirit. The development of sex was now better understood, and therefore disturbances in that development resulting in intersex became clearer. It was shown how sometimes, in the normal mechanism of sex development, the sexoformic impulse was deflected at a certain stage, and development then continued according to the opposite sex. This deflection could occur at various phases; the earlier it occurred the fewer organs differentiated, and therefore the more marked was the intersex. It proceeded from two groups of factors: hereditary weakness of the genetic impulse and factors of environment, the latter including education, imitation, and social milieu.

Sex was not a fixed feature; it was the result of an evolution, which continued. The lower beings remained at the stage of asexualism. Later sexual characters appeared, but coexisted in the same being (namely, plants and some lower animals); later still the sexes separated, and complete unisexuality could not be conceived at this, the human, stage of evolution.

In passing, the lecturer noted one differentiation between the sexes. Feminism in men—for example, in the male castrate—was regarded as a retrogression, but certain male features acquired by women were regarded as not abnormal but as perfecting the woman. He instanced Lady Hester Stanhope, the niece of William Pitt, a mild adrenal gynandroid, whose features and build were masculine, and whose courage, behaviour, and domineering tendencies were traits associated with the male sex, and yet she was admired, and had some sentimental and even physical adventures.

The Basis of Sex

The ovary and testis were not the basis of sex, but merely manifestations or results of the initial genetic sexoformic impulse, which in human beings was either male or female and never bisexual. A female was not the appendage of her ovaries, to use Virchow's phrase, but had ovaries because she was female. A male was not male because he had testes; he had testes because he was male. There was neither absolute male nor absolute female. Every male had more or less latent female features, and vice versa. Intensification of this normal intersexualism characterized the disease hermaphroditism, and all degrees were encountered.

As intersexualism was biologically a disease of the whole individual, not merely a disease of a particular endocrine gland, any treatment must be directed to the whole constitution. Had we any right to punish an individual who showed the homosexual form of intersexualism? Theoretically we had no such right. A male homosexual of intersexual origin was in fact an intersex who wanted to be a female. On the other hand, a homosexual was a focus of infection. Such a boy at school infected others, causing sex reversal through psychological factors, and handicapping them for life. The duty of society to such persons was to cure them or to prevent them from harming others.

Finally Dr. Cawadias touched on adrenal virilism, a special problem by itself. When it was due to a tumour, the indication for operation was the tumour, not the intersexual state. When it arose as an adrenocortical hyperplasia the problem was more complex. In adult cases no demasculinizing adrenalectomy should be performed if the patient wished to remain male. But the principle of sex choice should not be pushed so far as to withhold adrenalectomy in infantile cases of adrenal virilism, for the results of the operation were so brilliant that it was not justifiable to risk for these subjects the persistence of an intersexual state which, notwithstanding the predominance of one sex, was always a handicap.

HOSPITALS IN THE POST-WAR WORLD

INTERNATIONAL CONFERENCE IN LONDON

An international gathering filled the Great Hall of the British Medical Association House in London on November 25 when a conference was summoned by the United Kingdom Council of the International Hospital Association to consider the position of hospitals the world over at the dawn of peace. King Haakon of Norway, the Grand-Duchess of Luxemburg, and Dr. Benes, lately President of Czechoslovakia, attended, together with the Prime Minister of the Netherlands, the Belgian Ambassador, the Ministers of Norway, Venezuela, and Colombia, and official or other representatives of Poland, Yugoslavia, Greece, Palestine, Iraq, Egypt, Abyssinia, India, and China. The British Red Cross and the St. John Ambulance Association, the American Red Cross, and the Czech and the Netherlands Red Cross sent representatives, and there was a representative of the Free French Medical Corps. The Agents-General of several Australian States were present, as well as Sir Earle Page, the envoy of the Australian Government.

The Minister of Health (Mr. Ernest Brown) and the Secretary of State for Scotland (Mr. T. Johnston) attended, as did the Chief Medical Officer (Sir Wilson Jameson) and several officers of the Ministry, the President of the Royal College of Surgeons (Sir Alfred Webb-Johnson), the Chairman of Council of the British Medical Association (Mr. H. S. Souttar), and the representatives of many other bodies concerned with medicine, hospital administration, and social welfare.

Mr. W. McADAM ECCLES, chairman of the United Kingdom Council, presided over this assembly. At the outset a message was sent to the King, expressing gratitude for the interest he and the Queen have taken in the work of hospitals and the hope that with the swift coming of peace there may be freedom to continue and foster the healing art in every hospital in the world. Before the conference ended a gracious reply was received. A cable of greeting was also sent to the President of the International Association, Dr. MacEachern of Chicago.

International Hospital Collaboration

Dr. A. T. JURASZ, dean of the Polish Medical Faculty in the University of Edinburgh, opened a debate on the collaboration which must follow the war, a collaboration which must extend to all nations prepared to work together on a basis of honesty and friendliness. He suggested a greater interchange of personnel, both lay and medical; a six-months residence in the larger hospitals for graduates of different countries on a principle of international exchange, and an extension of post-graduate teaching. Prof. J. LOEWY (Czechoslovakia) followed with the suggestion for a "Health Union" among European countries, the basis of which would be the curative resources of each country, such as mountain sunshine or medicinal springs, and the distribution of patients without regard to national boundaries. Dr. GEORGE H. H. WOO (China) repeated the description of recent hospital progress in China which he gave to the China Institute the other day. Dr. KARL EVANG (Norwegian Minister of Social Welfare) said that in his country of three million inhabitants there was one hospital bed to every hundred of population. He believed that after the war the same system of hospital provision, based on sickness insurance, would continue. Dr. E. J. BIGWOOD (chairman of the Belgian Commission for the Study of Post-war Conditions) said that the Governments of the Allied countries at present in London had already considered a plan of action, both for immediate relief after the war and also for long-term development.

Hospitals in English-speaking Countries

Mr. McADAM ECCLES introduced a discussion on the special problems of English-speaking countries. It was not too early, he said, to consider problems that would arise as soon as peace was declared. He suggested that in any area the total number of beds required for in-patient treatment and the expected number of out-patients should be computed, the approximate annual cost per bed and per out-patient ascertained, allowance being made for some kind of sinking fund for the purchase of

The Ministry of Health has now issued in Circular 2395B the promised list of special clinics outside the Emergency Hospital Scheme which are to function as additional Fracture Clinics "C" (*Journal*, August 23, p. 290). Instructions on the method of referring cases to these clinics are being sent to all hospitals in the E.M.S.

new equipment and future rebuilding, and then on the basis of this annual budget it would be possible to announce the amount necessary from the local community for the support of their hospitals, and he did not doubt that the money would be afforded voluntarily.

Mr. H. S. SOUTTAR referred to the sweeping away of divisions between classes of hospitals. He had been a member of the staff of a voluntary hospital, but at present he was taking charge of an L.C.C. hospital under the control of the Ministry of Health. He referred to the work of the Medical Planning Commission as a kind of "Brains Trust" to determine the character of the after-war service, but, of course, the International Hospital Association, along its own lines, had a still wider purview.

Voluntaryism and State Aid

Lord GIFFORD, who has been associated with a hospital in Sydney, said that that hospital preserved its voluntary character although 60% of its income came from the State. More than half its board were State-appointed, but once they took their seats they were indistinguishable from other members. Voluntary hospitals would ask a great deal more aid from the State, and yet he believed that they could preserve their democratic character. Sir EARLE PAGE also said that in Australia they had endeavoured to incorporate the voluntary system with the maximum amount of State aid. Sir WILLIAM GOSCHEN (London Hospital) spoke of the need for a scheme which would bring the voluntary and municipal hospitals together. Mr. CARUS WILSON (St. Bartholomew's) said that the doubts which had been expressed as to the survival of voluntary hospitals after the war were also expressed during the last war, but voluntary hospitals continued then, and they would continue now. But they must look to such organizations as the Hospital Saving Association for augmentation of their income.

Among other speakers were representatives of the British Dental Association and the Royal College of Nursing, and the discussion was closed by Dr. ANDREW DAVIDSON (Chief Medical Officer for Scotland), who said that although the Committee on Scottish Health Services found a shortage of 3,600 beds, this had been more than made up by the Emergency Hospital Service. There was also now available for the first time in Scotland a comprehensive orthopaedic scheme.

E.M.S. Hospitals

Mr. ERNEST BROWN, Minister of Health, mentioned the close relation between Great Britain and the United States in connexion with the Emergency Medical Service. The U.S.A. not only had given material help but had lent medical and nursing personnel. The E.M.S. was not designed as a pattern for future development, but it had nevertheless proved a very useful experimental ground from which lessons of long-term value had been learned. It was organized to cope with the expected casualties of war, but in practice it had assumed a shape which made possible the adaptation to war needs of all kinds of existing hospitals and services. It had yielded experience with regard to the relation of hospitals one to another which would greatly influence the peacetime situation.

A HOMESTEAD SCHEME FOR MOTHERS AND CHILDREN

The family unit is the first casualty in war. If the nucleus of the State is the family—the living unity of father, mother, and children—then by some means the family should be enabled to maintain its status and fulfil its function, in spite of the disruptions caused by the war. The family unit was the basic idea of that great social venture, the Pioneer Health Centre at Peckham, whose work is now largely suspended because so much of the population it served has migrated. But the ideas which animated the Centre go on, and some of them are ably put forward in a memorandum addressed to the Ministry of Health and other Departments over the signature of Dr. Innes Pearse, the medical director.

Dr. Pearse proposes a homestead scheme, which will provide a reasonably healthy and useful life for the wives and children

of mobilized men. She wants to see the evacuated women and children introduced into a society of people like themselves, of which they would become an integral and significant part. If the family is to function the mother and child must not be separated, as they would be if the former went into one of the auxiliary services or into "munitions." Perhaps one-third of the mother's working day must be given to the young child, but the remainder could be devoted to work of national importance, most obviously food production. The running of a mixed farm and garden—a homestead—on an estate of thirty or fifty acres, of which there are many in this country, should be within the capacity of a group of twenty-five to thirty women with two-thirds of a day's work to give on the spot where they are living. Under the guidance of advisers and with the help of a nursery-school worker, the mothers in such a colony would be able to undertake useful self-supporting work on the land, they would take their turn in household duty, they and their children would live in relative safety and under optimum health conditions, and, what is of equal importance, the fathers, to their own great benefit, could rejoin them on the farm during their periods of leave. Dr. Pearse begs the Government to set up a voluntary service of young mothers with children under 5, to begin with, to be called "The Mothers' Auxiliary Yeomen Service." The health overhaul, which was another idea of the Peckham Centre, could be undertaken by a visiting doctor and nurse-laboratory attendant travelling in a motor van to each of a batch of homesteads, and they would also supervise the diet and general hygiene and assure antenatal and post-natal care and child welfare. It is not pretended that such a scheme could do more than touch the fringe of the vast evacuation problem; but it would at least provide that a certain number of women, made familiar with the land and having had their resourcefulness and initiative developed and their health reinforced, would be ready to stand with their men on the return of the latter from the war, a reconstituted family unit in wholesome surroundings, better able to meet the demands of the new world.

Local News

ENGLAND AND WALES

London's Wartime Hospital Needs

Mr. Charles M. Power, house-governor and secretary, reports that the Ministry of Health has placed at the disposal of the Westminster Hospital 100 beds at an emergency hospital near London. To these beds civilian patients are now being transferred, after initial treatment in the London wards of the hospital. Here, also, out-patient children needing operations for the removal of tonsils and adenoids are being sent. The Westminster Hospital has been able to reopen some forty beds for the accommodation of contributory middle-class patients. The Ministry of Health, at the request of the National Radium Commission, is providing a centre to contain 120 beds for patients needing radium and x-ray treatment. Five of the London hospitals will share the beds. It is hoped that these beds may be the means of avoiding delay which has occurred during recent months, and that the treatment of these distressing cases will not again be interrupted should air raids on London be resumed.

Emergency X-ray Service for Hospitals

A fleet of fifteen x-ray vans now stands ready to answer calls for assistance from hospitals enrolled in the Ministry of Health's Emergency Hospital Service. These mobile vans, fitted with the latest type of equipment, have been presented by the War Organization of the British Red Cross and Order of St. John of Jerusalem. They will be stationed at selected hospitals in London and the Provinces so that calls from any part of the country can be answered. It is not intended to use them for routine work, but they will constitute reserve sets for an emergency caused either by raid damage or by unexpected demands on

a hospital's resources. Each van generates its own current for the x-ray apparatus, which can be operated by cable up to 100 yards away. There is also a dark-room with films and developer. Typical purposes for which these units will be used are: in temporary breakdown of a hospital's x-ray service because of raid damage or the interruption of power supply; to examine cases in the wards of hospitals which have no mobile or portable apparatus; and to supplement the x-ray service at hospitals where, because of the large number of casualties, the normal facilities cannot cope with the demand. The vans will have women drivers, and a radiographer will be attached to each unit. The radiographer, who will be appointed by the hospital at which the mobile unit is stationed, will work in the hospital while not engaged with the unit. The Ministry of Health is anxious that full use should be made of these mobile units. Application should be made to the Hospital Officer or, in the case of the London Sectors, the Group Officer.

Tuberculosis in Lancashire

To meet the need for economy in paper, Dr. Lissant Cox, the central tuberculosis officer to the Lancashire County Council, presents for 1940 a very truncated interim report. He notes that in 1940 the new cases reported of pulmonary tuberculosis numbered 1,394, an increase of 105 over the previous year. On the other hand, the number of new cases of non-pulmonary tuberculosis was 751, or 39 less than in 1939. The death rates from tuberculosis per 1,000 of the population recorded in 1940 were as follows (the average for the five years 1935-9 is added in parentheses): pulmonary tuberculosis, 0.46 (0.44); non-pulmonary tuberculosis, 0.09 (0.09). It is good to read that Lancashire has been fortunate in respect of institutional treatment, because the sanatoria and hospitals, being small, were not commandeered for other purposes, so that treatment and isolation have been carried out without much alteration in spite of the war. Dr. Lissant Cox adds some data on the examination of recruits in connexion with the National Service (Armed Forces) Act, 1939. Since the passing of the Act to the end of October, 1940, the number of suspicious cases referred by medical boards to the county tuberculosis officers was 614. Of this number 78 were already known to the tuberculosis officers. Of the remaining 536, 27, or 5%, were found to be suffering from active tuberculosis (the sputum contained tubercle bacilli in 11); 15, or 2.7%, had quiescent lesions; and 3, or 0.5%, were patients with active disease who had received treatment for tuberculosis under another authority. The total number of recruits examined by the medical boards during this period has not been made known to Dr. Lissant Cox.

SCOTLAND

Post-war Reorganization of Hospitals

Mr. Thomas Johnston, M.P., Secretary of State for Scotland, in a recent address to members of the Scottish Advisory Committee of the Nuffield Provincial Hospitals Trust, urged the need for speed in defining Scotland's post-war hospital reorganization policy. He hoped the Trust would continue to help in propaganda for co-ordinating the voluntary and local authority hospitals and the new State-run emergency hospitals which had been created by the war. Mr. Johnston announced that the whole position was to be examined by a committee of inquiry which his Advisory Council on Post-war Problems had decided to set up as soon as possible. He said it was essential to have a vision now of how they were going to co-ordinate all the hospital services which would provide Scotland for the first time in its history with a surplus of hospital beds. One of the main tasks of the committee of inquiry would be to determine how co-ordination was to be secured and financial aid given to voluntary hospitals "without imperilling their jealously guarded autonomy." Members of the Scottish Advisory Committee of the Nuffield Trust agreed to give evidence before the committee of inquiry if required. It was also agreed to place at the disposal of the Secretary of State information which the Nuffield committee collected when examining the possibilities of regional reorganization of Scottish hospitals.

Correspondence

Radiology and Pelvic Disproportion

SIR.—Prof. Munro Kerr utters a warning against the easy assumption that x-ray examination now provides a lazy short cut to deciding the correct management of obstetric disproportion. I agree with his protest, and should be very sorry if recent publications have given any such impression. The radiologist who lacks obstetric experience, who has had no opportunity of studying the patient, and who cannot calculate with the components of difficult labour, is put in an impossible position when asked to pronounce, in a doubtful case, on obstetric prognosis and treatment; his position is even more difficult than it is when he is faced with a similar problem concerning a patient with a doubtful lesion in the lung. Further, there are many subtle pitfalls in the radiological diagnosis of disproportion, and I, for one, would regard with the greatest alarm any suggestion that the radiologist should reign supreme as dispenser of authority for the performance of Caesarean section.

Nevertheless, are we holding an even balance? Speaking as an obstetrician, I believe that we have been unreasonably tardy in accepting the aid of a valuable tool. It is for us to learn the real uses, and for us to read the meaning—as we can do with increasing accuracy—of the "writing on the wall."

Prof. Munro Kerr refers to a passing criticism I recently made of trial labour. This was taken from a paper dealing with the methods, clinical and radiological, by which pelvic contraction can be detected and its meaning assessed; and was intended to give point to my disapproval of the modern tendency to ignore pelvic measurements and to rely blindly on the method of trial labour for all sorts and types of foetal-pelvic disproportion. This tendency is, in my opinion, as reprehensible as is the extravagant and uncritical enthusiasm for radiological diagnosis which Munro Kerr so rightly deprecates. But the careful obstetrician will make intelligent use of both methods. Trial labour achieves its greatest success in dealing with the antero-posterior brim contraction of the rickety flat pelvis. It is indeed amazing to find how extreme is the contraction that can sometimes be safely overcome by the forces of Nature. This I referred to in the paper quoted. But the benefits of trial labour are far less certain when the contraction not only affects the brim but is continued downwards through the birth canal (the simple flat and the generally contracted pelvis), or when there is a true funnel contraction of the pelvis. In such cases a very great responsibility rests on the observer, and too often in hospital practice unfair reliance is put on a relatively inexperienced house officer. Labour progress indeed takes place, but it is painfully, and sometimes dangerously, slow. Nor is the state of the cervix a safe indicator for deciding the duration of the trial, for in these cases the cervix may never reach full dilatation, and the patient, in fact, may never truly enter the second stage of labour. When, then, shall word be given that conservatism has failed and surgery must come to the rescue? When does watchful expectancy become ignorant idleness? Too often, while hesitation prevails the foetal heart stops. Too often the labour becomes so prolonged that Caesarean section is deemed unwise, and a supremely difficult foetal extraction is attempted from below; too often a damaged woman is left to reflect in sadness on the loss of her firstborn, whose sacrifice she can ill understand. This, no doubt, paints the picture at its worst and is the reflection of poor obstetric judgment. But mature experience is not a universal asset, and in the very real difficulties that arise every aid is eagerly seized.

It is precisely for the reason that prognosis varies with the type of pelvis that accurate appreciation of pelvic shape and size, and of foetal size, is of supreme importance in the management of the slighter degrees of disproportion. In doubtful cases the information given by the lateral x-ray picture made during the course of trial labour is specially useful. In my experience this has sometimes helped to decide the issue in favour of Caesarean section before the trial of labour has degenerated into a test of the endurance of foetal life. Much

oftener, however, the examination has revealed a foetal head that has already safely passed through the plane of least dimensions of that particular pelvis, and delivery from below has then been undertaken with some assurance of safety. While it would be idle to pretend that mistakes are never made, increasing experience has given increasing confidence in the value of x-ray findings in such circumstances.

Lastly, Munro Kerr himself states the case for x-ray pelvimetry and cephalometry in breech presentation. Minor degrees of disproportion can then be detected only by radiological means since the head is no longer available as "the pelvimeter of the brim." When external version has failed, and it is clear that disproportion will complicate breech delivery, Caesarean section should be the rule.—I am, etc.,

Radcliffe Infirmary, Oxford, Nov. 22

CHASSAR MOIR.

Vaccinia as a Complication of Vaccination

SIR,—I have been greatly interested in the excellent description by Dr. J. N. Turnbull (November 22, p. 751) of the case of the baby with generalized vaccinia, and having spent years in the study of vaccinia virus in the laboratory I venture to submit two suggestions in the hope that they may possibly be of use should further instances of this rare complication of vaccination occur.

The first suggestion is that, as the viruses of both vaccinia and variola are extremely susceptible to the action of potassium permanganate, which even in a dilution of 1 in 100,000 inactivates vaccinia, a wet compress soaked in permanganate solution should be applied to the vesicles. The virucidal action is inhibited by glycerin, so the latter should not be used as well. The second suggestion is that in a severe case of vaccinia such as that described by Dr. Turnbull trial should be made of convalescent serum if it can possibly be obtained. At the same time as Dr. Turnbull's case, that of a baby girl of 7 weeks, a brother of 3½ years was vaccinated with normal result, and after the tenth day his serum would inactivate the virus; so that as the baby's condition remained good until the fourteenth day the effect of some of her brother's blood or serum might have been tried on her.

The beneficial effect of serum taken fourteen days after vaccination and injected into a case of that other rare complication of vaccination—namely, encephalitis—was dramatic in one of Lord Horder's cases at St. Bartholomew's, and others have confirmed this effect, with the result that the treatment is now generally established. The chief difficulty is to get the serum in an emergency, and a supply of it taken from young healthy adults fourteen days after vaccination and preserved after being dried ought to be available by this time for general use. This should not be beyond the scope of the Blood Transfusion Service. The Germans obtained it—subsequent to the publication of Lord Horder's case (*Lancet*, 1929, 1, 1301)—by taking serum from probationer nurses after the eleventh day from vaccination; but from my observations the fourteenth day is better. This same serum might also benefit severe cases of small-pox.—I am, etc.,

East Molesey, Nov. 24

M. H. GORDON.

National Wheatmeal Flour?

SIR,—I wish to draw the attention of members to an Order in the Statutory Rules and Orders of the Ministry of Food. This was issued in August and remained unknown to us until brought into the light by the *Lancet* last week. It regulates the contents of what is called "national wheatmeal flour." We had, I think, all understood that this flour must contain the germ of the wheat and so supply a fair quantity of the B vitamin as well as the minerals missing from white flour; that it was a protective food. By virtue of this Order 85% extraction white flour coloured sufficiently to make it pale brown and so indistinguishable from a genuine germ-containing wheatmeal flour can be sold as national wheatmeal flour. That is the situation to-day, and as one who has been actively supporting what was understood must be a protective food, and the only cheap one, I wish to make the story a little clearer so that my disgust and alarm may be felt by others. It is not a comforting story.

When the Medical Research Council published their memorandum on national flour (*Journal*, May 31, p. 828) it was generally understood that the new wheatmeal flour was to be made according to their recommendations. This belief was

strengthened when Lord Woolton made his speech to the bakers at their Leicester conference in June. He is reported to have said that on the subject of bread he had been to much trouble, that he had been "advised by the most eminent scientists in the country," and to have mentioned the Medical Research Council in this connexion; and that he had met the millers and a standard had been obtained for the production of national wheatmeal flour. As no other specification had been made public by the Ministry of Food this was regarded as pointing to the adoption of the only specification published—that of the M.R.C. Any remaining doubts were completely dispelled by Circular 2470 received from the Ministry of Health, also in June. This was sent to local authorities calling their attention to the nutritional advantages of making national wheatmeal flour available to patients and staff of hospitals, etc., in their area. It is so clear what Whitehall understood by the term "wheatmeal flour" that I quote two paragraphs.

"The Minister has been in consultation with the Minister of Food on this matter, and he is advised that national wheatmeal flour is now available to bakers. This flour contains the greater part of the germ of the wheat, with some of the finer bran, but excludes the coarser bran. It thus contains not only most of the vitamin B, but also most of the remainder of the vitamin B complex, as well as valuable mineral elements which are removed in producing white flour. National wheatmeal flour is therefore of high nutritional value and is particularly valuable at times when there is restriction upon the availability of other foods from which these vitamins and minerals could be obtained."

"Bread made from national wheatmeal flour should be of a pale brown colour and of a . . . texture closely similar to white bread."

This is a model of clarity; it tells in a plain and straightforward way just what they understood the new flour would contain. It gives definite and positive information about what it would supply, and is not an essay on what wheatmeal should supply. The mere fact that such a consultation had been held is evidence that this Ministry at least was fully aware of the nutritional importance of such a flour. It is also evidence of the source of their information which they felt justified their assurance—it was the Minister of Food himself.

We now know that by this Order 85% extraction white flour coloured with bran, which makes it resemble the wheatmeal described by the Ministry of Health, is what Lord Woolton had decided the country needs in these times. Are we to imagine that this was fully explained at the consultation; that, knowing this, Whitehall issued that circular? In my long experience as a grumbler at our Ministry I have never had anything like this to complain of.

Wheatmeal bread need contain no more vitamin than the white, which on account of these deficiencies it was to replace: no more of the anaemia-preventing iron or the other minerals. A miller may, of course, return all these to his wheatmeal flour, but he will only get the same price for it as he would if he sold the germ separately. What it will provide is to depend on what suits the business of the individual flour mills! So when we order wheatmeal bread we shall not know what we are getting unless we have a laboratory test made of the contents; only the miller will know.

It should be known when the Minister of Food altered his standard; whether it was after or before the meeting of the two Ministers. Was the Minister of Health advised so that he could have that circular withdrawn or altered so as to be in accordance with the facts? It is not clear why the Medical Research Council should have been mentioned at all when their advice was not to be followed; that was misleading. We should be told why their advice was rejected, for in the same speech in which he told them "the most eminent body of scientists in the country" Lord Woolton declared that there was no other body whose advice "could compare" with theirs. After that it is not understood how he can have found a still superior body to advise him and whose advice he chose to follow. We ought to be told who they were, or we may think that their superiority was not unconnected with financial considerations.

The situation is an alarming one when one thinks of how output can determine the result of the war and how much output must depend on nutrition. The disregard for the advice of scientists on this front may be of serious import. One heard at the meeting of the Nutrition Society at Cambridge that when 800 women munition workers were examined by members

of the society more than a third suffered from nutritional anaemia. Can that be without effect on output? Those who hearkened to vapourings about "all being well" and "there is no malnutrition in the country" live in a world of their own. What a chance for the iron-containing wheatmeal bread could be found among those munition workers! But Lord Woolton has decided it is not necessary. When will the Ministry of Health direct matters of nutrition?—I am, etc.,

Grimsby, Nov. 24.

S. W. SWINDELLS.

Red Cell Suspensions in Treatment of Anaemia

SIR.—Dr. G. E. O. Williams and Prof. T. B. Davie (November 8, p. 641) emphasize the need in certain cases to produce the maximum rise of haemoglobin using the minimal volume of blood possible. When the haemoglobin has reached 60%, they advise changing to fresh blood to obtain the advantages of antibodies and active leucocytes. But they do not mention a fact that I noticed in my much more limited experience—this is, that the amount of blood necessary to raise the haemoglobin varies directly with the age of the blood; this is more marked in the toxic patients.

In their series Dr. Williams and Prof. Davie used concentrated red cells, and the cases quoted in their Table I average 36.5 c.cm. for a 1% rise in the haemoglobin. But the individual figures vary very widely, and one wonders if the average would be much better if the cells were prepared from fresher blood. These all seem to be cases in which there was enough time to warn the blood bank of the transfusion and to send a sample of the recipient's blood to cross-group with suitable donors and to return their fresh blood.

In the cases I have observed, which included those of haemorrhage, anaemias of pregnancy and puerperium, pernicious anaemia, and leukaemia, with the patients' weights varying from 7 to 11 stone, fresh defibrinated blood being used, the amount necessary to obtain a 1% rise in haemoglobin was always between 40 and 43 c.cm.: it was rarely as high as 43 c.cm. So constant was this figure—40 c.cm. for each 1% rise—that one could predict the amount of blood necessary to obtain any required rise in haemoglobin. The haemoglobin estimations were carried out eighteen to twenty-four hours after transfusion, and were always done by the same independent observer, who made the test before transfusion. If fresh citrated blood was employed and the volume of anticoagulant subtracted, then the actual amount of whole blood given was still the same for a 1% rise in the haemoglobin. With citrated blood that was a few days old, still allowing for the anticoagulant, the amount necessary to produce a rise in the haemoglobin rose steadily: seven- to ten-day-old blood being used, it rarely required less than 70 c.cm., and often as much as 90 to 100 c.cm., to obtain this 1% rise.

It seems obvious that the fresh defibrinated blood can compare very favourably with the concentrated red cells as these are prepared now: the results are more regular and the patient has the advantage of fresh antibodies, leucocytes, and red cells, with a difference in volume of only 3.5 c.cm. for each 1% rise in the haemoglobin. If concentrated cells were prepared from fresh blood it would probably require much less than 35.5 c.cm., maybe as little as 20 or 25 c.cm., for each 1% rise in haemoglobin.—I am, etc.,

Newcastle-upon-Tyne, Nov. 21

K. B. ROGERS.

Haemoglobinometry

SIR.—In his letter Dr. Robt. Campbell (November 22, p. 747) mentions his difficulty in deciding the correct method to use the Sahli instrument to estimate the haemoglobin percentage. I should like to suggest that it might be possible to overcome this difficulty by standardizing the Sahli instrument by comparison with a Haldane instrument. The exact technique used during this standardization should be carefully noted and thereafter strictly adhered to. The time which elapsed before diluting might be two minutes or forty minutes, but would be constant in every case.

I think this method would give sufficiently accurate results from "the viewpoint of the general practitioner," and would be simpler and cheaper than carrying sparklets of carbon monoxide.—I am, etc.,

Dunder, Nov. 22.

A. J. E. MILLS.

Loss of Vision after Haemorrhage

SIR.—In view of Coloeel H. L. Tidy's article (May 24, p. 774) and Sir James Barrett's letter (November 15, p. 711), a brief reference to the following case, which will be published in more detail later, may be of interest.

A woman aged 35 and thirty-two weeks pregnant was admitted to the Radcliffe Infirmary in *extremis* due to a most severe, concealed, accidental haemorrhage. She had suddenly lost her sight when she collapsed with pain and shock. In a brightly illuminated theatre she could recognize light from darkness, but could not distinguish the outline of anyone standing by her bed. She stated she could recognize a shadow there, but that was all. Ophthalmoscopy revealed no fundal lesion. Before a transfusion was administered oxygen was given with a B.L.B. mask and was continued for five hours. Within twelve hours vision was returning, and three days later the patient could read large type. Since then there has been a complete recovery of sight. Before this patient left hospital she was seen by Miss Ida Mann, who stated that it was probably the administration of oxygen that had saved the retina from destruction. It is possible, therefore, that the wider use of the B.L.B. mask in cases of severe haemorrhage may decrease the incidence of this rare but terrible complication.—I am, etc.,

Oxford, Nov. 19.

JOHN STALLWORTHY.

Nicotinic Acid and Pellagra

SIR.—Your editorial article entitled "The Sprue Syndrome" (November 22, p. 731) contains the statement that pellagra "is curable by nicotinic acid." This statement surely requires some qualification.

It has become increasingly clear in recent years that pellagra is not due to the lack of a single dietary factor, as was formerly supposed, but is, in reality, a multiple deficiency syndrome. Besides the classic "three D's" of dementia, diarrhoea, and dermatitis, the "typical case" may present the following additional evidence of dietary insufficiency: (1) nutritional polyneuritis, usually (and probably erroneously) attributed to thiamin (vitamin B₁) deficiency; (2) anaemia, the cause of which is still uncertain in this condition; (3) cheilosis, angular stomatitis, and (4) vascularization of the cornea, which are currently attributed to deficiency of riboflavin; (5) folliculosis, the result either of vitamin A or vitamin C deficiency; and (6) a reduction in plasma protein, no doubt due to the aetiological factor you mention—"an unbalanced dietary deficient in protein." It is evident, therefore, that deficiencies of several dietary constituents ordinarily contribute to produce the clinical picture seen in pellagra. In fact, the only reason why it is possible to recognize pellagra as a clear-cut clinical syndrome is probably because of the uniform composition of deficient diets in those parts of the world where it occurs endemically. In other parts, including this country, where deficient diets are less uniform, certain features of pellagra are quite frequently encountered, but the full syndrome is rare.

The important question is, What part of this syndrome can be cured by nicotinic acid? Any critical clinician with experience of the condition will probably agree that this is a very difficult question to answer. The difficulty is that the average pellagrins improves remarkably on simple bed rest and good hospital care, even if the diet is so arranged that it provides no significant amount of the entire vitamin B complex. An efficient nurse, with the aid of soap and water, can often work wonders with a pellagrous dermatitis. This being the case, it is very hard to draw reliable conclusions from a therapeutic trial of nicotinic acid. However, there is now a considerable weight of evidence that it is at least effective in the relief of the gastro-intestinal manifestations of the syndrome and, perhaps, of the erythematous element of the dermatitis; but as to the psychologic changes—after four years' trial of nicotinic acid the mental hospitals of the Southern States of America are still providing for chronic pellagrins.

So far as I know there is no evidence whatsoever that nicotinic acid is in the least effective in the relief of nutritional polyneuritis, anaemia, cheilosis, angular stomatitis, corneal vascularization, folliculosis, or hypoproteinaemia, all of which are frequently encountered in the pellagra syndrome. Of course, it may be said that these changes are not a true part of the

syndrome, and are merely manifestations of other associated deficiencies. There may even be some who would wish to define pellagra as "the clinical consequence of uncomplicated nicotinic acid deficiency." Armed with this definition, it might then be true to say that nicotinic acid will cure pellagra, but the fact still remains that it will not cure pellagrins. Moreover, it would be impossible to give a clinical description of pellagra as so defined, since a pure deficiency of nicotinic acid, unassociated with any lack of other essential dietary factors, has probably never yet been seen in man. Your editorial implies that the simple administration of nicotinic acid is sufficient and adequate treatment for a case of pellagra, whereas the fact is that nothing short of a radical readjustment of the diet will result in a complete and satisfactory cure.

Your editorial also states that "the incidence of pellagra appears to depend not so much upon the lack of nicotinic acid in the diet as on the failure of the intestinal mucosa to absorb it." It is true that pellagra occasionally arises in consequence of some gastro-intestinal disease affecting digestion and absorption, but, in the common endemic disorder, the obvious inadequacy of the diet is surely a sufficient explanation of the deficiency, without calling in the additional hypothetical factor of faulty absorption.

You also state that "pernicious anaemia is often accompanied by glossitis similar to that of sprue and pellagra, and this is also amenable to nicotinic acid therapy." I am most surprised by this statement, since I had thought that all authorities on pernicious anaemia are now agreed that nicotinic acid has no effect on any feature of the glossitis in this disease.—I am, etc.,

Oxford Nutrition Survey, Nov. 22.

ARNOLD P. MEIKLEJOHN.

Unusual Outbreak of Haemolytic Streptococcal Infection

SIR.—The seasonal epidemic of haemolytic streptococcal infections of the nasopharynx is upon us, and I think that the following brief report of an unusual outbreak will be of interest. Details have been sent to the Medical Research Council by the county bacteriologist, Dr. J. S. Croll, who has been extremely helpful and interested. The late Dr. Griffith, immediately before his tragic death, typed some of the strains.

On January 12 last a woman went alone to the lonely farmhouse where lived her sister and brother-in-law with their large family of children. Three days later she was delivered normally of her thirteenth child. It was discovered eventually that a few months previously she had sent some of her other children away with scarlet fever. On January 16 she developed pyrexia and later sore throat and cervical adenitis. On January 18 the road became completely blocked by snow, and for several weeks no one could approach except on foot or horseback over the fields. The house was thus isolated from all except myself and the foreman's employer. Between January 22 and February 4 three persons in the house developed typical scarlet fever and three tonsillitis without rash. Two of the latter developed nephritis, as did the parturient woman, and all of these patients were extremely ill. The scarlet fever patients were not ill and had no complications. Repeated throat swabs of all, except, curiously, the original case, gave cultures of haemolytic streptococci, Type A, Group 14. I regret now that I did not obtain a culture from the lochia.

The source of the epidemic is not important and I am not concerned with case histories or treatment. My point is this. In view of the accumulating evidence, how much longer must we wait for reform of the existing rules of treatment and notification of scarlet fever?—I am, etc.,

Barton-on-Humber, Nov. 26.

T. H. KIRK.

Sulphonamides and Catgut

SIR.—I have heard the suggestion from more than one source that catgut employed for suturing wounds may have its normal rate of absorption seriously accelerated by the presence of sulphonamide powder, such as one has been using, for instance, in the abdominal wound in cases of gangrenous appendicitis. I have personally not yet found any reason for anxiety through rupture of such wounds, but I thought it would be helpful if others readers could bring forward any first-hand evidence either for or against this impression.—I am, etc.,

Bournemouth, Nov. 27

NOEL F. ADENEY.

Hemiprostectomy

SIR.—The respect due to a surgeon of the eminence of Mr. W. Sampson Handley is enhanced when one has had the privilege of serving as his dresser, and it is therefore with some misgiving that I venture to offer any criticism of his advocacy of hemiprostectomy (November 15, p. 681). Whilst I am in agreement with much of what he says, I feel that the general adoption of this operation even for one case in five would be a retrograde step. The figures he quotes from Thomson-Walker to support this proportion as suitable cases refer only to the intravesical projection and not to the all-important intra-urethral enlargement; and the conclusions of the same author that "the apparently normal lobe shows changes on section and microscopical examination which correspond exactly to those of the large lobe" are confirmed by the routine examination of all prostates in which both lobes are removed.

I would agree that the maintenance of continuity of the vesical and urethral mucous membranes posteriorly is an advantage, and the restoration of this continuity is one of the important principles of the Harris operation; the intra-urethral method of digital enucleation recommended by Harris (*Brit. J. Surg.*, 1934, 21, 437, 442) is designed to leave intact the verumontanum and the urethral mucosa below it.

The shock produced is due to a summation of all the traumatic stimuli set up in the whole operation, and it is difficult to believe that the shock from hemiprostectomy is only one-half that of total prostectomy. In any case the shock can be minimized by a suitable combination of anaesthetics and by gentle rather than rapid enucleation.

Mr. Sampson Handley states that he has no experience of later enlargement of the residual lobe after hemiprostectomy; I have recently seen and operated upon such a case. Left hemiprostectomy was performed by one of Mr. Handley's colleagues in June, 1933, for a man of 57 with acute retention (two-stage operation). In May, 1941, he returned with acute retention: there was gross urinary sepsis and his general condition was poor. The remaining right lobe was moderately enlarged on rectal examination, but was seen on urethroscopy to project to the left and to produce much distortion of the urethra; on removal it showed the usual changes of senile enlargement. This patient died six months later from hypertensive failure and auricular fibrillation.

To compare hemiprostectomy with endoscopic resection seems to confuse the issue; endoscopic resection undoubtedly has an important place in prostatic surgery, and it may be mentioned as a personal experience that where an adequate amount of tissue is removed in the first place by resection from a benign enlargement there is little tendency to a return of obstructive symptoms later.

After this preliminary report I shall await with interest the after-histories of the two patients operated upon this year and of the others for whom the operation has been done, but on the present evidence I am unconvinced that it has anything to offer over the accepted methods of treatment.—I am, etc.,

London, W.1, Nov. 24.

E. W. RICHES.

SIR.—I have read with interest Mr. W. Sampson Handley's article on hemiprostectomy (November 15, p. 681). In it he states that transurethral resection accomplishes "at best a partial removal of the adenomatous mass, the rest of which may continue to grow with a return of obstructive symptoms." Surely this description is more readily applicable to the operation he describes than to the modern "punch" operation, perfected by Gershom Thompson and Emmet. I have had the privilege of seeing Mr. Wardill of Newcastle using the "cold" punch, and can assure Mr. Sampson Handley that the removal of adenomatous gland is very nearly complete: "... as much of the enlarged gland is removed as possible." This in many cases must amount to about four-fifths; in some cases as much as 64 grammes has been removed at one sitting" (Wardill, *W. E. M., Lancet*, 1941, 2, 127).

The statement that "it seems likely that hemiprostectomy will have a lower mortality and will offer more security against the recurrence of obstruction" (than punch prostectomy) does not seem to be a fair conclusion to draw from the two cases quoted, and is indeed rather surprising, when the fact that in 1935 Gershom Thompson published a series of 451 punch operations without mortality was noted earlier on the same page.

Furthermore, the convalescence after the punch procedure is very considerably shorter than with open operation—usually about eight to fourteen days. Also the patient is out of bed and walking about one or two days after operation, a most important point when dealing with elderly men. Lastly, in the hands of experts the punch method is applicable to all cases, whereas hemiprostectomy can at best only be applied on comparatively rare occasions.—I am, etc.,

Lancet, Nov. 25.

G. A. BAGOT WALTERS.

X Rays in Treatment of Inflammations

SIR,—It is difficult to write with moderation in disapproval of the comments at the end of the annotation on "X Rays in the Treatment of Inflammations" (November 15, p. 700). The suggestion contained therein that hospital or armament works casualty officers after a few weeks' training would be competent to prescribe and administer x-ray treatment is courting disaster. The inadequately trained and insufficiently experienced in x-ray therapy would be a grave menace to patients, to themselves, and to any organization that they serve. It would be infinitely preferable to forgo the doubtful advantages of ill prescribed and administered radiation than to risk the calamities that can follow misjudgment.

Drs. Pendergrass and Hodes in their article describe their technique under five headings, and complete their prescriptions under each of the conditions with which they deal. Their technique includes the use of what has become familiar to radiologists as (1) near-distance therapy, (2) medium therapy, with and without filters, and (3) deep x-ray therapy: the whole armamentarium of modern x-ray treatment, three separate and distinct x-ray installations. The technique is not simple and the doses required are not, as the annotation states, so small that there is no risk of radiation injuries. On the contrary, the authors, dealing with bursitis and with the shoulder under consideration, state: "Occasionally six or eight exposures have been necessary. Under such circumstances multiple portals have been utilized to preserve the skin tolerance to irradiation." They have thought it desirable to draw attention to this in the text and in the caption. Again, under erysipelas, although they have had no untoward results, they say: "Patients should be warned of the possibility of epilation and a signed permission obtained before starting roentgen therapy." Special warning is also made in connexion with the use of near-distance therapy and the treatment of verrucae and similar lesions. The authors are not unmindful of the risks.

The interpolation in the annotation of the bald statement of "100 to 200 r daily for three to five days," totally unqualified as to filtration, area and how measured, with or without back-scatter, is no "so small" a dose, and it may prove to be misleading. All who have read the annotation in question should read Drs. Pendergrass and Hodes in the original, when they will recognize how dangerous the concluding advice of the annotation may be.—I am, etc.,

London, W.1, Nov. 25

H. COURTNEY GAGE.

Sciatic Pain

SIR,—Your leading article (November 15, p. 698) gives a true picture of the present position. "The major problem remains" indeed. But does "the next step lie in the direction of pathology"? And are not the terms used misleading, rather than only "quite devoid of meaning in terms of morbid anatomy"?

Idiopathic sciatica, lumbago, and related processes come and go in the vast majority of cases. Such pathological changes as may occur in the tissues must correspondingly be assumed to be reversible. Biopsy of the suspected organs is hardly ever possible since surgery is not called for. Where it was done, as in the work by F. and M. Lange (*Die Muskelhäuten oder Myogelosen*, Munich, 1931), there was no histological evidence of any change, certainly none of inflammation, as indicated in terms like *myositis* or *fibrositis*. Nor was inflammation found in the few cases of chronic sciatica examined post mortem. Spielmeier found signs of thickening of the nerve sheath and degeneration of the nerve fibres. It is safe to state that whatever the underlying pathological process may be it is not—in the vast majority of cases—a true inflammatory one, and the terms we use are wrong. Animal experiment is not likely to

help us, since pain is the only subjective symptom. And objective evidence of its existence will only be obtained if the animal limps. It is doubtful whether, owing to their coat, animals are likely to suffer at all from the passing forms of "muscular rheumatism" or neuralgia.

With the three usual paths of inquiry—biopsy, post-mortem examination, and animal experiment—blocked, how can we hope to arrive at a clearer picture of what causes the painful state, and what happens morphologically while it lasts? May I suggest that an indirect approach by way of a working hypothesis might prove useful to those who see large numbers of such patients and who have facilities for physiological research. Three sets of facts form the basis of such a working hypothesis: the exact history of the patient and the closely followed course of the condition as indicated by the curve of his main symptom, pain; the pathological physiology of the vegetative nervous system, so far as it is known through the work of Krogh and Lewis; and the normal anatomy of the vascularization of muscles, tendons, and nerves.

The common history of the attack of both lumbago and sciatic pain is that the skin of the patient at the onset was wet, either because of damp weather or through sweating, or both. Common, too, is a state of physical strain or exhaustion—frequently a state of overwork or worry and an excitable mental make-up. True trauma, unless "asked into" the patient, is rare. Common too is a start of pain after bending down, involving mechanical pressure by belts, etc., on the lumbar region. The pain in lumbago starts more or less at its worst and wears off within days, or a week or two; the pain in sciatica takes a few days to rise to its peak, remains at a high level for weeks, and wears off very gradually. It starts proximally, extends downwards, and ends eventually by first leaving hip and thigh and later the leg and foot.

That wet skin is a better conductor of heat and cold than dry skin is known. That cooling of deeper tissues under wet skin is possible is recognized. That a state of unbalance of the tension of arterial and capillary walls is set up by changes of temperature, leading to spasms of contraction or dilatation with consequent interruption or slowing down of the flow of blood, we have been taught by Lewis. In order to understand the predilection of painful reactions related to muscle groups, tendons, and nerves, we have to remember that in muscles several factors combine to oppose a smooth passage of blood—the normal or increased muscle tonus, stretching over joints, compression under belts. Tendons, fascia, ligaments, and nerve sheaths have in common a poor supply of blood vessels and no or hardly any provision for the setting up of a collateral circulation. It must be remembered that, for example, only one nutrient artery enters the sheath of the sciatic nerve below the junction of its roots, and this does so at an angle which favours mechanical closure of the lumen quite apart from spasm. (Little is known about the vasa nervorum. On 200 transverse serial sections I convinced myself that there is really no other source of arterial blood along the whole course of the nerve.) Any temporary stoppage of the supply of fresh blood in these tissues therefore must be followed by more drastic consequences than in tissues with more ample vascularization or greater chances for collateral circulation. Short of total ischaemia and consequent atrophy or necrosis, we must assume that intermediate and reversible states of degeneration may be caused which most likely are in the nature of what is known in the heart muscle as "cloudy swelling." Such swelling in turn would lead to compression of veins and lymph channels, increasing the swelling and setting up a vicious circle even if the causative spasm of the artery has already worn off. Not before normal circulation is re-established will this swelling be absorbed. As long as it lasts it is bound to cause pain by distension and pressure on sensory nerve endings, especially in a tissue as dense and tight as a nerve sheath. With or without treatment normal circulation is being re-established—slowly in a long nerve, quicker in a muscle or tendon. And once normal conditions have returned nothing would show that the process had taken place.

The hypothesis of a disturbance of circulation as the basis of myalgias and neuralgias is not new in itself. But I do not remember having seen a clear description of its possible pathological course. It is as difficult to prove to be right as to disprove. And while many clinical facts are in its favour it may

not ultimately prove to be right. As it is, it helps us to understand many otherwise isolated features. The neuralgias of a few hours' duration can be understood as well as the effect of cooling on a motor nerve in Bell's palsy. Neuralgias in conditions known to involve the vessels—as diabetes, diphtheria, lead poisoning—may be viewed from this angle. And some of the difficulties in therapy may be explained. Heat, for example, seems to help while it lasts, but warmth in bed is not liked (increased congestion?). The success of vitamin B treatment may be based on the action of nicotinic acid. Not more can be said than that here is a working hypothesis which might help understanding and further inquiry.—I am, etc.,

London, W.1, Nov. 24.

L. MICHAELIS.

Industrial Medical Boards for Women

SIR,—The letter from Dr. E. M. Herbert on industrial medical boards for women raises an important issue, but why should such not be established for industry in general? This is a way in which medicine can make an important contribution to the war effort. To suggest two directions only: first, there should be a system of grading and classifying labour at the labour-engaging centres. So urgent is the demand for labour in the heavy industries that all sorts of derelicts have been mobilized in the former distressed areas and sent, at no small expense, to attempt work for which they quickly prove to be totally incapable. We have had epileptics, chronic asthmatics, cardiac cases, and the like sent to factories where only men physically fit for long hours of heavy manual work are of service. The most casual examination of many of these would have eliminated this waste by frankly writing off the applicant as unemployable, or by diverting him to a job where he might be of use. Secondly, as regards the movement of labour under the Essential Work Order, where a factory has its own medical officer he is often able to rebut statements, frequently grossly exaggerated, by an employee to the effect that work and conditions are "ruining his health." But there are hundreds of factories on important war work, too small to have a doctor on hand, which are at the mercy of any employee able to bring a certificate labelled "Bronchial catarrh: recommended for change of employment," and who regards such as a charter sanctioning immediate release. True, the National Service Officer, if he is so moved, may refer the case to a referee, but such an officer is chosen quite casually from some Government Department and has not necessarily any knowledge of industrial conditions. The comments of industrialists on this lax system and on the ease with which such certificates are obtained are unprintable, though I acknowledge that in this area certificates are now worded much more cautiously.

Medical boards are judged to be essential in a system of military conscription. They have an equally important service to render to the country in a system of industrial mobilization. Their establishment might make the existing tentative element of compulsion in industry less uncourageous and full of loopholes than it is at present.—I am, etc.,

Nov. 24

A. H. DRIVER.

SIR,—Dr. E. M. Herbert's letter (November 15, p. 711) interests me very much and at the same time causes some perturbation. His letter implies that there exists in industry today a state of affairs which is truly appalling, and as chief medical officer of a group of factories employing some 31,000 workers I feel that I cannot let his allegations pass unchallenged. I would suggest that Dr. Herbert's experience of industry proper must indeed be limited, otherwise he would have hesitated before making the sweeping statements he does. The entirely erroneous impression he creates about lack of selection, lack of supervision, must, I feel, be corrected at once. Dr. Herbert has completely ignored the fact that by law all factories engaged on munition work and employing women must provide adequate welfare supervision, and, depending on the numbers employed, appoint nurses and part- or even whole-time medical officers. Dr. Herbert further states that there is no medical examination of females. This is quite untrue. I would suggest that he should have got in touch with the medical and welfare staff of any large concern in this or any other district before making a blunder of this magnitude. I can say definitely that, had

he done so, he would have found that the examination and supervision he maintains are being neglected are being most conscientiously carried out. The *British Medical Journal* is widely read in the U.S.A., and I feel that it is my duty to offset the entirely misleading impression Dr. Herbert's letter must create in that most friendly country.

The question of medical boards throughout the country is quite another matter; but why only for women? I should like to see such boards set up by the Ministry of Labour, not to supervise but to advise employers. Considerable difficulty is being met with to-day by reason of workers of both sexes claiming that their health is being injured by this job or that job, night shift or overtime. Frequently the works medical officer is asked to give his advice in such cases, and often finds himself in disagreement with the private doctor's opinion. This practice, I submit, is most undesirable, and such questions should be dealt with by a medical board of experts.—I am, etc.,

Nov. 24.

NEIL G. MARR, M.B., Ch.B.

SIR,—It would be interesting to know on what data Dr. E. M. Herbert (*British Medical Journal*, November 15, p. 711) bases his sweeping assertion that women entering munitions receive no medical supervision in the factories. The Ministry of Supply has established in all Royal Ordnance Factories medical departments which are being developed and expanded as the factories grow in strength, and in these establishments, where the weekly labour intake is very large, every new employee, from manager down to the humblest process worker, has to pass a medical examination before being taken on. Applicants are examined with a view to the particular work to be done and are graded accordingly, different standards of physical fitness obtaining in the different factories. For instance, a girl who is fit to make shell and bomb cases may be quite unfit to handle the high explosive with which they are filled, and vice versa. These examinations are carried out either by the factory medical officer or else by outside practitioners, the former, in my opinion, being more satisfactory, as the works doctor is in a much better position to assess the hazards of the various processes.

Once in the factory the worker comes under the supervision of the medical officer—in the larger establishments there are several full-time medical officers—and has the right of appeal in all cases where she feels she cannot for health reasons carry out the job to which she has been assigned. The medical staff also supervise and treat so far as possible all cases of industrial disease and accident, and also periodically inspect those workers who are exposed to special health risks.

I cannot speak for the other Ministries, nor of private enterprise working on Government contract, but I believe I am right in saying that works medical officers are being employed in ever-increasing numbers, and that before long the factory doctor will be an integral part of the factory management.—I am, etc.,

Nov. 24.

CATHERINE N. SWANSTON,
Factory Medical Officer.

Economy of Medical Man-power

SIR,—In view of the urgent need for medical officers in the various Services, it is of the utmost importance that (1) overlapping by the various Services should be eliminated, and (2) that medical officers in any Service should be used as economically as possible.

In regard to (1) there is no need to multiply instances, but I will quote one only—250 aircraftmen were sent to one of the healthiest spots in England: presumably they were all fit men, yet, although there was a naval hospital in the place with naval surgeons, and at least two military units with regimental officers, a medical officer R.A.F.V.R. had to be posted there. There is, I believe, a Commission looking into this matter now, but a medical officer recently told me that he understood the Commission was in his neighbourhood, but that although he had some excellent constructive suggestions to make he did not know how medical officers were selected (his phrase) to give evidence.

In regard to (2) there is at present in the Army a great number of doctors employed on non-medical jobs. I don't think that matters are as bad as in the last war, when I held the

post as officer in charge of Divisional Laundry on the outskirts of Bethune.

(a) *Clerical Work*.—A great deal of this could be done by physically low-grade non-medical officers, or, even better, by A.T.S. officers. It may sound revolutionary, but I can see no reasons why the D.A.D.M.S. of a Division should not be an A.T.S. officer. Voluntary hospitals of the size of Bart's and the London are, and have been for long years, administered perfectly satisfactorily by lay staffs. And many men in big positions find a lady secretary very satisfactory. I feel that our own profession owes much to the loyalty, devotion, and efficiency of the private secretaries. Where indeed would Harley Street be without the secretaries? If it is thought to be too much to appoint a lady to act as secretary to the A.D.M.S. of a Divisional H.Q. likely to go over-seas, instead of having a D.A.D.M.S., the same argument could not apply to A.A. Divisions or Area Headquarters and junior home staff appointments.

(b) *Sanitation*.—The inspection of markets, lodging houses, and alleged sanitary defects in our great cities is carried out by non-medical sanitary inspectors. The R.A.F. place a bomber in charge of a sergeant though officers may form part of the crew. Why, then, could not "hygiene sergeants" R.A.M.C. be appointed to inspect camps, etc.? I suggest that such a sergeant on finding any defect should make a report in duplicate, either using an indelible pencil and carbon copy or typescript if he can type and machines are available, one copy to be sent to the O.C. unit concerned and one copy to the M.O. i/c sanitation of the area (corresponding to civil M.O.H.). A fortnight later he should visit the camp again. If all is well now, a second report should be made as before. The reports in the M.O.'s office would cancel out and no action would be required, but if the sergeant found that no action had been taken at the camp he should issue a second report, preferably on a different-coloured paper—say, pink (for rapid recognition). The M.O. i/c sanitation would visit the O.C. of any area on which he had received a "pink report" to find out (i) why the sanitation was defective, (ii) why it had not been remedied after the first report, and (iii) if he considered it necessary to report the matter to higher authority to inform the O.C. of his intention. Most O.C.s are as keen as anyone to have good sanitation, and, as a rule, on his attention being drawn to any overlooked fault, he will take immediate steps to remedy it. By these methods M.O.s would be freed to do purely medical work.

This letter is already overlong, and so I will not elaborate that side of it, but increased facilities for carrying out minor medical and surgical procedures and a better clinical supervision would shorten the time spent by the soldier in receiving treatment. A colonel in the last war asked me: "How is it that in civil life an employee can have a tooth out and he back at work in under an hour, but if I send a soldier to get a tooth out I don't see him again for six weeks?"—I am, etc.,

Hove, Nov. 27.

H. J. MCCURRICH.

The Nation's Dental Services

SIR,—Your article on the nation's dental services (October 4, p. 488) interested me greatly. The memorandum, to my mind, is perhaps one of the most important and far-reaching of any on the subject of dentistry. The great danger is, however, that views expressed will be allowed to lapse into obscurity in the maelstrom of war and that nothing further will be done.

It is a healthy sign that the students themselves have realized that the foundation on which our study of dental disease is based is unsound and unscientific, which is certainly the case. The link between so-called dental disease and systemic conditions is very real and intimate, and if only it were realized that in the teeth we have the most sensitive "indicators" of upsets in metabolism the whole science of dentistry would be revolutionized. There would be no more talk of the status of the dental surgeon: he would become a key man in our study of disease in general.

All this, however, can only come about if the whole foundation of dental training is altered and more time is spent on the biochemical side of dental disease. We should ask ourselves more often why dental caries or pyorrhea is present rather than treat the condition by fillings or extractions. To-day, in dentistry, we are only treating the symptoms of metabolic upsets

and not treating the causative factor of the symptoms. We have for too long taken the *ipse dixit* of our pastors and masters for granted, and followed blindly in their misleading and bewildering footsteps, with the net result that dentistry to-day is not a science but a highly specialized symptomatic treatment.

If only the memorandum is followed up and acted upon by the younger members of the profession it may well be that it will lay the foundation of a more scientific outlook on the training of dental surgeons. More important still, it will bring together the medical and dental professions in a closer bond than ever before, to the great benefit of patients.—I am, etc.,

G. E. KING-TURNER,
Capt. R.A.M.C.

London, Nov. 21

A Human Ostrich

SIR,—The following case is so out of the ordinary that I think its publication may be justified on that ground alone.

A man aged 25 years was in prison, where he stated he had swallowed various articles. He was removed to a London hospital for x-ray examination, but at the hospital he managed to effect an escape, and was recaptured; in view of this behaviour it was thought necessary for him to be operated upon within prison walls. He was transferred to hospital on May 17, 1940. An x-ray examination made the same day showed (1) two long metal bodies and a big belt-buckle in the area of the stomach, (2) a screw in the right iliac fossa, (3) a long needle near the ileo-caecal junction.

That evening I operated upon him under general anaesthesia, opening the abdomen by a right paramedian incision. From the stomach I removed (1) a metal punch, (2) a spoon handle, (3) a tin prison-knife, (4) a buckle, (5) a piece of a metal comb, (6) a picture hook, (7) a piece of glass (this I had to work back from the duodenum through the pylorus). I found a needle lying partially through coils of small intestines and in the peritoneal cavity directly over the right iliac vessels. It appeared to have worked through the intestinal walls very easily. Later on he passed normally the screw which had been seen in the right iliac fossa. The third day after the operation, when he was left for a few minutes, he was found standing on his bed looking out of the window at the view. He made an uneventful physical recovery, but his mentality degenerated, and on June 8 he had to be certified insane, and was transferred to a civil mental hospital, from which he escaped.

On September 15, 1941, he was again in custody and admitted to prison with the history of having pushed a needle into his chest. There was a small scratch at the site of entrance internal to the left nipple. X-ray examination showed the needle lying to the left of the sternum in a slightly vertical line point downwards, and the lateral view showed it to be inside the thoracic cavity. I opened the chest with a horizontal incision over the sixth rib, and resected one and a half inches of this rib to open the pericardial cavity. Unfortunately the needle could not be found free in the cavity. The heart was beating strongly, and it appeared that the needle lay in the muscle wall: I did not feel justified in attempting its removal, especially as the anaesthetist was by then worried somewhat by the man's condition.

On September 24 he passed four large pieces of glass per rectum, which did not injure him in any way. These he admitted swallowing about ten days previously in prison. He developed an empyema on October 13; I resected a part of rib and drained this: fortunately he made an uneventful recovery, the wounds being practically healed on October 30.

The special points to be noticed are (1) that he could swallow large foreign bodies and (2) that he could pass glass fragments without any damage to himself.—I am, etc.,

Nov 15

J. W. MCK. NICHOLL, M.D., B.Ch.

Sarcoma treated with Coley's Fluid

SIR,—While I was acting as locum for Dr. G. W. Ayres, the Priory, Chippenham, a male patient aged 33 consulted me. Both Mr. C. Kindersley and Mr. Fuller, jun., of Bath saw him with me: the growth observed was x-rayed, and a biopsy was done. The growth was huge and covered the left scapula, and was diagnosed as a sarcoma. Mr. Fuller removed

Psychiatric Problems in Wartime: A Plea for Caution

SIR.—The interesting article by Captain R. F. Tredgold (July 26, p. 109), including as it does detailed observations upon psychotic states occurring in soldiers and their prognosis, together with a description of methods of treatment, gives cause for careful thought, and seems to prompt the question as to whether the present is the time to arrive at conclusions concerning problems of the deepest psychiatric significance.

While it may be of the utmost importance for psychiatrists carefully to record their observations and impressions of the clinical material with which they are called upon to deal in time of war, it is submitted that it will be some time before the opportunity for proper assimilation and mutual discussion of this experience and its implications for psychiatric theory can be obtained. For example, the present war came upon us before it was possible to arrive at scientifically based conclusions as to the precise value and sphere of beneficial application of the various forms of shock therapy. Service needs and the associated demand for simplicity and speed in application required the adoption of Raven-Penrose progressive matrices testing upon large numbers of men before there had been opportunity for full evaluation of this method. The investigation of amnesias, etc., under artificially induced states of narcosis—for example, injection of sodium amylal—prompts certain fundamental questions as to its bona fides from the psychopathological standpoint. Various methods of treatment require to be employed on empirical grounds for their symptomatic value alone and in the absence of suitable checks or controls. This may be admissible, but there appears to be a danger of hasty conclusions being formed from consideration merely of results. Further, when compared with the whole field of psychiatric case material, Service cases, though numerous and a formidable problem at the present time, are nevertheless a limited and selected group developing under artificial environmental conditions.

A case in point is the discussion concerning the nature of depression. It may be that the views expressed by Curran and Mallinson (March 1, p. 305) find a substantial measure of agreement among many psychiatrists, while others will continue to subscribe to the views of Ross and others touched upon in your leading article of July 5 (p. 21). But while it is admitted that in many instances the task of differentiating between "endogenous" and "reactive" depression constitutes a severe test of the psychiatrist's clinical acumen, surely there is danger in teaching the student that "distinction between neurosis and psychosis is at times convenient but without substance," when upon that distinction being made at as early a stage as possible in the development of the mental illness the mental well-being, future, and even the life of the patient may depend.—I am, etc.,

Liverpool, Aug. 7.

S. BARTON HALL.

Depressive States in the Soldier

SIR.—My attention has been drawn to Captain R. F. Tredgold's statement in his paper on the above subject (July 26, p. 109) that I "diagnosed the psychotic type [of depression] by the possession of insight." I hope and believe that it is by a mere *lapis calami* that Captain Tredgold has credited me with this feat, however one interprets his pleasingly ambiguous phrase. To avoid any possible misunderstanding, however, please let me state that if he refers, as I assume, to the patient's insight I have never held or expressed the opinion which he seems to attribute to me. If the word "absence" were substituted for "possession" the sentence would at least be in harmony with my views so far as it goes.

I readily admit the difficulty of assessing insight, but I think most people recognize nowadays that psychiatry is a difficult specialty. I would also suggest, with respect, that in it, as in all other specialties, experience sometimes helps a little.—I am, etc.,

London, W.1, Aug. 3.

HENRY YELLOWLEES, M.D., F.R.C.P.

Air-raid Noises in Psychotherapy

SIR.—I was very interested in the article by Majors F. L. McLaughlin and W. M. Millar (August 2, p. 158), and I feel the authors are to be congratulated on the ingenuity which they have shown in getting gramophone records of the actual noises. I foresee great use being made of this type of therapy, especially

where the psychotherapist can control the volume of the noise at will while the patient is on the couch, and thus be able to work up "the dose." I hope it will be made possible for those doing this type of work to obtain similar records.

Just after the last war I was in a Ministry of Pensions hospital dealing with war neuroses, and I found the same difficulties—that is, that the men were noise-sensitive. The method which I used was in some way similar to those described in this article. I used to get the men to talk about their war experiences until they were very conversant with the anxiety-provoking incidents, and then I would get them to take a blanket out into a field at the back of the hospital (which was near a railway line), lie down, and relax, and when they saw a train approaching I suggested that they should close their eyes and take their minds back to their experiences in France and link up the emotions which they felt with the noise of the passing train. In a large number of cases the men had violent abreactions coupled with an increase of memory for the actual happenings. After a few weeks of this treatment the majority were able to go into the town near by without suffering any ill effects from the noise of traffic, which had hitherto caused them acute anxiety.

In considering this type of therapy now, in view of my past experience, I cannot help but feel that much greater use should be made of transference relations between patient and therapist—first by adopting the attitude, "We together are facing these difficult situations which proved too much for you when you were alone"; and then, when the patient's self-confidence has been restored, a process of handing back to him the sense of his own responsibility as an adult and a competent member of society.—I am, etc.,

AUG. 5.

D. N. HARDCASTLE

SIR.—If it was Herodotus who declared that history repeats itself, he will find, if he reads the *B.M.J.* in Olympus, remarkable evidence in the article by Majors F. L. McLaughlin and W. M. Millar on the use of air-raid noises on the gramophone as a form of psychotherapy (August 2, p. 158). It certainly recalls with irresistible and entertaining vividness the medicine-man treating disease with his tom-tom and other cacophonies.

Although it is regrettably true that much of the practice of psychiatry at the present moment is empirical in character, one feels compelled to ask: Is there not a limit beyond which the descent into the extra-rational should not be pursued? If the answer is in the negative and the implication follows that symptomatic treatment is good enough, however achieved, I would like to suggest an improvement. It is that, on the conclusion of the gramophone treatment, a bellicose attitude should be stimulated in the patients by teaching them a war dance. In this the Gaumont British News, I am sure, could help from a selection of their films of Darkest Africa. Finally, the treatment could be properly rounded off by "conditioning" the patients to a record of Herr Hitler delivering one of his celebrated harangues. But that perhaps would be going too far!—I am, etc.,

London, W.1, Aug. 4.

FREDERICK DILLON.

Cardiac Arrest during Anaesthesia

SIR.—In reply to Drs. H. J. Brennan, J. W. Patterson, and Mr. F. R. Brown (August 2, p. 175), I can state that pure chloroform anaesthesia has not been used in any of the hospitals in the many parts of the country where I have worked. The forty cases represent the collected experience of over twenty years. Half of this time was spent in senior resident posts, where the proportion of serious emergency cases was very high. During this period my anaesthetists were for the most part hospital residents, and although I have not made statistics I do not think that the cases of cardiac arrest were unduly high on this account. In the case quoted in my paper the anaesthetic was administered by a professional anaesthetist of the highest attainments, whose skill I appreciate.

I suggest to Dr. Patterson that a surgeon with a penchant for the nerve-racking ordeal which the necessity for cardiac massage entails must be about as common as a general practitioner with a partiality for puerperal sepsis.

I should like to call attention to an error in my article: "Darling and Lane" should read "Starling and Lane" (July 19, p. 85). I am greatly indebted to Dr. Edwin Starling, who, in

their tasks. They had no choice in the matter. While it is true that much of the modern hospital's work is to restore men and women for their industrial and domestic occupations, it is only a fraction of their missions. Again, we have to remember that the slave of the Roman Empire had little in common with his namesake of *Uncle Tom's Cabin*. In many cases the Roman slave-owner was on terms of intimacy and friendship with his slaves; as boys they were probably brought up and educated together. From the slave class, too, were recruited many members of the "learned" professions—notably the teachers and physicians, both of whom Juvenal associates with tight-rope artists, fortune-tellers, and attendants at the public baths! We have, then, to keep in mind this personal relationship of master and slave when we are tempted to deny a spirit of altruism to the founders of Claudian infirmaries.

Dr. Cook castigates the system whereby the shepherd "wrapped in the fleeces of his flock" goes to the private home while his shorn sheep are relegated to the municipal hospital. An analysis of that will probably give us good clues towards proposals for a revision of the hospital system. Why does he go to be "fleeced" at a private nursing home? Because (a) the medical profession expects a man of his position to do so; (b) the municipal authorities no less look to him to do this; (c) the voluntary hospital authorities will darkly hint—or pointedly suggest—that their beds are not for him; (d) the hospital for which a "works" card is necessary will not receive him without the very form for which he has no qualification, as he is not a contributor to the "scheme." In other words, our ideal system will have to take account of all four of these factors.

Now the obvious defect of the voluntary hospital is that it makes essential work depend upon uncertain charity. The manifest defect of the municipal hospital is that it allows the typical "high-handedness" of officialdom to invade what is basically a personal service. The glaring inefficiency of a hospital supported by workers' contributions is that it leaves out of account the man who cannot subscribe and "the stranger that is within our gates." But both the voluntary and the works subscription hospital lead to a sense of ownership in the community which is at once valuable, and absent in the instance of the municipal hospital. Why this is lacking in that case I cannot tell: I mention it as the conclusion to some years of experience.

There seems little doubt from my own observations (I was a member of the staff of one of our large voluntary infirmaries) that the future of the hospital lies either with the municipal or subscription (covenanted) supported type. Now Dr. Cook has surprised me by suggesting that the tending of the sick should be placed on a level with sewage disposal. Surely he will allow that a man's illness is in a much deeper sense a personal thing than his ashes, old newspapers, and empty sardine tins. Sickness belongs to a man as refuse does not. That fact must be taken into account in any plans for the future of hospital treatment.

I have been surprised that the control of hospitals entirely by the medical profession does not feature prominently as a suggestion in the discussions on this problem. Briefly, I believe that the facilities for hospital treatment and care ought to be the property of the accredited medical practitioners of the particular community. The points to be kept in mind are: (1) The medical profession will be absolute in its rightful sphere. This will avoid the ridiculousness of the average committee of a typical voluntary and covenanted-subscription hospital and the "prison governor" methods of the majority of the superintendents in municipal hospitals. Let the medical profession learn the lesson from the teaching world. Let us have no counterpart of the "touting" for appointments of "the butcher, the baker, and the candlestick maker." (2) There will be a sense of ownership by the community. I have already mentioned this as one of the desirable features of the non-municipal hospital. The community will feel its responsibility towards its clinic and hospital. (3) There will be no closing of doors against personal service and benefactions to the hospital; there will be scope for these under the jurisdiction of "the profession."

We have to rid people of the idea that, even if we allow that the care of the sick is a very personal service, the adequate

provision of hospital and medical facilities can rest on a haphazard voluntary basis. The teaching profession is, nowadays, well esteemed; we do not despise the schoolmaster because he draws an adequate salary from a well-provisioned municipal undertaking. But time was when the training of the young was regarded as a personal service, and, therefore, to take money for doing so was mean and despicable. Time was when the professional schoolmaster was ranked in society with the man who hawked kippers in the street. Whatever "scheme" is finally selected will have to make its way against prejudice and misunderstanding. But the more it preserves of the best features of the old voluntary hospital system, so much the more will it commend itself to "us, the people." I venture to suggest that my scheme for absolute ownership by "the profession" embraces those aspects. I should be glad to have the observations of "the new owners"!—I am, etc.,

St. James's Vicarage,
Darlington, Nov. 14.

KENNETH HARPER.

SIR,—The voluntary hospitals claim to treat the sick better than do the municipal hospitals by reason of possessing superior tradition, atmosphere, standards, and exponents. The following would appear to be among the chief virtues of the voluntary hospital system:

1. It is a personal and flexible form of local self-government, reminiscent of democracy, specially adapted to each separate hospital and therefore well calculated to influence the conduct of those in direct contact with the sick, as well as producing a readier consent of the governed.
2. It works to broad principles rather than written rules.
3. It shows a full appreciation of the value of local *esprit de corps* and supports it as a policy.
4. It acknowledges that continuity of standard is essential and pursues this as a policy.
5. It has no place for the party politician, his whims, his wiles, and his nostrums, and provides no privileged opportunity for his public advertisement at the expense of staff and patients.
6. Under its sway professional standards applicable to the sick are more generally acknowledged and uniformly supported throughout the whole organization, both professional and lay, and alien creeds are not encouraged.
7. In making appointments to the staff the need of the hospital concerned is the only consideration and is paramount.
8. In it the factors productive of stress and strain to the staff are almost exclusively professional.
9. In it every specialism is considered a full-time job in itself; progress through the various stages of that specialism is better safeguarded, can be more accurately assessed, and its practice more effectively controlled and is moreover less likely to be involved in extraneous responsibilities.
10. Under the voluntary hospital system character is more uniformly an asset than a liability, and, in general, personal advantage is less likely to be at variance with professional duty.
11. In it local security of tenure is the rule and compulsory transfer of staff from hospital to hospital unknown.
12. The work of the ward sister is recognized as a life work in itself, and the possibilities of her contribution to hospital atmosphere, standard, and tradition are highly rated and fully acknowledged.
13. It provides opportunity, leisure, and rewards for its senior professional staff commensurate with their ability and position and in such manner as to stimulate progress.
14. It admits there are limits to the effective range of human control over others, and its practice is not suggestive of the dinosaur.

Virtues not all perhaps conspicuous by their absence in municipal systems, but conspicuously inconspicuous in some. The voluntary hospital arrangement is a pleasant, attractive, and effective system, with the path of honour eased and rendered even more attractive by a judicious use of limelight and the constant attentions of the mighty. Wise, too, for a job made easy is already half done. But freedom may become pathological and the enervating character of mutual admiration tend to smugness, especially when sequestered and aloof, protected from the buffeting endured by lesser breeds.

Time was in the tradition-forming days when the sole test for admission to the voluntary hospitals was the oed of the

patient, and none was too dull, uninteresting, or unpleasant. Time was when character, religion, altruism, and untiring vocational nursing matched the present claims. For many years past, however, honour has gone where difficulties, other than technical, have been least—that is, to voluntary hospital staffs; public neglect and disdain have gone where the difficulties were greatest—that is, to the municipal hospitals. The levelling-up process (so called) proceeds apace in the municipal hospitals, however, though often with noticeable lag in municipal hospital enthusiasm, which quality was never greater, in my opinion, than in the years before 1929, when, though local difficulties were rife, they could be got to grips with and a generous meed of the above fourteen points was obtainable, and individualism, I fear, had scope. But that, of course, was making it much too easy. Incidentally, one notes that the medical superintendent casts his baneful shadow. Might one inquire if the comparable counterparts in the voluntary system are equally baneful, and, if so, are the hospitals so afflicted the least seaworthy? My name is not important, my pseudonym not.—I am, etc.,

Nov. 13.

"BEWARE THE POLITICIAN."

Surgical Instruments for Russia

SIR,—Surgical instruments of all kinds are urgently needed by the U.S.S.R., and at present it is possible for the manufacturers to supply only a limited number. Among the instruments required at once are:

Artery forceps of every description.	Bullet or swab forceps.
	Ancurysm needles.
	Surgical needle holders.
	Bone forceps.
Needles of all kinds (including intravenous, blood-transfusion, hypodermic, and spinal).	Scalpels and amputation knives.
Scissors of every description.	Plaster cutters.
Towel clips.	Tracheotomy tubes.
Dissecting forceps.	Abdominal retractors.
Aural forceps.	Volkmann retractors.
	Sterilizers and autoclaves.
	Dental instruments.

The Anglo-Soviet Medical Committee appeals to all who have any surgical instruments which they can spare to send them as soon as possible to the Secretary, Joint Committee for Soviet Aid, 171, St. Stephen's House, Cannon Row, Bridge Street, London, S.W.1. The need is urgent, and instruments received will be dispatched promptly. Instruments which require to be re-plated or repaired will be accepted with gratitude, and will be restored to good condition before being forwarded to the U.S.S.R.—I am, etc.,

Nov. 24.

A. E. WEBB-JOHNSON,
President, Anglo-Soviet Medical Committee

R.M.B.F. Christmas Gifts

SIR,—Referring to my appeal on behalf of the Christmas Gifts Fund of the Royal Medical Benevolent Fund, I recently received a letter from a doctor aged 78. He and his wife, aged 72, are both beneficiaries of the Fund and their joint income is £169. They have been recipients of our Christmas gifts, and their letter states:

"As Christmas approaches we think of the special gift which the Committee has so kindly sent us for several years, but would like to make a suggestion. Since we came to this little farm worker's cottage we find expenses are easier than formerly. It would therefore give us much pleasure if our Christmas gift this year was given instead to someone who has been bombed out of home."

Many of our beneficiaries have unfortunately suffered through enemy action. May I, through your columns, ask those of your readers who have not yet responded to my Christmas appeal to send in their contributions as soon as possible to the Christmas Gifts Fund, Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, Putney, S.W.15.—I am, etc.,

THOS. BARLOW,
President.

Dec. 1

A pamphlet giving particulars of films dealing with physical recreation and health education has been published by the Central Council of Recreative Physical Training, 58, Victoria Street, London, S.W.1. The title of the pamphlet is "Films about Movement and Health," and it is priced 9d. post free. It should prove a useful guide to those arranging film shows in clubs, colleges, youth centres, etc.

Obituary

THOMAS CHARLES HUNTER, M.D.

The death occurred on November 15 of Dr. T. C. Hunter after a very short illness. He had spent nearly the whole of his professional life in Newcastle-upon-Tyne.

Thomas Charles Hunter was born at Sunderland on March 24, 1876, and was the second son of the late Sir George Hunter, the Tyneside shipbuilder. On leaving Fettes College he intended to become a shipbuilder and went abroad to complete his education. It was while he was in Spain that at the age of 19 he contracted pulmonary tuberculosis. He lived at Davos for the next two years and three more winters. His interest in medicine was now aroused, and at the age of 24 he had sufficiently recovered to begin the medical curriculum at Newcastle-upon-Tyne, where he qualified M.B., B.S. in 1904, taking the M.D. Durham in 1911.

He spent about a year in postgraduate study in Vienna, and for some time was an assistant in a practice at Consett. Then he settled in Newcastle in general practice. At one period he was assistant surgeon at the Children's Hospital, but his real interests were in medicine and diseases of the chest, and he soon confined himself to consulting practice. In the war of 1914-18 he joined the R.A.M.C., but after some months ill-health compelled him to resign his commission, and the rest of the war was spent in the country recovering. He was physician and later consulting physician to the Royal Victoria Infirmary, and also physician to the Chest Hospital in Newcastle. His great interest was the sanatorium for tuberculous children at Stannington, where he was visiting physician for about thirty years right up to the time of his death. Under his guiding influence this institution developed and flourished, and he wrote several papers on various aspects of the clinical work there. He had been a member of the British Medical Association for thirty-seven years.

Charles Hunter was intensely interested in his profession. He was a conscientious physician, deeply sympathetic towards his patients; indeed, his sensitive nature was perhaps rather too deeply moved by suffering and tragedy. He never sought the limelight, and was happiest with his family at his lovely cottage on the Durham moors, where he took a particular interest in growing roses. In his day he was a fine skater, a good lawn-tennis player, and a keen golfer. He never had robust health and had to live within his physical limits; but he faced life with great courage, gave of his very best to the community, and succeeded. His ready smile and warm-hearted friendship will be sadly missed by those who knew him.

G. M. GREIG.

H. O. WEST, M.D., F.R.C.P.

Dr. Henry Owen West, medical superintendent of Queen Mary's Hospital for Children, Carshalton, died on November 20 after a brief illness. He was a student of King's College and University College, London, and after graduating M.B., B.S. Lond. in 1909 served as house-surgeon at King's College Hospital and senior house-physician at the Seamen's Hospital, Greenwich. He proceeded to the M.D. in 1912, took the M.R.C.P. in 1914 and the D.P.H. two years later, and was elected a Fellow of the Royal College of Physicians in 1936. During the last war he held a temporary commission in the R.A.M.C., served as specialist sanitary officer, and was mentioned in dispatches.

A. T. sends the following appreciation:

By the untimely death of Dr. Henry West the London County Council has lost one of its most distinguished and popular medical superintendents. He was chosen by the Metropolitan Asylums Board to be superintendent of Princess Mary's Hospital for Children in 1919, having held several house appointments at King's, the Seamen's, and the Royal Chest Hospitals, and spent five years as tuberculosis officer in Kent.

Hackney, and Stoke Newington. When the L.C.C. took over the M.A.B. and Guardians' hospitals West was accorded the rapid promotion which his experience, ability, and qualifications warranted, and, after being in charge of the Archway and St. Giles general hospitals, was in 1937 chosen to succeed Dr. Gordon Pugh as medical superintendent of Queen Mary's Hospital for Children, Carshalton. This is one of the largest and best-known children's hospitals in the country, and Henry West, with his flair for quiet, happy efficiency, not only maintained but improved its standing. He was a man of great clinical and administrative ability: his outlook and method completely refuted the theory that the superintendent of a municipal hospital is a soulless bureaucrat with limited clinical knowledge and interest. West never ceased to be an ardent clinician, and one of the secrets of his success was that he could, and did, take a close personal interest in his juniors and in their clinical problems. His team at Queen Mary's was a happy one, and when, after the outbreak of war, E.M.S. personnel joined they were quickly incorporated as members. He was by nature a reserved man and no seeker after cheap popularity. He set a very high standard and was persistence itself in his demands for quality of staff and equipment and anything else that would improve his hospital. Of all his many fine qualities his innate genuineness stands out as possibly the most striking. His very arduous experiences of last winter may have predisposed him to the cerebral haemorrhage to which he succumbed. He never spared himself, and was proud that none of his patients suffered serious injury. The profession has lost a distinguished physician and the London County Council an outstanding officer. To his widow and his three sons our sympathy goes out in very full measure.

J. R. GILMOUR, M.B., C.M., F.R.C.P.Ed.

The sudden death of Dr. John Rutherford Gilmour on October 28 brought sorrow and a keen sense of personal loss to his many friends and former patients. Less than three years have passed since he left the post he had held for thirty-seven years in the West Riding of Yorkshire and retired to Overstrand, Norfolk, where he died.

Born in Edinburgh in 1871, and educated at George Watson's College, John Gilmour was a notable student at Edinburgh University, where he graduated M.B., C.M. with first-class honours in 1894. After holding a resident post in the Edinburgh Royal Infirmary and spending a short time in general practice, he joined Sir Thomas Clouston's staff at Morningside as an assistant physician, and so began his career in psychiatry. Becoming senior assistant physician under Dr. Rutherford at the Crichton Royal Institution, Dumfries, he remained there until 1901, when he was appointed by the West Riding County Council to direct the new mental hospital for private patients at Scaleshor Park, Burley-in-Wharfedale. He was medical superintendent of that hospital from its opening in 1902 until his retirement in 1939. He was elected a Fellow of the Royal College of Physicians in Edinburgh in 1902, and soon after taking up his post in the West Riding he married Miss Dorothy Rutherford, daughter of his former chief.

Although by nature reticent and unassuming, Dr. Gilmour's personality and ability soon made him a well-known figure in the West Riding, where, in addition to his other work, he had a large consulting practice. Of tall and distinguished appearance, he was gentle and kindly, calm, slow to anger, but quick to detect sham and hypocrisy, and always ready to maintain—against whatever odds—a cause he considered to be right and just. Scaleshor Park was his main interest, and the clinical side of his work there attracted him most. He had a shrewd insight into the nature of the problems of the mentally ill, and quickly gained the confidence and co-operation of his patients. Nothing was too much trouble for him and nothing too good for them. His memory was remarkable, and he could draw at will upon his large experience to point a moral or illustrate a case. He took an active part in the medical life of the West Riding, and regularly attended, and was an accomplished speaker at the clinical meetings of the British Medical Association and the Bradford Medico-Chirurgical Society. His fellow psychiatrists recognized his personal attributes no less than his stand-

ing in the specialty, when, in 1937, they elected him President of the Royal Medico-Psychological Association. He had been a member of the B.M.A. for forty-six years, and when the Association met at Bradford in 1924 he held office as secretary of the Section of Neurology and Psychological Medicine.

One of his oldest friends (T. B. H.), in the course of a tribute printed elsewhere, has written: "John Gilmour had a commanding presence. He invariably showed exceeding kindness to his patients and their relatives. His staff were well trained and devoted to him. He had a grand sense of humour. He had a happy home and was a delightful host. He was a charming companion on a holiday. He was a faithful friend, and those of us who knew him well missed the tall figure in the Inverness cape when he left the district. He never said an unkind word. He has left a fragrant memory of kindness, efficiency, and work well done."

One of the good old type of family doctors and general practitioners passed away at Bournemouth on October 23 in the person of JOHN ALFRED WARD, aged 77. Coming of Shropshire yeoman stock, he qualified from Guy's and then held some appointments at London public institutions. After that he went into practice at Grays, Essex, where he lived a very busy life for over twenty-five years. Those were the days when doctors had to tackle things somehow or other, before everything was rushed at once off to hospital, and when childbirth was looked upon as a physiological and not a pathological process. Neither did the general practitioner then get those pleasant breaks in the drudgery such as half-days for golf and regular evenings off. Ward was plunged into a most strenuous life with a large practice and constant midwifery to a poor neighbourhood. He was also one of the honorary surgeons at Tilbury Hospital, medical officer of health for Grays Urban District, and medical officer to the training ship *Shafesbury* in the River Thames. Despite all this he had the grit to take the degree of M.D. Durham for practitioners of fifteen years' standing. This necessitated doing a book of Caesar, and the writer has a vivid remembrance of an early morning visit to Ward's house and finding him half dressed, after a maternity night-out, trying to do morning surgery, eat some belated breakfast standing up, and construe some Caesar, all three efforts being intermingled! We finished the Caesar together, but that little vignette gives an idea of the full life he lived. At this pace, no wonder if he was tired. Fortunately he was able to give up general practice fairly early. He then spent some years as ship surgeon with the P. & O. line, and was able to visit Australia and the Far East. Being unmarried, he had no family responsibilities. He finally retired to live quietly at Bournemouth. A pleasant aspect of his personality was the country farmer element, which he retained through life, with interest in the land, crops, shooting, etc., though he never got much time off to indulge in the last. These few memorial lines are offered by one who was in keen competition with him during that quarter of a century of practice, as a respectful testimony to a genial and quiet personality. *Molliter ossa cubent.*—A. F. B.

We regret to announce that Dr. ALFRED LINNELL died on November 18 at his home in Northampton at the age of 60. The son of J. E. Linnell of Paulerspury Hill, he studied medicine at Guy's Hospital, where he played in the Rugby Cup-tie XV, and qualified as M.R.C.S. in 1883. He returned to his birthplace to work in general practice there, and took a prominent part in the public life of the district. When the Northamptonshire Insurance Committee was set up in 1913 he represented his parish on that body and served for two years as its chairman. In 1920 he was appointed regional medical officer under the Ministry of Health and went to live first at Northampton, then at Leicester, and on his retirement returned to Northampton. Dr. Linnell joined the British Medical Association fifty years ago. He had been president of the South Midlands Branch in 1910, and was a member of the Rural Practitioners Subcommittee 1911-20. He served on the Consultative Council for Medical and Allied Services which was set up by Lord Addison as first Minister of Health, with Lord Dawson as its chairman, but resigned on appointment to the staff of the Ministry.

A correspondent writes: Those who knew Alfred Linnell will treasure his memory as one who was a splendid type of rural practitioner. Great in stature, robust in body and mind till an advanced age, he was a man who inspired confidence. He excelled in open-air sport as a young man. He loved the country and understood it. Kindly, shrewd, and reliant, it is little wonder that he built up a good practice at Paulerspury, the village where he was brought up. He took an active part in parish and Church affairs and was held in high esteem by everyone who knew him, particularly by his patients and professional brethren. He was constant in his attendance at medical meetings and could always be relied on to give a sound opinion, expressed in a clear and definite manner. He was recognized as one whose views on medico-political matters were most valuable. When the National Health Insurance Act came into being Linnell was the inevitable choice as representative of his district, and he became one of the first members of the Insurance Acts Committee. Here his talents were properly valued, and when regional medical officers were first appointed he was among the chosen. No one was more suitable. He had a wide knowledge of medical practice and of human nature, which enabled him to hold a fair balance when there were differences between his Department and medical practitioners. It is a tribute to the democratic ways of our Association that a man who started his professional work in a village practice could attain to the position he held—not only his official position but the place he held in the hearts of his fellow-practitioners.

Dr. DAVID ROBERTSON TAYLOR died on November 8 at his residence in Malone Road, Belfast. He was educated at the University of Edinburgh and Queen's University, Belfast, graduating M.B., Ch.B.Ed. in 1906 and taking the Belfast D.P.H. in 1918. He had held the posts of house-surgeon at the Royal Victoria and the Maternity Hospitals at Belfast. Dr. Taylor was a member of the British Medical Association and the Ulster Medical Society. He was an old-established general practitioner of the classical type, and during the present war was constantly engaged on medical boards. He was an outstanding athlete and represented Ireland at rugby football as a centre three-quarter in 1903. In more recent years cricket commanded his attention, and he represented the Province of Ulster on many occasions.

Dr. PETER MURRAY KERR died on November 16 at Dumfries at the age of 78. He was one of the best-known doctors in the south of Scotland, where he had practised for nearly half a century. He took the M.B., C.M. at Edinburgh University in 1887, and not long after graduation settled in Dumfries, where he served for many years as surgeon to the Dumfries and Galloway Royal Infirmary. Dr. Kerr joined the British Medical Association in 1892, represented the Dumfries Division at the Annual Meeting of 1908, and held office as chairman in 1925-6; in the following year he was elected president of the Border Counties Branch. In his early years of practice he had been medical officer to the old Dumfries Parish Council; later he served for twenty years as medical referee for Dumfriesshire under the Workmen's Compensation Act and for the Ministry of Pensions. He joined the 3rd King's Own Scottish Borderers in 1891, and was gazetted to the command of the 5th Battalion in 1911. He went with his regiment to Gallipoli in 1915 with the rank of lieutenant-colonel, but was invalided home. After the last war he maintained his keen interest in the regiment as its honorary colonel, and received the Territorial Decoration. In 1930 his services to the local hospital and to the community of Dumfries and district were publicly recognized. In recent years he had been an honorary Sheriff-Substitute, and also a J.P. for the county.

The following well-known medical men have recently died abroad: Dr. DEAN DE WITT LEWIS, president of the American Medical Association, 1933-4, editor from its foundation of the *System of Practice of Surgery* and of the *International Surgical Digest*, and editor of the *Archives of Surgery* since 1921; and Dr. FRANK BURR MALLORY, formerly professor of pathology at the Harvard Medical School, Boston, editor of the *American Journal of Pathology*, and co-editor with J. Homer Wright of *Pathological Technique*.

Medico-Legal

A FATHER'S DILEMMA Refusal to allow Amputation

A labourer of Glamorgan, an ex-soldier with six children, was tried recently at the local quarter sessions for neglecting one of his sons, aged 6 years, by failing to provide him with adequate medical attention. The evidence for the prosecution was chiefly medical and was not substantially in dispute. The boy was suffering from tuberculosis of the left knee. He had been in the special hospital at Glan Ely for fourteen months and had been discharged able to walk. In April of this year, however, he was readmitted; his condition was steadily getting worse and he was beginning to suffer from chronic general poisoning. The medical men in charge of the boy advised the father that the only hope for the boy's life was to amputate the leg, and that even this, in view of his bad general condition, would be a dangerous operation. The father refused his consent, and the prosecution followed. Counsel for the defence said on the father's behalf that he had not been told his son's life was in danger and that he had not finally, but only provisionally, refused consent. The man himself said he was afraid the shock of the operation would kill his son; that during his service through the last war he had seen a great many fatal amputations; and that if he thought the child would recover he would consent at once, though even so the child would be a cripple for life. The jury acquitted him after only two minutes' deliberation in open court.

Considering that the prosecution admitted a substantial risk that the amputation might not save the boy's life, it is a little difficult to see why the authorities should have seen fit to add to the father's existing distress and anxiety by prosecuting him. Medical attention is a "necessary" for the provision of which a minor may make a valid contract, and which the parent or guardian of a minor is bound by law to provide. This obligation has probably always existed at common law, but has been specifically enacted in a number of statutes relating to the welfare of minors. The law at present in force is contained in Section 1 of the Children and Young Persons Act, 1933. It is a criminal offence to neglect a child under 16 in a manner likely to cause him unnecessary suffering or injury to health, including injury to or loss of sight, hearing, a limb, or an organ of the body. A parent or guardian is deemed to have neglected a young person under this section if he has failed to provide adequate medical aid for him, or failed to take steps to procure it to be provided under the Acts relating to the relief of the poor.

Did the Parent Act Reasonably?

The present case is amply covered by authority. In *Oakey v. Jackson* a girl of 13 had been suffering from adenoids, which were injuring her health. The only possible remedy was a surgical operation. This was not a dangerous operation, but the father refused his consent to it. He was summoned for wilfully neglecting her in a manner likely to cause injury to health, by failing to provide adequate medical aid (the Children's Act, 1908, contained the same provisions as the 1933 Act). The justices dismissed the information on the ground that the father was under no legal liability to consent to the operation. Mr. Justice Darling said on appeal that in such cases, as in so many other branches of law, the test must be whether or not the parent has acted reasonably. There may, he said, be cases in which a parent is bound to allow his child to undergo an operation, but a refusal to allow an operation is not necessarily a failure to provide adequate medical aid of a kind which offends against the statute. The question can be answered only by considering all the evidence in each case; it is one of fact. The justices who are called upon to reach such a decision must take into consideration the nature of the operation and the reasonableness of the parents in refusing to permit it. Mr. Justice Avery added that another material fact is whether the operation is advised by a qualified medical practitioner or merely by some irresponsible person. In the case against the Glamorgan father the chairman of the sessions, following this decision, put to the jury the

simple question: Was the father's refusal reasonable in all the circumstances? and the jury had little hesitation in finding that it was.

A correspondent has asked whether in such a case a court has power to order a given operation to be performed. The answer seems to be clearly laid down in the 1933 Act, Section 63. If the jury acquits, the court of course takes no notice of the order, but if the parent is convicted the court may make an order committing the child to the care of a "fit person." Often the fit person is the local authority, and under the order it has the powers of a guardian to give consent to the indicated operation. Alternatively, the court may bind the parent over to exercise proper care and guardianship, and this would presumably include his consent to the operation.

The Services

NAVAL AWARDS

The D.S.C. has been awarded to Temporary Surgeon Lieuts. Emlyn Roderick Llewellyn Davies (H.M.S. *Manchester*), Cyril Joseph Vaughan (H.M.S. *Forester*), and Eric John Yates (H.M.S. *Fearless*) for courage and resolution in operations in Mediterranean waters.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

War Substantive Captain ERNEST JOHN FRANK HINDE, who was announced as "Missing at Sea" in the *Journal* of November 1 (p. 638) and who is now reported to have died at sea in August as the result of enemy action, was the eldest son of Dr. and Mrs. E. B. Hinde of Norwich and qualified M.R.C.S., L.R.C.P. in 1938. In October, 1939, he was granted a temporary commission as lieutenant in the R.A.M.C., and was promoted captain a year later. He was a member of the British Medical Association. He leaves a widow.

Missing

Lieut. Niall Eugene O'Neill (not prisoner of war, as announced in the *Journal* of November 16, p. 639).

Prisoner of War

Lieut. John Edward Readman.

Universities and Colleges

UNIVERSITY OF EDINBURGH

At a meeting of the University Court, held on November 17, with Sir J. Donald Pollock, Rector, in the chair, it was reported that Dr. H. M. Traquair had been appointed a member of the Court as a General Council Assessor in succession to Sir Norman Walker.

On the recommendation of the Senatus and the Faculty of Medicine, the Court approved the appointment of Prof. Bruno Nowakowski, professor of hygiene, as a member of the Faculty of the Polish School of Medicine in Edinburgh.

It was announced that a bequest had been received from the late Mrs. M'Laren of Surling of £2,000 in memory of her husband, Lawrence M'Laren, the interest to be used for research into the cause and cure of brain and nerve trouble and to be called the Lawrence M'Laren Bequest.

EXAMINATION FOR CZECH MEDICAL DEGREES

At the request of the Czechoslovak Minister of the Interior and Education in London, the Examining Board in England of the Royal Colleges of Physicians and Surgeons has undertaken to conduct a special Final Examination (Second and Third Rigosos) for the Czechoslovak MUDr. degrees. Part I (Pathology and Bacteriology) was conducted in London last week, when twelve candidates were examined, of whom the following satisfied the examiners: Artur Flach, Jan Glaser, Zdenek Pfeifer, Karel Skopek, Karel Josef Susat, Walter Tausig, Josef Voracek, and Josefina Liebsteinova.

Medical Notes in Parliament

Health and Disease in the Colonies

Mr. NOEL BAKER opened, on November 20, a debate on colonial affairs. He said Parliament was now building up the social services of the Colonies, but there was still too much poverty and preventable disease. Mr. DE ROTHSCHILD said that under the Colonial Development Act the production of subsistence crops should be encouraged. There was much chronic ill-health among the natives due to a diet of low nutritive value. Unless a deficiency of sound home-grown food was remedied the work of doctors, nurses, and hospitals stood little chance of success.

Dr. MORGAN said the people of the West Indies suffered from malnutrition because the ground was used for exportable crops. There were in the West Indies instances of a chief medical officer acting on a basis of favouritism and of crowds of doctors moved without cause to the poorest parishes. He found the people of the West Indies living in a cesspool of disease—yaws, hookworm disease, syphilis, malaria, tuberculosis, infectious diseases, leprosy. Tuberculosis in the West Indies was of a galloping type, and in certain places syphilis affected 60% of the population. Hookworm disease spread because the Government would not insist on preventive measures. The doctors were blamed for a medical policy with which they had nothing to do. He had never seen a more disgraceful hospital than at San Fernando in Trinidad.

Mr. GEORGE HALL replied to the debate, but did not deal in detail with Dr. Morgan's charges.

High-frequency Apparatus

On November 27 Mr. HERBERT MORRISON told Dr. Howitt that for security considerations he could not instruct the chief officers of police to report on the possibility of licensing the use of more short-wave high-frequency apparatus, such apparatus being completely screened and issued only to practitioners for whose integrity the police could vouch. This proposal, he added, had been considered before the Control of High-frequency Apparatus Order was made. Dr. HOWITT asked whether a test had been made of how far these rays travelled. Mr. MORRISON replied that he could not say. It was undesirable to discuss such details in public.

Diphtheria Immunization.—On November 18 Mr. VIANI asked the Minister of Health whether he would obtain information of the amount of immunization against diphtheria practised in the areas covered by his circular dated June 12, 1941, in view of the fact that unless this information was given the mere number of cases of diphtheria notified and the proportion of cases immunized would not have any significance. Mr. ERNEST BROWN replied that the main purpose of the returns referred to in the circular was to furnish information about the extent to which immunization of children against diphtheria was carried out between January 1, 1940, and September 30, 1941. The return had been asked for from all local authorities.

Disease in Wiltshire Labour Camps.—Sir PERCY HURD inquired on November 20 what action Mr. Brown had taken upon the report last month by the Wiltshire Public Health Committee that the committee had been called upon to provide facilities for cases of vermin, scabies, venereal disease, and advanced pulmonary tuberculosis among imported labourers, especially from Ireland, for employment on Government contracts. Mr. BROWN reported local consultations with all concerned regarding medical arrangements at the labour camps referred to. The county council's medical officer was giving valuable assistance, and the necessary measures were in train.

Sir PERCY asked whether steps would be taken to ensure a strict medical examination before importation of labour. Mr. BROWN said that point was being considered in conjunction with the Ministry of Labour and National Service.

Compensation for Shock.—Sir WALTER WOMERSLEY said on November 20 that his attention had not been drawn to a decision given in the Bristol County Court that injury under the Personal Injuries Scheme did not include shock unless accompanied by physical injury. He added that compensation was payable where, as a result of enemy action, a person sustained concussion of the brain, whether there was visible injury or not, or where a person sustained nervous shock of a commotional character associated with blast, burial among debris, or some similar severe incident. In either case the patient must be medically certified as incapable of work.

Incidence of Tuberculosis among Young Women.—On November 20 Mr. BROWN told Mr. J. Griffiths that in 1940 mortality among women from all forms of tuberculosis showed an increase of 11% over the figure for 1939. The highest incidence was in the age group 20-24, where the increase was 18%. He had arranged, with the co-operation of the Medical Research Council, for expert investigation of the possible causes of the increase. Everything possible was being done to maintain the tuberculosis service.

Insurance Practitioners: War Bonus.—On November 25 Mr. ERNEST BROWN said that he had received copies of resolutions recently passed by the Doncaster and Kent Panel Committees supporting the appeal for a war bonus of 4s. to insurance practitioners. He could not see his way to grant such a bonus.

Mr. GROVES asked whether the Minister was aware of the difficulties of the average medical practitioner to meet the increased income tax out of a capitation fee which, despite its rise, really remained as it was at the end of the last war, and whether he would consider granting a war bonus. Mr. BROWN: I am not aware of any reason why medical practitioners should not be subject to income tax in the same way as other citizens. The capitation fee is to be increased for other reasons from the beginning of next year, and I am not prepared to increase it further by way of compensation for the increase in income tax.

Pediculosis, etc., in Evacuated Children.—On November 25 the Minister of Health was asked whether he was aware that the condition of evacuated children from London showed pediculosis, impetigo, and scabies, and why such children were permitted to change their residence. Mr. BROWN said he was aware that in the past children suffering from these conditions had sometimes arrived in the reception areas. It had recently again been thoroughly impressed on the evacuation authorities in the London area that before organized parties of children were sent to reception areas medical inspection must be carried out and, where necessary, the children must receive efficient treatment before they might travel. The authorities knew that no child who was suffering from an infectious condition must be sent out until he was cured.

Courses for R.A.M.C. Officers.—On November 25 Captain MARGESSON, replying to Mr. Thorne, referred to courses given to civilian doctors on entering the Army Medical Service. He said that some 5,000 medical officers had passed through a course at the Army School of Hygiene, and over 1,000 through a course for the treatment of mechanical warfare casualties.

Notes in Brief

On November 25 Captain Margesson told Mr. Leach that no cases of small-pox in the Army had been reported since the outbreak of war.

Major Lloyd George states that, provided they are stored under suitable conditions, canned foods such as are now being distributed remain sound indefinitely.

Major Lloyd George stated in reply to Captain Profumo that no recommendation made by the Medical Research Council with regard to national wheatmeal bread had been rejected by Lord Woolton. All had been acted upon, with one exception. That is still being examined.

The November issue of *Industrial Welfare and Personnel Management*, the journal of the Industrial Welfare Society, includes an article on Factory War Casualties by Dr. H. A. Faulkner, who describes the need for "a carefully planned bomb-proof organization to deal with the results of incidents," and outlines the principles on which the scheme in his firm is run: competent area first-aid organizations under efficient incident officers; central mobile units of well-trained first-aiders for use in any part of the works; a well-equipped casualty clearing station (with equipment for comfort of patients as well as medical and surgical treatment), and one or more reserve casualty clearing stations. An editorial discusses means for controlling influenza and the common cold, which are responsible in normal times for between 30% and 40% of the working hours lost in industry. Firms are trying various methods in the hope of reducing this loss: free inoculation of employees, sun-ray treatment, distribution of vitamin capsules, reduction of overcrowding, encouragement of the use of face-masks, spraying the air with disinfectant, education in general hygiene by works doctors and nurses. A letter from Dr. T. E. A. Stowell, chairman of the Industrial Welfare Society's advisory medical committee, points out the dangers of unsupervised use of artificial sunlight treatment, but emphasizes the value of correct exposure in preserving health, promoting a sense of well-being, reducing fatigue, and increasing resistance to disease.

SURVEY OF LONDON HOSPITALS

In the House of Commons on Tuesday Captain G. S. Elliston asked the Minister of Health whether he was in a position to make any further statement about the survey of hospitals in London and the surrounding area proposed in connexion with the Government's post-war hospital policy. Mr. Ernest Brown, in reply, gave the following as the terms of reference for the guidance of those undertaking the inquiry:

"To survey the hospitals (other than mental hospitals and mental deficiency institutions) in London and the surrounding area; and having regard to the information thus obtained and to the general principles of post-war hospital policy laid down by the Minister of Health in the House of Commons on October 9, to advise the Minister what area would appropriately be served by a hospital system centred on London, and what modifications or extensions of the existing hospital facilities would be necessary or desirable to give effect to that policy."

The Minister added that he had invited Dr. A. M. H. Gray, President of the Royal Society of Medicine, and Dr. Andrew Topping, Deputy Medical Officer of Health and School Medical Officer for the County of London, to act as surveying officers, and both had accepted the invitation. The services of Dr. Topping had been made available through the kind offices of the London County Council. A beginning had already been made with the preliminary work of the survey.

While it happens that one of the "surveyors" is associated with the voluntary hospitals and the other with the municipal, it is understood that they have not been chosen as representatives of these two aspects, but merely as persons who have had large experience in separate fields of hospital administration. The business of Dr. Gray and Dr. Topping will be to advise as to how hospitals can give the best service to the public; we understand that the whole question of teaching would be considered separately.

Medical News

At a meeting of the Pharmaceutical Society of Great Britain on Thursday next, December 11, at 2.30 p.m., in the Society's house, 17, Bloomsbury Square, W.C., the Harrison Medal will be presented to Mr. Thomas Tickle, B.Sc., public analyst for the County of Devon, and a member of the British Pharmacopoeia Commission. After the presentation Mr. Tickle will deliver the Harrison Memorial Lecture on "The Influence of Analytical Chemistry on Pharmacy." In this he will give the impressions of one who was first trained as a pharmacist and who afterwards practised as an analyst for forty years in close association with pharmaceutical matters. It is hoped that members will bring friends. Tea will be served after the meeting.

Colonel T. E. Osmond will deliver a lecture on "Venereal Disease in the Army: its Prevalence, Prevention, and Management," at the Weston Hotel, Bath, on Thursday, December 11, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

Mr. Ernest Brown, Minister of Health, will address a meeting on December 10 at the Royal Institution, Albemarle Street, under the auspices of the National Council for Maternity and Child Welfare. His subject will be "The Care of Mother and Child in Wartime." The other speakers will be Miss Crosbie and Professor Fletcher Shaw. Lord Dawson of Penn will preside. Dr. Allen Daley, Chief Medical Officer of the L.C.C., will propose, and Dame Louise Mellroy will second, the vote of thanks.

A Dominions and Colonies Section meeting of the Royal Society of Arts will be held at John Adam Street, Adelphi, London, W.C.; on Tuesday, December 16, at 1.45 p.m., when Dr. Maurice Ashby will read a paper on "British Empire Drug Production."

Owing to the efforts of the Nazis to secure medical aid for the war wounded in Slovakia, cars have been sent to the Jewish internment camps and forced labour battalions not only for Jewish doctors but also for male nurses and medical students.

The Minister of Health announces that the Medical Research Council has tested samples of pituitary extracts carrying the expiry date October 26, 1941, and has reported that provided supplies of these extracts have been kept under ordinary conditions of storage and at normal room temperatures they may be used with safety for a further twelve months.

The well-known firm of manufacturing chemists in the United States, John Wyeth and Brother, Inc., of Philadelphia, recently restored the old necropsy house of the Philadelphia Hospital at Old Blockley, and dedicated it to the memory of Sir William Osler. In the June issue of the *Bulletin of the History of Medicine* there are fifty pages to commemorate the dedication of the Osler Memorial Building. This interesting and profusely illustrated section includes a number of signed articles bearing upon Osler's life, with special reference to his years at Philadelphia as professor of clinical medicine in the University of Pennsylvania.

The September issue of the *Journal of Pediatrics* is devoted to the problems of adolescence.

EPIDEMIOLOGICAL NOTES

Discussion of Table

An increase in the notifications of pneumoocia, dysentery, and whooping-cough occurred during the week in England and Wales, the notifications of the other infectious diseases being below the totals of the preceding week. The large rise in the incidence of pneumoocia—266 cases—was distributed throughout the country.

A further 65 cases of measles were notified in the epidemics which began during the previous week in Kent, Easby R.D., with 94 cases, and an outbreak of 20 cases in Malling R.D. was also reported from that county. Four of the 21 cases of poliomyelitis were recorded in Buckinghamshire: that county is again the principal centre of infection, a position it occupied three months ago, when the incidence of this disease started to rise.

In Scotland a fall in the number of notifications of diphtheria, measles, and dysentery was recorded, while the figures for scarlet fever, whooping-cough, and pneumonia were in excess of the totals of the preceding week.

In Eire the notifications of diphtheria, measles, and whooping-cough were twice as numerous as in the previous week. Whooping-cough was practically confined to one area—Westport R.D., Co. Mayo, where 49 of the 57 cases were notified. The largest rises in the figures for the other two diseases were recorded in Dublin.

Diphtheria

The number of cases of diphtheria notified in England and Wales was 26 fewer than in the preceding week. During the past two months the weekly total of notifications has alternately risen and fallen, and there has been no obvious tendency towards an increased or decreased incidence for the country as a whole. The trend of the notifications in the various divisions of the country has, however, not been uniform, and some interesting contrasts are displayed when the subdivisions are considered. In Wales there has been a 50% increase during the past three months; in the north-western counties the increase has been of the order of 25%, while in the south-western counties the incidence has declined by 50% during this period.

Dysentery

Notifications of dysentery in England and Wales increased by 56 during the week compared with the total of the preceding week. The largest of the local outbreaks was reported from the administrative areas of Surrey (Coulson and Purley U.D. 19, Dorking and Horley R.D. 12), Dorset (Dorchester R.D. 10), Derbyshire (Derby C.B. 22), and Lancashire (Blackburn R.D. 19).

Returns for the Week Ending November 22

The returns of infectious diseases notified during the week included scarlet fever 1,417, whooping-cough 1,995, diphtheria 1,082, measles 639, pneumonia 1,100, cerebrospinal fever 114, poliomyelitis 13, dysentery 209, paratyphoid 18, typhoid 10. Deaths from influenza numbered 25.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 15.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland. *Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for:* (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland. A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	104	5	28	—	6	129	13	32	1	7
Deaths	—	1	1	—	—	—	—	—	—	—
Diphtheria	1,043	34	262	58	37	1,403	30	457	12	36
Deaths	43	1	6	1	—	52	3	5	4	5
Dysentery	204	12	45	—	—	97	—	31	2	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	5	—	1	—	—	4	—	2	—	—
Deaths	—	—	—	—	—	—	2	1	—	—
Enteric (typhoid and paratyphoid) fever	—	—	—	—	—	22	1	7	2	—
Deaths	—	—	—	—	—	4	—	1	—	—
Erysipelas	—	60	9	6	—	—	16	58	5	7
Deaths	1	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	37	3	19	19	7	23	3	14	4	3
Deaths	—	—	—	—	—	—	—	—	—	—
Measles	671	50	19	61	4	13,114	190	486	—	24
Deaths	2	—	—	—	—	20	—	2	—	—
Ophthalmia neonatorum	78	1	11	2	—	72	4	21	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	30	5	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza*	997	44	14	4	5	693	26	6	—	6
Deaths (from influenza)	38	—	5	2	—	33	3	2	3	1
Pneumonia, primary	33	226	17	9	11	—	38	207	6	2
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	1	—	—	—	—	5	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	21	—	1	6	—	22	—	4	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	1	1	15	4	—	—	—	4	3	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	135	4	10	—	4	128	2	8	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,352	36	247	59	44	1,634	53	263	74	51
Deaths	—	—	—	2	—	1	—	—	1	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever†	9	—	1	7	2	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	2,066	177	88	57	5	2,032	15	183	—	12
Deaths	8	2	3	—	—	10	1	3	—	—
Deaths (0-1 year)	333	23	60	40	23	280	16	77	22	22
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths)	4,473	618	647	192	137	5,490	1,201	630	168	130
Annual death rate (per 1,000 persons living)	—	—	14.1	12.7	‡	—	—	12.7	11.2	11.4
Live births	4,937	410	770	306	215	4,627	373	763	293	147
Annual rate per 1,000 persons living	—	—	15.7	20.3	‡	—	—	15.4	19.9	12.0
Stillbirths	195	22	34	—	—	185	14	46	—	—
Rate per 1,000 total births (including stillbirths)	—	—	4.2	—	—	—	—	5.7	—	—

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Stabbing Heel Pains in Rheumatoid Arthritis

Dr. E. S. HART writes from Great Yarmouth in reply to W. R. S., whose query appeared on November 15 (p. 716): Has the patient tried raising the bedclothes with a stool?

Gum of Postage Stamps as Germ Carrier

Mr. A. ERNEST SAWDAY, F.R.C.S.Ed. (London, N.8), writes: For the greater part of my life I have collected stamps. This hobby is very popular among medical men. If this note should catch the eye of a philatelic bacteriologist his observations as to the possibility of tubercle bacilli (and other organisms) being carried alive in the gum of postage stamps would be of interest.

Students Seeking Midwifery Cases

PAUL A. RIDDLE, GORDON D. McDONALD, and DIXIE M. CLEMENT write from the Edinburgh University Union: We are three fourth-year medical students of Edinburgh University at present attending midwifery lectures. We would like to do our twelve practical midwifery cases from the same hospital during our Easter vacation (March 19 to April 14). We would be very grateful if any of your readers could put us in touch with any hospital or institution which would be willing to take us, together with details of cost, etc.

Income Tax

General Practice and Appointments

J. O. is in general practice and also holds two or three appointments, for one of which—part-time M.O. at a factory—he receives £450 per annum. Must the emoluments from these appointments be assessed under Schedule E?

* Strictly such emoluments are so assessable, but it is the general and accepted practice of the Inland Revenue Department to include them in the general receipts of the practice where the duties are of the ordinary professional type. That condition seems to be met in J. O.'s case, and we think that his request for assessment under Schedule D only is in accordance with general custom. If the local inspector of taxes does not agree we suggest that the facts be put before the Chief Inspector of Taxes, Somerset House, London, W.C.2.

LETTERS, NOTES, ETC.

Control of Scabies

Dr. W. F. COOPER writes: There have been letters which, very rightly, emphasize that a proof of cure is difficult. I wrote (April 19, p. 616) stating from personal experience that sulphur alone (and it is necessary to emphasize that it is mixed with nothing whatever) was efficacious. When I was abroad a friend who was staying with a neighbour some five miles off came to me suffering from itch. In a few days I also was infected. I treated this man and myself by dusting powdered sulphur into our clothes, into the rugs (no sheets), and all over the joints of the iron bedstead. I used the same clothes every day, partly because we had only one or two spares, partly because I knew that it would not matter. I had a bath at night as usual, and changed into pyjamas, which were also thoroughly dusted with sulphur. In a country where one gets very hot there is no possible doubt whether one is itching, and so a cure of "itching" can be quite certain. After a few days of this powdered sulphur treatment there was no more itching; so if the acarus remained it had lost all power of causing trouble. There was no return of it over a period of several

months. It is well known that sulphur is one of the most effective remedies against pests, and has been used for centuries. Many thousands of tons of it are used annually in other parts of the world against both insect pests and fungous diseases. The most usual form is as calcium polysulphide, which is a solution of sulphur in calcium hydrate. On exposure to air this forms chalk and the sulphur is precipitated. If the shelters were sprayed out with this solution (diluted) there would be no infestation of the places by "itch," and infectious diseases should be reduced.

The Future of Mental Health

Dr. F. DUDLEY (Newton Abbot) writes: I have read with interest and appreciation Dr. A. J. Brock's comments (November 15, p. 710) on Dr. Karin Stephen's article which appeared in your issue of October 25 (p. 589). The difficulty is to find the "mentally healthy milieu" in which to treat suitable cases. There are psychoneurotics who, when admitted to a mental hospital, at once begin to improve. Mental disability is, if possible, even more widespread than physical disability, and, like it, is a matter of degree. Reason and emotion are more often than not incompatible. There is more unreason outside the mental hospitals than in the wards. The certified patients are those who, because of their disability, are incapable of looking after themselves or managing their affairs, and whose friends are unable or unwilling to do so. There are mentally unbalanced dominant personalities whose conduct makes the lives of relations and friends a misery, but the latter, for family or other reasons, will not have them "put away."

Treatment of Burns and Wounds by the Envelope Method

Dr. D. O'DWYER (Plaistow, E.13) writes: I was surprised to read in the letter of Mr. A. G. F. Halford (November 22, p. 750) certain criticisms of the envelope treatment for burns. In his reference to Lister there was the following statement: "He contended that antiseptics, however mild, interfered with healing..." Is it presumptuous to suggest that if the great man were alive to-day he might be prepared to qualify this statement? With regard to eusol, my experience over a period of twenty-five years has been the reverse of this contention. Whatever the faults of this antiseptic may be, I don't think that anyone would maintain to-day that it interferes with the healing of wounds. The beauty of the envelope technique is that it minimizes any objectionable features in the hypochlorite solution, while utilizing to the full its healing and antiseptic properties. It has been made clear that the action of electrolytic sodium hypochlorite is not so much in killing germs as in removing necrotic tissues.

Malaria illustrated by Cinematograph Film

Dr. P. A. STEVEN (Ripon) writes: I was interested to read in the *Journal* of November 15 (p. 707) of a film on malaria, and trust some day the profession may have a chance of seeing it. I see the idea is a world-wide production. The description is thrilling, and to those of us who in the late war served in malarial districts is of special interest. I trust we in time may have the pleasure of seeing the production.

Clothing Coupons for the Expected Child

Dr. N. KEMP (York) writes: I suggest that an effort should be made to secure an alteration in the regulations for the supply of coupons to the expectant mother for the necessary clothing for the expected child. The supply appears to be quite inadequate. One of the principal grievances is that for each napkin made of Turkish towelling one coupon is required. An experienced maternity home matron, who can look back upon a long succession of patients to whom she has been in the habit of giving detailed advice about the equipment of the infant, tells me that thirty-six napkins are necessary. Thus, straight away thirty-six coupons have to go. It is true that for the various kinds of muslin squares no coupons at all are asked. They, however, are more expensive and much less "thrifty," being less able to stand the perpetual washing required. Fourteen coupons are left, therefore, for the other items of clothing, and the child requires at least two of each garment, and should have three. It is difficult to see how the child can be fitted out with fewer than sixty coupons, especially in the case of the less well-to-do. If the infant is not the first arrival in the family, no doubt the time-honoured custom of the younger members wearing the cast-off clothing of the older ones is a help. Further, apparently in some areas these coupons are not to be given before the sixth month of pregnancy. This leaves much work to be done by the expectant mother at a time when she might be glad to think that her preparations were nearly completed. A further strange direction in some of these cases is that the expectant mother is called upon to attend at an office at some considerable distance from where she lives in order to procure the coupons, and this at the sixth month of pregnancy, and in these times when travelling any distance is not encouraged.

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OBSERVATIONS ON SOME NORMAL AND INJURIOUS EFFECTS OF COLD UPON THE SKIN AND UNDERLYING TISSUES

II. CHILBLAINS AND ALLIED CONDITIONS*

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The reactions of the skin to cold described in Lecture I (p. 795) are acute reactions in that they appear in quick response to the stimulus and are relatively transient effects. The main response is vascular, consisting of vasodilatation and increased permeability, displayed in the traditional signs—redness, heat, and swelling. We are about to examine reactions that are neither transient nor so simple, and yet are recognized as associated with exposure to cold. And we are to discuss the responsibility of cold for these lesions and the manner in which they are produced. I refer to chilblain, to "erythrocyanosis" of the skin, and to so-called "trench foot."

Principal Features of the Lesions

First it may be well briefly to outline the salient features of these lesions and the circumstances in which they arise.

Chilblain.—The chilblain is most familiar to us as it occurs on the fingers, its most frequent site. It affects particularly the dorsal surface of the phalanges, especially between rather than over the joints. The thumbs are relatively exempt, though there is no part of the dorsal surface of the hand, or for that matter of the foot, which may not be affected. The chilblain appears as a red swelling, usually warm or hot and itching. There is obvious vasodilatation, and there is oedema—phenomena which, like itching, are common reactions to cutaneous injuries of any kind. The further course of the chilblain is inconstant. It may disappear in a few days. Usually it continues for periods of days, weeks, or months, but the original state of vasodilatation subsides. Redness gives place to a deep purple or reddish-purple colour, itching to soreness and pain: the swelling remains and may increase; the tissues may become tender; the skin often blisters or even ulcerates; but whichever happens the inflammation tends to indolence and slow healing.

That chilblains have come to be regarded as provoked by cold, and not by frost, is implicit in a term that has for so long met with popular approval in this country. But in other lands cold as the essential provocation has not been so clearly recognized. Thus it happened that Uona (1894) obtained credit for asserting, as late as that time, that these lesions, popularly termed "Frostbeulen" in German-speaking countries, are not due to freezing, as he stated they were generally regarded to be. The chilblain is common in our own land, where, though damp cold is frequent, frost-bite is a rarity. It appears with winter and generally departs only with the coming of warmer days. It is not the rule for subjects to account for the lesions preceded by a single and unusual exposure to cold, though from time to time such histories are given. It is quite definitely the rule that sufferers from chilblains of the hands are people, young rather than old, whose hands in winter, and quite often in summer too, are habitually colder than those of their companions. It often happens that the hands as a whole are deeply coloured.

Erythrocyanosis of the Leg.—This lesion appears as a vascular discoloration of the lower part of the leg; the front of the leg immediately above the ankle is perhaps the favourite site. The skin becomes diffusely purple, or purple and red; the region of the follicles is often particularly marked by this congestion. The skin is usually over-tense, and therefore sometimes shiny; the oedema may be great, and in time the skin may blister or thickening may appear and break down to form ulcers. The lesions become chronic and indolent, and breaches of the skin surface heal slowly. The relation of the lesion to cold is similar to that of chilblain. It comes in winter and stays till the warmer days return. As in the case of chilblain of the hands, with which it is often associated, this lesion appears in those whose limbs tend to persistent coldness.

Trench Foot.—This condition sometimes begins with pain and tenderness without notable abnormality in appearance. Usually the foot is cold, red or blue, and swollen. Out of the cold trench the foot may be bot. In the more severe cases blisters and ulcers form and areas of the skin become necrotic; toes or even large parts of the foot become gangrenous. The condition was recognized and clearly described by Larrey (1812) in his account of Napoleon's Russian campaign. Larrey's description is memorable: he pointed out that the malady could not be ascribed to frost-bite. He says that in the exceedingly cold days which preceded and succeeded the Battle of Eylau—the temperature being 10° to 15° (Réaumur) below zero (9.5° to -1.75° F.)—not a soldier complained of frost-bite, although the days and many of the nights were passed in the snow with hard frosts. Then the temperature rose abruptly to 3° and 5° R. above freezing-point (39° and 43° F.); a thaw had set in and it rained. From this time a large number of soldiers complained of severe pain in the feet, and of itching, redness, and swelling, which progressed in some to insensibility and gangrene. In the Crimean War the most serious foot troubles appeared in cold wet weather. In the war of 1914-18 "trench foot," as it was called in France, appeared among men who stood or worked for days in the cold water or mud of the trenches, and was responsible in the first winter for thousands of casualties (Grattan, 1922, 1923). Similar foot trouble was reported among Turkish soldiers exposed to wet cold trenches (Wieting, 1913). By general consent long exposure to wet and cold was responsible, though tight footwear was regarded as contributory, and infection, which occurred readily in the conditions experienced, might be added to complicate the lesion.

Relationship of the Lesions

Here, then, are three conditions—chilblain, erythrocyanosis of the leg, trench foot—separately described, but increasingly regarded as different manifestations of essentially the same process and as resulting from prolonged action of cold. They have a very great deal in common: in the early stages itching or tender, presenting coldness and high vascular coloration, they may proceed to swelling, blistering, and ulceration in all three instances. That necrosis belongs more to trench foot finds a natural explanation.

* The third, and last, of these lectures, on "Frost-bite," will appear in our next issue.

ation in the severity of damage and in a neglect enforced by conditions of service. Indolence of the lesions and slowness of healing are common to all three.

Their chief distinctions lie in their locations, and these are clearly fixed by manner of exposure. Chilblains come on exposed hands and on just those parts that cool most profoundly; when they affect the foot they will often display the areas of chief exposure, appearing in women on the dorsum and sharply defining the parts of the foot unshod. Erythrocyanosis is particularly a woman's malady, and as a frequent lesion is recent: its prevalence dates from the shortening of skirts and the use of thin stockings. In "trench foot" it is the foot only that has long been wet and cold.

A comparison of the microscopical lesions of chilblain and erythrocyanotic skin confirms the view of their close relationship. The lesions are those of subacute or chronic inflammation: widened vessels, oedema, and perivascular infiltration form the essence of the picture, until destructive lesions, also of common pattern, are added (Gans, 1925; Grattan, 1922, 1923; Hodara, 1906; Juster and Delàter, 1926; Pautrier and Ullmo, 1928). Haxthausen (1930) has rightly insisted on their general resemblances. Of the histology of trench foot we know little or nothing directly. But we do know that trench foot not infrequently presents macroscopically a picture identical with that of large chilblain (Grattan, 1922, 1923). It is a mistake to regard the lesions as we see them as specifically distinct: they present a common, fundamental, and hardly unexpected picture.

If it is accepted that chilblain, erythrocyanosis, and trench foot are in their origins essentially similar, further discussion may be concentrated upon one of these.

Pathogenesis of Chilblain

Our interest in the pathogenesis of chilblain cannot be satisfied by referring to H-substance release. Such release would of course account for the itch, the redness, and the swelling. Chilblain, however, is more than a simple vascular response; it is supplemented by other processes—namely, diapedesis of red and white cells, infiltration by various types of inflammatory cell, hyperplasia of epidermal and connective-tissue cells, etc. These are all phenomena common to subacute inflammatory processes occurring in response to diverse injuries, such as repeated friction or long-continued action of heat. They are the natural and inherent reactions of the skin to injury in general. The interest of the problem is no longer in the lesions themselves but in the manner in which injury arises, and inquiry may take one of several directions

In Chilblain Subjects, are the Immediate Reactions of the Skin to Cold Normal?

The reactions of a finger to crushed ice may be taken first. If the subject is sitting ordinarily clad in rooms at temperatures of from 19° to 21° C. (66° to 70° F.), it is the rule for the finger to react well, its temperature rising 4° to 8° C. (7° to 14° F.) within 10 to 20 minutes of its cooling. At lower room temperatures—namely, 17° to 19° C. (63° to 66° F.)—the reaction is usually smaller and delayed or fails. A chilblain subject sitting very warmly clad out of doors, the temperature being 6° C. (43° F.), showed a large reaction of the finger (8° C.) after cooling. Tenderness following such exposure to cold is no greater than that displayed by normals. Thus the normal mechanism of defence against injurious cooling is present in these cases. It is limited in them in one sense only. The reaction of the finger of normal subjects is neither so free nor so prompt if the forearm is unusually cold, because this coldness tends to close down the vessels of the forearm through which blood passes on to the region

that is called upon to react. The forearm of the chilblain subject is in general colder than that of the normal, and thus the defensive mechanism, though intact, is less effective.

The immediate reaction of the chilblain subject's skin to histamine pricked in, or to simple injuries of any kind, is normal, provided that the skin is naturally warm when so tested. The reactions of skin, whether belonging to the normal or the chilblain subject, are less intense but more prolonged if the skin is cold. Thus the chilblain subject's skin reacts normally when tested under standard conditions, but the coldness of the chilblain skin modifies the reaction.

If the hand of a chilblain subject is immersed in cold water (3° to 5° C.; 37° to 41° F.) for a period of two hours its appearance at the end does not differ from that of the similarly treated normal hand. There are the same signs, described in the first lecture, of vascular dilatation and oedema—signs that subside within a few hours. As stated in the same lecture, there are rare instances in which cold damages skin very unusually, producing acute whealing. These subjects are not prone to chilblain; neither do chilblain subjects present this phenomenon.

However the skin of the chilblain subject has been tested in its immediate reaction to injury it does not depart from the normal.

Production of Chilblain by Prolonged Cooling

In the chilblain subject it is very unusual for a finger that has a normal appearance to develop chilblain after immersion in ice-cold water for half an hour. In no instance out of many such tests have I seen such an after-effect. But I have known chilblain follow more prolonged cooling. Thus an exposure of the hands out of doors for two hours at 9° C. (48° F.) followed by an hour in a cold room and warming of the fingers before a stove produced in a predisposed subject the first chilblain of the season. A patient usually suffering from chilblains on both hands was asked to immerse the left or less susceptible hand for five minutes in cold water (5° to 10° C.) ten times a day. She continued to do so for a month, and then developed chilblains on several fingers of this hand, the right remaining without them. These observations bear out the statements of many patients and emphasize the importance of prolonged or repeated cooling. There is, however, a very real difficulty in arriving at true values for the duration of cooling required. A patient suffered regularly in the winter from chilblains; during the autumn, before any chilblain had appeared, her hand was immersed in water for a period of two hours at 7° (45° F.). The hand had resumed its usual appearance within two hours, but at five hours a typical chilblain had begun to form on the little finger; it blistered the same evening and healed in a few days. Now, it is to be observed that such an exposure does not cause chilblains in a normal subject and that all five fingers of the patient's hand were similarly exposed but one only developed chilblain. The reason may be found in the fact that the chilblain appeared on the dorsum of a proximal phalanx where seven months previously a chilblain had occurred, and which still presented a persistent reddening and a little thickening of the skin. The observations, at all events, definitely support the idea that an area that has suffered once is one specially prone to suffer again. Here attention may be drawn to the fact that skin which has previously been damaged is in general prone to react. Thus scars left in the skin from small infected wounds sometimes, and temporarily, become red and swollen, and itch, from time to time without obvious reason. A man who has had trench foot is stated to be more prone to have it a second time. But, recognizing that there is this proneness in the case of chilblain, it is impossible accurately to

absorption of the vitamin from the intestinal canal of senile persons. A probable cause of the low vitamin level would be deficiency of vitamin C in the diet of old people. For example, Yavorsky, Almaden, and King (1934), Malmberg and Euler (1935), and Wortis, Wortis, and Marsh (1938) observed a sharp decrease of vitamin C levels in adrenals, liver, brain, and kidneys of guinea-pigs fed on a diet deficient in vitamin C. Also, Schroeder (1939) found in human beings on a diet poor in vitamin C only 0.8 mg. of ascorbic acid per 1,000 c.cm. of blood instead of the usual 10 mg. on a normal diet. These experiments, however, were not on aged persons.

The clinical observations of Plaut and Bülow (1935) and Monauni (1937) indicate that the decreased amount of vitamin C in older persons cannot be explained merely by the low content of this vitamin in the diet, because the difference between young and old persons is present even when both groups are receiving the same hospital diet. Plaut and Bülow, and Wortis *et al.*, have therefore suggested that in senile persons there is a decrease in intensity of those metabolic processes in which vitamin C is taking part. In our opinion the administration of extra-large quantities of ascorbic acid very probably compensates this faulty metabolism or deficient absorption, and this explains the increased content of ascorbic acid in the urine of senile patients receiving large amounts of the acid.

Berkenau (1940) found definite hypovitaminosis-C in senile psychoses, and Bersot (1936) in some mental and nervous diseases. Wortis, Wortis, and Marsh recorded a subnormal vitamin C content of the blood and cerebrospinal fluid in alcoholic patients who suffered also from neuritis or psychopathy. They therefore suggest that a nutritional factor may play a part in the production of mental and nervous diseases. Gander and Niederberger found that treatment of senile persons with adequate doses of ascorbic acid was followed in some cases by improvement of the general health, increased vitality, better sleep, disappearance of rheumatic pains, and a favourable effect on pneumonia of senile patients. Schroeder, reviewing the literature of the subject and the results of his own observations, considers 50 mg. of ascorbic acid to be the minimum daily dose for human beings.

Vitamin B Complex in Old Age

Greying of Hair.—Niemes and Wacker (1922), Hartwell (1923), Bakke, Aschehoug, and Zbinden (1930), and Gorter (1934, 1935) recorded greying, bleaching, or yellowing of hair in rats with dark fur on different deficient diets. Gorter claimed that an insufficient amount of copper salts was responsible in his experiments for the depigmentation of the fur, which he was able to prevent or to cure by the administration of copper salts. Since György (1935) was not able to cure the bleaching of the fur of rats on a vitamin-B-deficient diet by supplementing the diet with aneurin, lactoflavin, and Peters's eluate factor, none of these factors could be considered as the anti-greying compound. Morgan, Cook, and Davison (1933), Morgan and Simms (1939, 1940), Morgan (1941), Lunde and Kringstad (1939), and Mohammad, Emerson, Emerson, and Evans (1939) have confirmed that greying of hair develops regularly on vitamin-B-deficient diet, and, in addition, have proved that of all the B complex the "filtrate factor" alone can prevent or cure this pathological condition. At the same time, the experimental results of these authors suggest that very probably the filtrate factor contains two vitamins, one anti-greying proper and the other growth-promoting. Oleson, Elvehjem, and Hart (1939) also came to the conclusion that the anti-greying vitamin is different from all the known B factors.

Morgan and co-workers produced greying of the fur, and cured it with the anti-greying vitamin, in dogs and silver foxes as well as rats. It still remains to prove, however, that in natural ageing deficiency of this vitamin is at least partly responsible for the greying of hair in old age, and not some other cause. For instance, Morgan and Simms (1940) themselves recorded that injections of cortin and thyroid extract can cure, although slowly, the greying of hair in deficient rats. In his latest paper Morgan (1941) stresses the fact that rats on a diet deficient in the filtrate factor show, in addition to greying of the fur, some other signs of ageing—loose wrinkled skin, sparse hair, atrophic adrenals, and finally emaciation with ulceration of the skin.

Presence of Some Similar Pathological Changes in Vitamin B₁ or Nicotinic Acid Deficiency and in Senility

Williams, Mason, Wilder, and Smith (1940) produced experimental deficiency in 6 normal healthy women for a period of 88 days on a diet sufficient in all vitamins except aneurin (B₁). Among the symptoms observed by these authors the following features also often occur in senile patients: depressed mental state, weakness, dizziness, easy fatigability, backaches, soreness and atony of muscles, palpitation, dyspnoea on exertion, reduction of the capacity for physical and mental activity, difficulty of concentration and memory, insomnia, headaches, abdominal distension, and roughness of the skin. McLester (1939) and Spies, Hightower, and Hubbard (1940) give an account of "pre-pellagrous prodromal" forms of nicotinic acid deficiency. In the symptoms described it is also possible to note some features usually occurring in aged people: rashes, symmetrically and bilaterally developing on the skin; mental disturbances such as apprehension, confusion, disorientation, nervousness and forgetfulness, depression, weariness; and also increased fatigability, headaches, and insomnia. While pointing out the similarity of the features, however, we should like to note that the same pathological conditions might be produced by altogether different causes, and therefore the similarity might suggest only the desirability of investigating the possible significance of B vitamins in the process of senescence.

Some encouragement is afforded by the results obtained by Cleckley, Sydenstricker, and Geeslin (1939), who treated 19 patients with nicotinic acid. Of these, 12 were old, with advanced arteriosclerosis, presenting a clinical picture commonly attributed to arteriosclerotic encephalopathy; 5 showed marked deafness. All of them were suffering from hebeteude amounting to profound stupor, which was a most prominent feature of the disease. Improvement obtained after the treatment was so remarkable that the authors conclude that "nicotinic acid was life-saving in all but one or two of the cases under discussion." The deafness was also much relieved, especially in two cases.

Another reason for investigating the effects of vitamins B complex and C on senile persons is based on the admission, accepted by most specialists in nutrition, that at the present time a partial deficiency of vitamins B and C is more widely prevalent among the populations of Europe and America than was previously thought. Corroboration of this, for example, is given by the deficiency of vitamin C, referred to above, in the blood, cerebrospinal fluid, organs, and urine of aged people.

Present Investigation

The total number of patients concerned in the clinical trial at the Littlemore Hospital was 58 (one patient left the hospital after Period III). The effects of vitamins B and C were studied on 40 patients (15 males and 25 females), while the remaining 18 (males) formed a control group receiving dummy pellets of lactic sugar. The investigation was of about a year's duration.

Vitamin B complex was given in the form of dried yeast specially prepared in the Government's Chemical Research Laboratory at Teddington, to the Director of which, Dr. G. S. Whitby, and to Dr. A. C. Thaysen, who was responsible for its preparation, we express our gratitude. The single dose was preparation, we express our gratitude. The single dose was about 25 grammes, given as a sweetened suspension in water three times a week. The yeast was supplemented by tablets of the pure crystalline vitamins, given three times a week in the following single doses: 5 or 3.3 mg. aneurin (B₁), 5 or 3.3 mg. lactoflavin, and 50 or 33.3 mg. nicotinic acid. We are most grateful to Prof. R. A. Peters, who suggested these doses. Vitamin C was given as pure ascorbic acid three times a week, each dose 200 or 300 mg. All crystalline vitamins B and C were supplied in generous amount by Messrs. Roche Products Ltd., to whom, and in particular to Dr. F. Bergel, we offer our thanks.

Observations on the 40-patients of the experimental groups were divided into five periods, each of 8 or 9 weeks' duration, during which examinations and tests were

repeatedly performed. These treatment periods alternated with rest periods of 10 to 14 days:

Period I ("Pre-treatment period").—All patients.

Period II.—During this period vitamin B complex preparations were given to 20 patients (first group, 7 males and 13 females), and vitamin C to the remaining 20 (second group, 8 males and 12 females).

Period III.—The first group was now given vitamin C, and the second group vitamin B complex. Thus each of the 40 patients was receiving either vitamin B ("Vit. B Groups") or C ("Vit. C Groups") treatment. In the tables (p. 842) the results obtained from groups similarly treated have been pooled.

Period IV.—To all the patients of the experimental groups both vitamins B and C were given simultaneously ("Vits. B + C Group") in the doses described above.

Period V.—"Post-treatment period" of 4 to 5 months, during which no treatment was given.

In the clinical investigation special attention was paid to changes in senile features (see later). In addition, blood examinations were made on the number of red cells and haemoglobin content. The urine was examined for albumin, casts, and sugar.

Dr. Stephenson applied psychological tests of psychomotor speed (tapping on three keys arranged in triangle fashion) and of psychomotor co-ordination (tapping with two hands co-ordinately on three keys). Besides this he tested (a) muscular power by dynamometer grip for each hand alternately, using the apparatus of Cheron and Verdin; (b) compression power for left arm; and (c) extension power for right arm, using apparatus devised and constructed by him, which will be described in detail elsewhere, together with the results of some additional psychological tests used (reaction to visual stimulus, card-sorting, and manual dexterity).

For economy of space we have tabulated only some of the clinical, psychological, and ergographic results, presenting them in the briefest possible way. Senile features not included in the tables will be discussed in the text.

Age and Condition of Patients

The average age of the patients in the treated group was 73, varying from 65 to 86; in the control group 71½, varying from 60 to 87. So far as was possible the patients were distributed evenly in the different groups according to their age and the severity of the senile changes, although these changes were on the average slightly fewer and less severe in the control group.

All the patients were suffering from dementia senilis, which, however, varied greatly in degree; in some cases the dementia was secondary to a previous psychosis. Delusions complicated 13 cases and hallucinations 5 cases. Besides dementia senilis, some or all of the following usual features of senility or those that accompany ageing were present, and their changes were recorded during repeated examinations: increased bony prominences of the face, sunken eyes and cheeks, stooping, general weakness, flabby muscles, uncertain movements, tremors, stiffness of joints and of stretching and bending movements, shuffling gait, rheumatism, flabby shrunken genitalia, obliterated interosseous spaces, parchment skin, wrinkles, rashes, senile itchings, discoloration and pigmentation of skin, senile hair, dry mouth, fissured coated tongue, impaired digestion, constipation, flatulence, husky cracked voice, uncertain slow speech, shortness of breath, dim vision, arcus senilis, red conjunctivae, deafness, arteriosclerosis, varicose veins, haemorrhoids, oedematous eye sacs and ankles, weakened or lost control of bladder and bowel action, dullness of sensory nerve endings, easy chilling, daytime sleeping, and nocturnal insomnia. The number of patients showing some of these senile features is given in Tables I and II, column 2.

Those features in which no numerous or pronounced changes were noted have not been tabulated, but will be mentioned in the text.

Excretion of Vitamin B₁ in Urine

The patients received the usual hospital diet, sufficient in calories but restricted in greens (three times a week), fruit, or fresh lettuce (once a week, if available). The vitamin content of the diet was limited. The amount of vitamin C in the organs and urine of aged people has already been repeatedly investigated by other workers, so it was decided to assay the amount of vitamin B₁ in the urine. Every effort was made to collect the whole of the twenty-four hours' urine and to mix it with preservatives (HCl and toluol) as quickly as possible after excretion. This was not easy to arrange with demented senile patients. Therefore, although the qualitative changes obtained in the different groups were clearly defined, the actual figures should be considered with some reservation. The assay of vitamin B₁ in the urine was performed by Dr. H. W. Kinnerley in Prof. R. A. Peters's Department of Biochemistry at Oxford University. We are most grateful both to Dr. Kinnerley and to Prof. Peters for their kind help.

In the urine of the control senile patients not treated with vitamins (16 patients were examined) an average of about 5% of vitamin B₁ was excreted during twenty-four hours; in the urine of those treated with vitamin C (9 patients) about 6%, and in that of those treated with vitamin B complex (8 patients) 15%. The average excretion of vitamin B₁ in the urine of 25 young soldiers suffering from different mental diseases, in the same hospital, was about 34%, but their diet contained a little more of cooked and fresh vegetables. Therefore, without further investigations it is impossible to decide whether the very low figures of B₁ excreted in the urine of senile persons were due only, as is the case with vitamin C, to some disturbance in senile metabolism in which vitamin B₁ is involved, or not. The average amount of urine excreted and collected in twenty-four hours was 1,335 c.cm. in control senile persons, 1,006 c.cm. in senile patients treated with vitamin C, 1,556 c.cm. in patients treated with vitamin B complex, and 1,667 c.cm. in the control young patients.

Body Weight and Fat Deposition.—Towards the end of the experiment there was a slight loss of body weight in both the control and treated groups, but no pronounced changes were observable in the subcutaneous fat of the patients.

Mental Condition

1. *Clinical Observations*.—In most cases the changes in mental condition were not great, but were quite definite. Where, for instance, "improvement" is recorded it consisted in a marked improvement or sometimes even in the disappearance of two or more, or all, of the following abnormalities: the patients became less incoherent and more intelligent in their talk, less depressed or less excited, less restless with fewer aimless movements, brighter and more friendly and sociable and less quarrelsome, and cleaner in their habits; they started to recognize relatives and nurses, performed better work; and nocturnal insomnia and day sleeping improved or disappeared. The percentage of improved cases was much greater and that of deteriorated cases considerably less in the treated (Table I) than in the control groups (Table II), and the number of improved cases grew steadily during the three successive periods of the treatment. After the treatment, although the change for the better was maintained in most of the improved cases, the number of deteriorated cases increased, including some of those which improved during the treatment. The improvement in a few of the treated cases was really remarkable. For example, in one case the patient before

TABLE I.—*Effect of Vitamin Treatment on Senile Features of 40 Patients*

Senile Features	Pre-treatment Period	Number of Patients with Senile Features during											
		Vitamin B Periods			Vitamin C Periods			Vitamins B + C Period			Post-treatment Period		
		Improvement Occurred	Deterioration Occurred	No Change	Improvement Occurred or Maintained	Deterioration Occurred or Maintained	No Change	Improvement Occurred or Maintained	Deterioration Occurred or Maintained	No Change	Improvement Occurred or Maintained	Deterioration Occurred or Maintained	No Change
Impaired mental condition	40	8	2	30	13	3	24	25	3	11	20	13	4
Stooping	38	12	3	23	9	4	25	21	2	14	6	19	12
Shuffling gait	25	13	0	12	16	0	9	19	0	5	10	8	5
Uncertain movements	22	12	1	9	12	1	9	17	0	4	13	10	2
Tremor in hands	22	10	2	10	6	3	14	19	0	4	4	19	3
Stiff joints and movements	25	11	3	11	10	0	15	20	2	6	6	18	3
Shortness of breath	23	7	3	14	8	1	15	9	4	13	7	12	12
Oedematous ankles	17	8	2	7	5	9	13	4	6	7	5	13	6
Oedematous eye sacs	30	20	1	9	21	1	10	25	2	5	6	22	5
Easy chilling	27	7	3	18	3	7	17	13	4	12	7	12	12
Skin rashes	13	8	1	5	6	0	7	10	2	5	5	9	3
Senile itchings	9	5	2	4	6	0	4	8	3	2	4	10	1
Insomnia	17	10	4	3	12	2	3	14	1	1	6	11	1
Constipation	14	6	1	8	10	0	4	11	0	3	5	13	2
Total No.	322	137	28	163	139	27	165	224	27	91	99	189	71
Change in total No. of features as compared with pre-treatment period	—	43%	9%	52%	43%	8%	51%	70%	8%	28%	31%	59%	22%

TABLE II.—*Changes in Senile Features of Patients of the Control Group examined before Administration of "Dummy" Tablets (Examination I) and 5 Months (Examination II) and 9 Months (Examination III) Later*

Senile Features	Examination I	Number of Patients with Senile Features					
		Examination II			Examination III		
		Improvement Occurred	Deterioration Occurred	No Change	Improvement Occurred or Maintained	Deterioration Occurred or Maintained	No Change
Impaired mental condition	18	1	5	12	1	7	10
Stooping	16	0	1	16	0	3	14
Shuffling gait	8	1	2	7	1	5	4
Uncertain movements	6	1	0	5	1	2	5
Tremor in hands	12	0	1	12	0	5	10
Stiff joints and movements	11	0	0	11	0	4	9
Shortness of breath	6	0	1	6	0	4	6
Oedematous ankles	1	0	3	0	1	2	2
Oedematous eye sacs	15	3	1	12	3	4	10
Easy chilling	8	0	0	8	1	2	7
Skin rashes and itchings	5	2	1	3	0	10	2
Insomnia	3	0	0	3	0	3	3
Constipation	1	0	0	1	0	2	1
Total No.	110	8	15	96	8	53	83
Change in total No. of features as compared with Examination I	—	7%	14%	87%	7%	48%	75%

the treatment had no control over her bladder and bowel, was dirty in her habits, very depressed and stuporous, showed no intelligence in her behaviour and talk, and did not recognize her relatives or the nursing staff. At the end of the treatment all these abnormalities had disappeared, except for occasional slight confusion in thought.

In the control group delusions were present in 6 patients and hallucinations in 2, and no improvement was recorded in any; in the treated group, in 5 out of 13 cases of delusion a pronounced improvement (in one case disappearance) was noted, and in 1 out of 5 cases there was a disappearance of hallucinations. It should be mentioned, however, that in the "post-treatment period" delusions returned in 4 patients—i.e., in the majority of cases the improvement lasted only during the period of treatment with vitamins. Nocturnal insomnia definitely improved or disappeared in a considerable number of cases (compare Tables I and II), while day sleeping was recorded less frequently in those who were subject to it.

2. *Psychological Effects* (W. Stephenson).—The objective results of the psychological tests (Table III, Tests 1 and 2)

again corroborated the clinical observations and recorded a definite improvement in the mental condition of the treated group. The results of the psychomotor co-ordination test are perhaps particularly demonstrative, showing as they do some improvement, in a lesser degree, even in the post-treatment period.

TABLE III.—*Averaged Effects of Vitamin Treatment as shown by Psychological Tests and those of Muscular Power, compared with the Same Tests (performed at Approximately Two-months Intervals) on Control Senile Persons*

Tests	Periods of Observation on Controls :				
	I	II	III	IV	V
	Periods of Observation on Treated Group :				
	Pre-treatment	Vit. B	Vit. C	Vits. B + C	Post-treatment
1. Psychomotor speed :					
Control	100	100	101	105	99
Treated	100	109	113	110	103
2. Psychomotor co-ordination :					
Control	100	102	102	106	102
Treated	100	114	121	119	116
3. Dynamometer grip :					
Control	100	99	105	99	105
Treated	100	110	112	110	103
4. Averaged compression (left arm) and extension (right arm) power :					
Control	100	101	100	99	109
Treated	100	128	122	147	130

Note : The quantitative changes of the tests are expressed as percentages of initial score (taken as 100) of Period I in control senile persons ; or, in the treated senile patients, as percentages of the pre-treatment period (also taken as 100).

Muscular System

1. *Clinical Observations*.—Muscular function definitely improved under the treatment (Table I) as judged by the favourable effects on stooping, shuffling gait, uncertain movements, tremor in the hands, and stiff movements. At the end of the "Vits. B + C period" of the treatment improvement was such in the patients with mild or medium changes that these senile features completely disappeared or were present only in very slight degree—in the ease of stooping in about one-quarter, uncertain movement in about three-quarters, shuffling gait, tremors, and stiffness of movement in about a half of all the "improved" cases shown in Table I. Hirata and Suzuki (1935) observed hypovitaminosis-C in patients suffering from progressive muscular atrophy. Treatment with vitamin C improved their condition considerably.

2. *Tests with Dynamometer and Ergographs* (W. Stephenson).—These tests corroborated the clinical observations and are particularly useful because their results can be

presented quantitatively. As the data for Tests 3 and 4 show (Table III), a distinct improvement was obtained during the treatment with vitamins B and C (the larger differences between the treated and control groups are statistically significant, as will be shown in a later, more detailed, paper on these tests). Ergographic results on arms (Test 4) were much more demonstrative than those with the dynamometer (hand grip, Test 3): this is most probably due to the greater sensitivity, greater reliability, and more comprehensive nature of the ergographic tests as compared with the less reliable and cruder dynamometer.

Cardiovascular System

There is a convincing amount of literature demonstrating a causative association between cardiovascular disturbances and partial deficiency of vitamin B₁. These symptoms are promptly cured by vitamin B₁ administration. The extreme form—"cardiac beriberi"—is very dangerous, but even the milder forms call for the closest medical attention. A good summary of the literature on the subject, with an account of their own cases, is given by Weiss and Wilkins (1936) and Weiss (1940). Weiss and Wilkins described these mild forms as various combinations of tachycardia, or vagus reflex irritability with bradycardia, sometimes with asystole and syncope, one-sided heart failure, peripheral arteriolar dilatation or vascular constriction, or vasomotor collapse. Histological changes were found to be similar to those described in "beriberi heart."

In our patients we have not noticed well-defined symptoms as described above. In two, however, *extrasystoles* which had been present for a long time before the treatment disappeared after the administration of vitamin B complex.

No constant or significant changes were observed in the "resting" blood pressure and pulse rate. Although varying in individual cases, the average figures obtained in all of the 40 patients were remarkably close. For example, the average systolic-diastolic pressure before the treatment was 170/95; at the end of each of the three succeeding periods of treatment the values were 169/86, 169/91, and 167/89 respectively. In the control group the average figures at the beginning and end of the observations were 165/89 and 154/82 respectively. No change was noticed in the degree of *arteriosclerosis* of the treated patients. Some definite improvement was indirectly recorded, however, in the function of the cardiovascular system, because the *shortness of breath* and *oedematous eye sacs and ankles* completely disappeared or were much improved in a large percentage of the cases, as shown by a comparison of the data in Tables I and II. No changes were noted in the condition of the *varicose veins* or *haemorrhoids* of our patients, in none of whom were these conditions severe. Krieg (1938) and Ochsner and Smith (1940) were able to decrease pain in the varicose veins and ulcers considerably, and Krieg even noticed a contraction of the varicose veins after administration of vitamin B₁. This latter, however, was not confirmed by Ochsner and Smith.

Skin and Hair

Dullness of the nerve endings in the skin was recorded in 28 of the treated patients; it improved in 9 cases, appeared in one new patient not previously suffering from it, and persisted unchanged in the remaining patients towards the end of "B + C period." In the control group no improvement was noticed in any of the patients; it persisted in 12 who had had it from the beginning, and newly appeared in 2 others. Complexion, wrinkles, and parchment-like skin were also unchanged, but the senile patchy pigmentation of the hands appeared to be less pronounced in most patients at the end of the third period of

the treatment. Quite definite improvement or in some cases complete disappearance of senile skin itchings and rashes was recorded (Table I) in a considerable percentage of the treated cases, the highest figures being obtained when vitamins B and C were administered simultaneously. In the control group (Table II, Examination III) no such improvement was recorded.

In the literature some favourable results were recorded with vitamin B in skin diseases; for instance, pellagra rashes could be quickly improved by the administration of nicotinic acid and aneurin (Boyd Campbell and Allison, 1940). A good result was obtained by Kristensen and Vendel (1940) in the treatment of chronic eczemas with yeast extract, and by Madden (1940) in the case of psoriasis treated with aneurin.

No changes were noticed in the grey hair, growth of bristles, or baldness in the treated senile patients. The scarcity or absence of hair in the axilla was also uninfluenced.

Digestive Tract

The tongue was fissured or coated, or both, in 22 cases; by the end of the third period of treatment it became better or normal in about half of them, while dry mouth disappeared in only a few. Constipation was a symptom which improved or disappeared in most of the treated patients (Table I) but in none of the controls (Table II). The treatment had no effect on flatulence. No other serious disorders in gastro-intestinal function were noted. Satisfactory results in the treatment of cases of constipation with aneurin have repeatedly been published, and a good review of the literature on the subject has been given by Harris (1938). Gastro-intestinal distension and atonia have been found to be prominent features of aneurin deficiency both in men and in animals (Harris, 1938).

Other Senile Features Examined

Easy chilling improved or disappeared after combined treatment with vitamins B and C in about half of those cases in which this feature was present before the treatment (Table I); the body temperature did not on the average show any definite changes in all the five periods examined. Husky cracked voice, present in different degree in almost all the treated and control patients, became clearer in only 2 of the treated cases.

Uncertain slow speech persisted in 3 patients and appeared in 3 more of the control group at the end of the period of observation. In the treated group it was present before treatment in 11 patients, in 5 of whom it definitely improved or disappeared; but 2, not affected in this way before the treatment, had begun to suffer from it by the end of the third period.

Rheumatism, atrophied interosseous spaces, deafness, dim vision, arcus senilis, and red conjunctivae were not definitely changed in either the treated or the control group.

Red Blood Cells and Haemoglobin

Although varying in individual cases, there was on the average in the treated group a hardly significant increase of the red cells and haemoglobin during the treatment. (The respective figures were: before treatment—red cells 4,850,000, Hb 89; vitamin B groups, 5,090,000 and 92; vitamin C groups, 5,160,000 and 99; vitamin B + C groups, 5,110,000 and 93.) In the control group the decrease of red cells from 5,080,000 to 4,930,000 and of Hb from 93 to 89 was also insignificant.

Post-treatment Period

If the data of the "post-treatment period" (Table I) are compared with those of the previous periods in the experimental group and with those of the last examination

in the control group (Table II), it becomes clear that certain typical changes occurred after the end of the treatment. Thus about four months after the treatment finished considerable deterioration had occurred, consisting in particular of disappearance of the improvement obtained during the treatment, and also of the appearance of some new cases of deterioration. This indicates that in some cases improvement of certain senile features and prevention of further senile deterioration can be maintained only if treatment with the vitamins is continued. In spite of this relapse in a number of cases, however, in numerous others the improvement obtained by the vitamin treatment was maintained after its discontinuation. This was demonstrated by the clinical observations (Table I), the psychological test (Table III, Test No. 2), and the ergographic test (Table III, Test No. 4).

Experiments on deficient animals have shown that the specific effects of vitamins B and C do not last long after the end of the administration of these vitamins. Therefore it is most probable that the explanation of the lasting action of the vitamins in some of the senile patients lies in the disruption of those secondary vicious circles which are originated by pathological changes in different organs (e.g., sex glands, adrenals, gastro-intestinal canal, liver, etc.), changes in these organs in their turn being produced by the direct action of vitamin deficiency. These secondary pathological conditions, being specific for dysfunction of the affected organs, become additional to those caused by pure vitamin deficiency proper. Of course, when the effects of the discontinued vitamin treatment have worn off, the repair of the organ concerned disappears after some time and the secondary vicious circles return.

Summary

Forty senile patients were treated with vitamins B complex and C, the whole period of observation lasting for about a year. The condition of these patients was compared with that of 18 senile patients of a control group receiving dummy tablets. All patients were on a usual hospital diet not rich in vitamins.

Treatment with vitamins B and C, as with any other remedy, did not stop the biologically inevitable development of senility, and therefore did not affect those basic features which are specific for and present in even the most physiological type of senility.

By treating the aged people with vitamins, however, it was possible to prevent or improve, in some cases to a striking degree, certain of those senile features which could be considered as pathological, because they appear prematurely or in an extreme degree (e.g., muscular, cardiovascular, and mental deterioration) or which do not seem to be inevitable in normal physiological senility (e.g., dementia, insomnia, skin rashes and itchings, constipation).

During the period of observation improvement or disappearance (apparently not of a lasting nature) of some pathological senile features was observed in numerous cases, while a number of other cases were not improved by the treatment, and a few patients who had been free from certain senile features developed them during and notwithstanding the treatment.

In spite of the comparatively limited and modest results which aged people might expect from treatment with vitamins, it seems clear that in suitable cases the relief obtained in some pathological senile features might be considerable.

The results obtained provide strong support to the argument, repeatedly emphasized by several specialists in the modern science of nutrition, that the greatest care should be taken to prevent the occurrence of partial or latent vitamin deficiency, apparently widely spread in the population. This will result not only in the prevention of certain vitamin-deficiency diseases but probably also, in the approach to a less pathological senility.

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THE VALUE OF BLOOD TRANSFUSION IN MALIGNANT DIPHThERIA

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Judging by the lack of any published reports in English medical literature on the value of blood transfusion in malignant diphtheria, it would seem that this method of therapy has received little or no attention in this country. On the other hand, a review of the available literature goes to show that the subject has engaged the attention of certain Continental workers for some time.

Baer and Benedict (1933) treated 43 cases of malignant diphtheria with either "human serum" or blood transfusion. All the cases selected for treatment by transfusion were rigorously classified, nor were desperate cases with cardiac insufficiency discarded. Twenty-seven of the 43 cases recovered, giving a case mortality of 37.2%. The authors claimed that transfusion reduced the mortality rate of malignant diphtheria by one-half.

Moeller (1934) tried the method of giving blood in the proportion of 1/70 of the patient's weight. In all he transfused 19 cases: 5 were transfused late in the illness (6th, 7th, or 8th day), and of these four died; 2 were moribund on admission and died; of the remaining 12 cases, 7 survived. Moeller calculated the mortality rate at 41% in the transfused cases and at 66% in the non-transfused, but intimated that the number of cases was too small for any firm conclusions.

Darrow and Yannel (1935) emphasized the value of blood transfusion in malignant cases as a method of combating the

early toxæmic manifestations which in many respects were analogous to those of shock, and also in the maintenance of nutrition in those cases in which persistent vomiting precluded oral feeding.

The present investigation into the value of blood transfusion in malignant diphtheria was carried out during the 1940 epidemic of diphtheria in Swansea, which was characterized by the prevalence of malignant cases. The report is based on 40 malignant cases admitted to hospital between July, 1940, and January, 1941, of which 20 consecutive cases, admitted during the three months November, 1940, to January, 1941, were transfused.

Clinical and Therapeutic Considerations

It seems hardly necessary to recall here the clinical features of malignant diphtheria, since these are admirably described in modern textbooks on infectious diseases. We would mention briefly that the term "malignant" is applied to an unusually toxic form of diphtheria. The patient is as a rule apathetic and drowsy, and takes little interest in his surroundings. Locally there is extensive membrane, involving the tonsils, pillars, palate, and uvula, and extending on to the nasal mucosa, together with faucial and palatal oedema and redness, the oedema at times being so pronounced as to mask the real extent of the membrane. A profuse purulent or sanious nasal discharge is common and results in nasal obstruction and oral breathing. Swelling of the cervical glands and periglandular tissues is considerable. Fœtor is marked. Haemorrhage into the skin and from mucous surfaces is not uncommon. As a rule such cases show a slow response to specific treatment with antitoxin. The mortality is often as high as 50%, and those patients that recover usually suffer severe paralysis.

Up to November, 1940, malignant cases were treated at this hospital upon the following lines:

1. Prompt administration of a large dose of concentrated antitoxin, intravenously if possible, and partly intramuscular.
2. Intravenous infusion of 10% glucose in saline.
3. Absolute rest in the flat position with the foot of the bed raised.
4. Glucose drinks by mouth, except in those cases in which vomiting was troublesome and persistent, when oral feeding was stopped and salines with 5% glucose administered rectally.
5. Strychnine daily.

In spite of intensive antitoxic therapy it was felt that its value in malignant cases was limited, and in November, 1940, it was decided to investigate the possibilities of blood transfusion. The first case transfused responded so well that it was decided to continue with the investigation, and during the ensuing three months until the subsidence of the epidemic towards the middle of January, 1941, in all 20 consecutive malignant cases were transfused. Apart from the substitution of blood transfusion for the intravenous administration of glucose and saline, the treatment of the 20 transfused cases was strictly comparable in all other respects to that given to malignant cases admitted before November, 1940.

Transfusion Technique

Transfusion was performed as soon as possible after the admission of the patient to hospital, and in each case the total volume of blood given was approximately one pint. Stored citrated blood was used throughout, and whereas 14 of the cases were grouped beforehand and received blood of the same grouping, this preliminary was omitted in the case of 6 desperately ill patients who were transfused with Group O blood. The apparatus used for giving the blood was the Medical Research Council's blood transfusion outfit, and owing to the collapsed nature of the veins it was found necessary in each case to cut down on the vein. The blood was given cold, and in order to avoid over-

loading an already embarrassed myocardium the rate of flow was slow, the average duration of transfusion in the 20 cases being two hours.

Plan of Investigation

The object of this paper is to compare the results obtained in respect of 20 transfused cases (test series) with a similar number of consecutive cases of malignant diphtheria treated by the orthodox method outlined above, and which were admitted during the four months July to October, 1940 (control series). It is proposed to compare the results in the two series of cases with regard to the following criteria: mortality rate, immediate response to treatment, incidence and severity of complications, and total duration of stay in hospital.

Since the validity of such a comparison might easily be influenced by such factors as (1) the real extent of malignancy in individual cases and the amount of antitoxin administered, (2) the age and sex distribution of the patients, and (3) the duration of the disease before admission to hospital, these must first be briefly considered.

All the cases were under the direct supervision of one of us (I. P.) throughout, and they all received the same nursing attention. All were rigorously classified on admission, and their malignancy may be gauged from the fact that the total amount of antitoxin given in the test series and control series averaged 110,000 and 112,000 units per case respectively. In no single case was the total dosage of antitoxin under 100,000 units. That the two series were fairly comparable regarding age and sex distribution can be seen from Table I. Table II gives the day of disease on admission, and it will be noted that whereas all the cases in the control series were admitted on the second and third days, 5 in the test series were admitted later than the third day of illness.

TABLE I.—Age and Sex Distribution

Age	Test Series		Control Series	
	Males	Females	Males	Females
3-4 years	1	1	1	1
4-5 "	1	1	1	2
5-10 "	4	9	6	1
10-15 "	2	2	2	5
15-20 "	1	1	1	1
Total	7	13	10	10

TABLE II

	Day of Disease on Admission				
	1st	2nd	3rd	4th	5th
Test cases	1	6	9	4	1
Control cases	1	10	10	4	1

Results

Mortality Rate.—Out of the 20 cases treated by blood transfusion in the test series there were 2 deaths, giving a case mortality of 10%, whereas in the control series there were 7 deaths and a case mortality of 35%. Of the 2 patients who died in the test series, one was moribund on admission and died the same day, a few hours after transfusion. The second died during the sixth week of the illness. At this time the patient was suffering from pharyngeal paralysis, and death occurred from cardiac failure as the result of an unfortunate attempt to institute nasal feeding. In the control series 5 patients died of profound toxæmia during the first week, while the other two fatalities were due to cardiac failure during the second week. Table III gives the number of deaths at different age periods.

TABLE III

Age	Test Series		Control Series	
	Cases	Deaths	Cases	Deaths
3-4 years	1		2	
4-5 "	1		3	2
5-10 "	13	2	7	2
10-15 "	4		7	3
15-20 "	1		1	
Total	20	2	20	7

Immediate Response to Treatment.—A noticeable feature of the test series was the rapidity with which most of the cases responded to treatment as compared with the control series. It was noted in most of the transfused cases that during the days immediately following the giving of the blood the patient's apathetic and drowsy aspect was transformed into a bright and keen appearance, and the nasal discharge, the periaidenitis, and the membrane rapidly cleared up, whereas such a rapid clinical improvement was not so prominent in the control series.

Complications.—As regards the incidence, and severity of complications in the recovered cases, the test series followed a more favourable course: of the 18 cases that recovered 4 were uncomplicated; the other 14 developed a total of 33 complications. In the control series all 13 recovered cases developed complications, with a total of 44 complications. Although complications of a mild character were common to both series, the more severe types, including cardiac irregularities, pharyngeal paralysis, and severe peripheral neuritis, were more prominent in the control series (Table IV).

TABLE IV.—Complications in Recovered Cases

	Test Series No.	Control Series No.
Recovered cases	18	13
Uncomplicated recovery	4	0
Complicated recovery	14	13
Complications :		
Mild { Precocious palatal paresis		1
Palatal paresis	8	5
Paralysis of accommodation	1	
Facial paresis		1
Squint	2	2
Absent or sluggish reflexes	8	10
Pharyngeal paralysis	3	7
Severe { Weakness and wasting of limbs		2
.. ..	1	3
.. ..	1	4
.. ..	6	9
Secondary cervical adenitis	1	
Otitis media	2	
Total complications	33	44

The incidence of paralysis in both test and control series is approximately equal, being 55% and 60% respectively. When, however, the severer forms of paralysis are considered alone it is found that they predominate in the control series, their incidence in this group being 35% as compared with 15% in the test series.

Duration of Stay in Hospital.—Table V gives the duration of stay in hospital of the recovered cases. Transfused cases made a more rapid recovery, the average duration of stay being 10 weeks as compared with an average duration of 13 weeks in the control series.

TABLE V.—Length of Stay of Recovered Cases

Weeks :	8	9	10	11	12	13	14	15	16
Test cases	6	3	3	2	1	3			
Control cases		2	3		1			1	6

Reactions following Transfusions.—Among the 20 cases transfused 3 developed a mild febrile reaction with a rise of temperature up to 100° F. soon after the giving of blood. In only one case was a definite rigor encountered.

Comments

In the 40 cases of malignant diphtheria under review it appears that following the introduction of blood transfusion, on the whole, the immediate clinical response of the patients to specific therapy was accelerated. Not only was the case mortality reduced from 35% to 10%, but there was a decided decrease in the incidence of the severer forms of paralysis, and the duration of stay in hospital of recovered cases was appreciably reduced. Admittedly the number of cases transfused is small, and we fully realize that in such circumstances the results are open to serious criticism. Nevertheless, we maintain that the results are sufficiently encouraging to warrant further investigation into the possibilities of blood transfusion in the treatment of malignant diphtheria.

Summary

The available literature on the use of blood transfusion in malignant diphtheria is reviewed.

The main clinical features of malignant cases are outlined.

The present investigation deals with a series of 40 consecutive cases of malignant diphtheria. The first 20 were treated in the usual orthodox manner; in the others treatment was supplemented with blood transfusion.

The transfusion technique adopted is described with special reference to the form of apparatus used, and the type, volume, and rate of administration of the blood.

The results obtained in the two series are compared, and it is suggested that the results for the transfused series are sufficiently encouraging to merit further investigation into the value of blood transfusion as a therapeutic measure in malignant diphtheria.

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J. S. Simmons (*South. med. J.*, 1941, 34, 62) states that early in 1940 the Surgeon-General requested that the chairman of the Division of Medical Science of the National Research Council should appoint committees composed of civilian leaders in the various medical specialties to advise the U.S. Army concerning its emergency problems. Another important health measure was instituted in February, 1940, when the Public Health Service was authorized to co-operate with the Army by improving sanitation and disease control in civilian areas adjacent to military stations and concentrations. The Surgeon-General has also obtained the assistance of the American Medical Association in classifying the medical personnel of the country and determining the availability of physicians for service in civil life and in the Army. The paper contains brief notes of the procedure applicable to (1) immunization of all military personnel against small-pox, typhoid and paratyphoid, and tetanus; (2) immunization against localized outbreaks of endemic disease such as scarlet fever; (3) immunization against uncommon and dangerous diseases to which the troops might be exposed at home and abroad—such as yellow fever, cholera, plague, and typhus.

SACRO-ILIAC STRAIN

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the uncertainty that surrounds the vexed question of sacro-iliac strain has provided a basis for much quackery. While some authorities doubt its very existence, others hold it to be a common cause of backache and of pains felt radiating down the lower limb. Bone-setters and osteopaths have no misgivings, and habitually postulate the existence of subluxation of the ilium as a pretext for mobilizing the joints of the lower back. Confusion of this sort can spring only from great individual variations in the criteria held to justify this diagnosis. When tenderness "over the joint" suffices, strain is found to occur in a fair proportion of all patients with backache; but when this diagnosis is restricted to cases showing a positive response to one or more of the tests set out below, the fraction is found to be very small. This paper seeks to show how a diagnosis of sacro-iliac strain may be limited to cases in which the pain arises in the sacro-iliac ligaments.

Incidence.—Adherence to the diagnostic standards described below enabled the presence of sacro-iliac strain to be determined in 3 out of the 420 patients with symptoms referable to the lumbo-sacro-gluteal region seen in the physiotherapeutic department of St. Thomas's Hospital during the past two years. During the same period I have also seen two such cases in private practice. Hence the frequency of sacro-iliac strain as a cause of such pains is estimated not to exceed 1%. I have yet to see this condition affect a male patient.

Summary of Findings in a Series of Five Cases.

The following table gives the salient features of five patients who, between them, had suffered six "attacks" of sacro-iliac strain.

Occupation	Age at Onset	Cause	Parity	Length of History (Months)	Side	Pain on Waking	Pain referred to	Tender Area	Palpable Subluxation	Control by Corset
Housewife	41	?	0	8		No	Thigh, leg, and heel	All over sacrum	No	Yes.
Physical training instructor	21	Twist in mid-air while vaulting	0	3	Both	?		?	?	Not tried
Housewife	37	Childbirth	1	12	"	No	Iliac fossae	None	Yes	No
Masseuse	27	"	3	25	"	Yes	Hypogastrum	"Over joint"	"	Yes
"	21	?	0	3	"	No	Sacral only	None	"	"
"	22	"	0	1	"	No	"	None	No	"

All five were women of childbearing age. Recovery after three months' rest in bed was followed in one case by recurrence twelve years later during the first puerperium. Strain began after the birth of her third child in another patient—a treated congenital syphilitic. The influence of trauma seemed negligible: only one patient gave such a history, and then the injury appeared too slight to have done more than make manifest a laxity already in existence. In three instances the onset was gradual and no cause was discoverable. A feature common to all patients was the unusually large range of movement at the lumbar spine; this suggested that the sacro-iliac laxity formed part of a more widespread suppleness.

Symptoms and Signs of Sacro-iliac Strain

The outstanding symptom is a deep sacral ache, aggravated by exercise and relieved by rest; three patients were free from pain on awaking in the morning. Pain was referred to the lower part of the abdomen in two cases,

and to the thigh, leg, and heel in another. The fourth and fifth patients had a purely sacral ache.

No patient volunteered the information, but questioning after making the diagnosis elicited the fact that clicking followed by increased pain had been noticed in three cases. Two patients had realized that the pain could be eased by provoking another click, and had discovered methods of reducing the subluxation. One fixed her pelvis by standing with her legs crossed, and gave her trunk a quick twist; the other knelt with her thighs pressed against the abdomen.

The signs of sacro-iliac strain are as follows:

Pain on Stretching the Anterior Sacro-iliac Ligaments.—The anterior superior spines of the ilia are pressed apart while the patient lies supine. This test proved as reliable as any; for pain was easily provoked thus in four cases. In the fifth no pain was elicited by any tension put upon the sacro-iliac joint except rotation, but palpable subluxation occurred (see below). Since a negative response to this test appears to exclude the sacro-iliac joint as the source of pain with reasonable certainty, this manoeuvre suffices during the routine examination of the lower back. Renewed search for the further signs described below is necessary only when the examination of adjacent structures fails to disclose the site of the lesion.

Pain on Stretching the Posterior Sacro-iliac Ligaments.—The patient lies on her side, and the uppermost part of the iliac crest is pressed downwards. If the pressure is applied well forwards along the bone the posterior ligaments bear the greater stress. Pain was elicited thus in three cases; moreover, it was felt less certainly. Though this test is less delicate than that described above, it possesses the advantage of not pressing the sacrum against the couch, thereby obviating confusion between pain due to pressure on a tender area and that due to stretching the ligaments.

Pain on Attempting Forward Luxation of the Sacrum.—The patient lies prone, and pressure is applied centrally over the sacrum. This is a good test; it yielded a positive result in four cases and a doubtful result in the fifth.

Pain on Forcing Rotation at the Joint.—A rotation strain cannot be put upon the joint without also straining the lumbar spine or the hip-joint towards extension. Since the chief diagnostic difficulty lies in distinguishing between lumbo-sacral and

sacro-iliac conditions, this test has little practical value, though pain thus elicited was present in every case.

Signs of Sacro-iliac Laxity

Presumably strain is merely the early stage of laxity, before excessive movement becomes apparent. In three bilateral cases laxity was demonstrated; in one bilateral and one unilateral case only the signs of strain were present.

Palpable Subluxation.—As the patient lies prone the ilium is pulled backwards by the examiner's one hand about the anterior superior spine, while the other presses the sacrum forwards. This manipulation may succeed in producing palpable movement at the joint; if so, an unpleasant crunch occurs, reminiscent of the sensation produced by fractured bone-ends rubbing together. Three cases showed this sign.

Radiography during Subluxation.—This did not prove possible in any case, and the radiographic appearances were consistently normal. Sacro-iliac strain, therefore, is a diagnosis that can be arrived at only on clinical grounds. The fact that subluxation can be produced in the manner described above,

considered in conjunction with the way in which patients had learnt to achieve reduction, leads to the conclusion that the abnormal movement is towards posterior displacement of the ilium on the sacrum.

Tenderness "Over the Joint"

A glance at the diagram giving the relations of the sacro-iliac joint should finally dispose of the idea that tenderness of any structure accessible to the examiner's finger denotes tenderness of the sacro-iliac ligaments. Nevertheless, tenderness "over the joint" was present in three of the five cases, though the tender structure was clearly the sacral part of the sacrospinalis muscle. Evidently the movement apart of the sacrum and ilium puts lateral stresses upon the

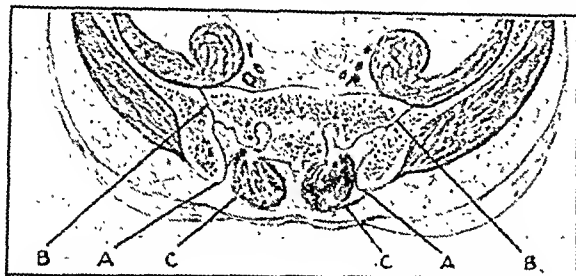


Diagram of relations of sacro-iliac joints at first sacral level. A, Posterior superior spine of ilium. B, Sacro-iliac joint. C, Sacrospinalis muscle.

fibres of origin of this muscle, causing a series of minor tears in this position. Hence a chronic traumatic fibrositis is set up, and is the proximate cause of the tenderness.

Tenderness "over the joint" is in no sense a sign of sacro-iliac strain, for it occurs far more commonly in fibrositis of the lowest part of the sacrospinalis muscle and its sheath, in the absence of any sacro-iliac affection. A diagnosis of true sacro-iliac strain is made on grounds quite other than the existence of such tenderness, whose presence is to some extent confirmatory, but whose absence is without significance. As a rule, loosely made diagnoses of sacro-iliac strain can be shown to be incorrect by the simple expedient of infiltrating with a local anaesthetic solution the muscle fibres lying behind the joint. If cessation of pain for the duration of anaesthesia results the site of the lesion evidently lies in the muscle. The objection that it is possible to be mistaken as to the position of the point of a needle is met by the fact that no one can fail to perceive the wide difference between muscle and dense fibrous tissue both in the resistance they offer to the progress of a needle and in the degree of pressure needed for their respective infiltration.

Clinical Course of Sacro-iliac Strain

The strain in Case 1 had been present for eight months when this patient was first seen. A corset was worn for a year, and she is now symptom-free without a corset. The laxity in Case 2 at the age of 21 cleared up completely after rest in bed for three months. The recurrence at the age of 33, after childbirth, has now continued unchanged for twenty months in spite of corsetry for the past eight months. Arthrodesis will be performed as soon as the patient can arrange to leave home. The laxity in Cases 3 and 5 is adequately controlled by a corset, which is still being worn. It is obvious that progress is being made towards freedom from pain in the absence of corsetry. The laxity in Case 4, though considerable in degree and in the amount of disability present, had improved so much after only one month's corsetry that this could be discarded for several hours a day without ill effect.

Treatment

The sacro-iliac is like the acromio-clavicular joint in that no muscle spans it; hence each relies for stability on its capsular ligaments alone. Mobilization of the joint leads to further overstretching and increased pain; indeed, the stresses put upon the joint by its mere clinical examination temporarily aggravate the symptoms. The fact that mobilization has cured "sacro-iliac strain" by supposedly adjusting the position of the ilium on the sacrum is in itself strong evidence that such strain was not present. All the manipulations calculated to move the ilium on the sacrum, as anyone who watches an osteopath can see, stretch or rotate the lumbar spine. Hence cure by mobilization suggests that the pain had a lumbar origin.

In true sacro-iliac strain, then, stretching the joint makes the patient worse. Immobilization is required, and is best obtained by a corset that holds the ilia firmly against the sacrum. It should be worn day and night until the pain on waking disappears; thereafter it need be worn only by day. After several months, if full relief has been attained meanwhile, the patient may try increasing periods up and about without the corset. Throughout she should be warned to do nothing that hurts, and to rest at once if pain begins. Since no muscle controls movement at the joint, exercises are contraindicated; for they can serve only to strain the ligaments further. Since a laxity absent for twelve years reappeared after childbirth in one case, it is evidently wise to prescribe adequate corsetry for several months before and after the confinement as a prophylactic measure in patients who have suffered from true sacro-iliac laxity in the past.

When repeated subluxations add to the patient's pain she should be shown one or other of the methods of reduction already described. Attempts at forcing by the practitioner are unwise, in so far as they are at best only momentarily successful; they are more apt to result in a prolonged increase in the symptoms.

Corsetry and the avoidance of all activity that sets up pain proved successful in four out of the five cases cited here, and progress towards full relief without a corset has been, or is being, achieved. Patient No. 2, though waking symptom-free, found a corset useless to prevent the regular onset of pain about two hours after rising. Since prolonged rest in bed—the only other conservative treatment—is impracticable, arthrodesis will be performed.

Discussion on Aetiology

When a ligament the tension on which is not under muscular control has been sprained, any overstretching thus caused is permanent. For example, it is a commonplace that lengthening of the cruciate ligaments of the knee, or of the capsule of the acromio- or sterno-clavicular joints, persists indefinitely. Now the sacro-iliac joint is not under muscular control; yet its laxity appears not to be due to injury, not to affect men, usually to be bilateral, to have some connexion with pregnancy, and to be recoverable from completely. These facts suggest that the cause is non-traumatic, general, peculiar to women, and temporary. It is interesting, therefore, to speculate on the possibility of an endocrine element in the aetiology of sacro-iliac strain. Evidence of very slight lengthening of the ligaments towards the end of pregnancy has been demonstrated and measured radiographically. The existence of a special hormone of the corpus luteum—relaxin—has been suggested to account for this change, which is strikingly large in some animals. Hence, sacro-iliac strain may in the future come to be regarded as due to a temporary over-

CONGENITAL ARTERIOVENOUS ANASTOMOSIS

DEC. 13, 1941

secretion of this hormone, and thus in essence a medical rather than a surgical condition. An increase in the distance between the bones at the symphysis pubis, had it been visible on the radiographs, would have afforded valuable confirmation of this hypothesis, but was not in fact demonstrable.

My thanks are due to Mr. R. H. Young, my senior colleague at St. Thomas's Hospital, for his advice and for assistance in the diagnosis of two of the cases.

CONGENITAL ARTERIOVENOUS ANASTOMOSIS

BY

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Cases of congenital arteriovenous anastomoses in the limbs have been recorded by Reid (1925), de Witt Lewis (1930), Holman (1937), and others. Most of these, however, had an associated surface naevus, which was not present in the following case. The existence here of an arteriovenous communication is suggested by the slowing of the pulse after reducing the arterial flow through the anastomosis by occlusion of the right common femoral artery. Lewis and Drury (1923) suggest this fall in rate is vagal in origin.

Case Report

The patient, a girl aged 8, was an only child of healthy parents, who stated that since birth they had noticed that their child's right leg was bigger and hotter than the left. Apart from this the limb had given no trouble until two days before she was seen, when a "milky discharge" had appeared in the right groin. This was painless and did not follow any known injury. She had always been healthy except for scarlet fever, measles, and an attack of catarrhal jaundice.

When she first attended the out-patient department the girl's general condition was good apart from discomfort from the discharge. This came from a pin-point opening on the inner side of the right thigh, about the apex of Scarpa's triangle, and was quite profuse, 1 c.cm. being easily collected in a test-tube. Her clothing, though changed about two hours previously, was soaked. There was no obvious sinus and no reddening or thickening of the skin. Her right leg was larger and warmer to the touch than the left.

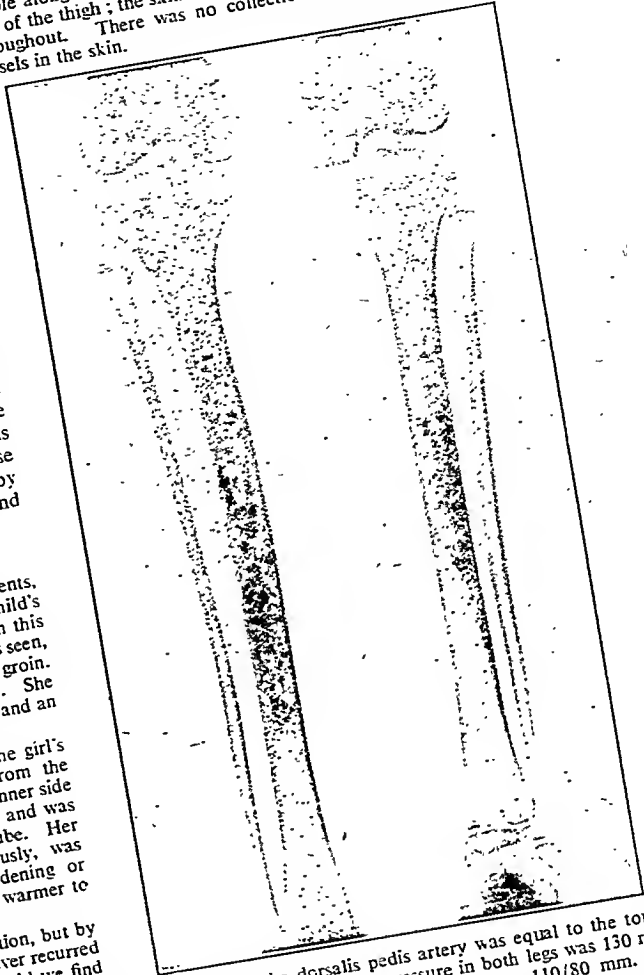
She was admitted to the ward for further observation, but by the following morning the discharge had ceased; it never recurred in spite of massage and exercise of the limb, nor could we find the opening through which it had come. She had never had this trouble previously, nor has it recurred since she was seen last April. The fluid collected was reported on by Dr. Gough as follows: "The appearance is that of a pale yellow milky opaque fluid with a clot stained faintly pink on standing. The cell count is 1,600 per c.mm., all lymphocytes. No organisms were seen, and nothing was grown on culture. The fluid contains only a little fat. It is not 'chyle,' but may be a fluid from a lymphangiectasis."

Examination of the right leg showed that throughout its whole length it was larger and warmer to the touch than the left. The measurements of the limbs and bones were as follows:

	Right Leg	Left Leg
Iliac crest to heel	29½ in.	27½ in.
Iliac crest to tibial spine	16½ in.	15 in.
Tibial spine to big toe (foot extended)	17½ in.	16½ in.
Length of foot	8 in.	7½ in.
Maximum circumference of thigh	14 in.	12 in.
Maximum circumference of leg	9 in.	8½ in.
Maximum circumference of both tibiae on single film	12½ in.	11 in.
Radiograph of tibia	2½ in.	2 in.
Length of head of tibia	3¼ in.	11/16 in.
Breadth of head of tibia	1¼ in.	1/4 in.
Breadth of shaft of tibia		
Breadth of shaft of fibula		

Pulsation was felt behind the inner border of the right tibia almost throughout the length of the bone, and there were several palpable and pulsating vessels around the inner aspect of the

right knee-joint. The limb surface in the upper thigh area was shiny, with some distension of the superficial veins extending to just above the iliac crest. No demonstrable oedema of the limb was observed. The internal saphenous vein was palpable and visible along its course from the internal malleolus to the inner side of the thigh; the skin was grooved over it, and it was patent throughout. There was no collection of enlarged superficial vessels in the skin.



Pulsation in the dorsalis pedis artery was equal to the touch in both feet, and the systolic pressure in both legs was 130 mm. Hg. The blood pressure in each arm was 110/80 mm. Hg. Occlusion of the right common femoral artery slowed the pulse after an interval of about 6 beats by 10 to 15 beats a minute, with quickening soon after release. Occlusion of the left artery was without effect on the pulse rate. No other vascular abnormalities were noted, and the heart was normal in size. A radiograph of the right tibia showed no grooving suggestive of erosion by enlarged vessels.

Surface temperatures were not taken, but daily groin temperatures were on the average 0.4° to 0.8° higher in the right groin than in the left. Repeated observations in which the skin was felt showed the temperature to be consistently higher on the right side throughout the whole leg.

Discussion

The unusual and puzzling feature of this case was the milky discharge, and no reference to a similar happening has been found in the literature. Unfortunately this cleared up so quickly that we were unable to make full observations on it, but its presence pointed to an increased flow of lymph in the limb. The close embryonic relation between lymphatic vessels and veins, which are both derived

from a common capillary plexus, may have produced a lymphatic developmental disturbance with increase in the lymph channels, or the greater lymph flow may simply have been the result of an increased blood supply to the limb. No oedema of the limb was present when the patient was first seen, and we do not know whether there had been any before the discharge.

The most striking clinical feature of these cases is the increased growth of the limb, affecting bones and soft parts. Paterson and Wyllie (1925) suggest this is due to an increased vascularity at the growing ends of the tibia and femur. Experimental section of the sympathetic nerves of limbs of kittens as described by Harris and Wright (1930), although producing a greater blood supply, did not increase their growth. When the cervical sympathetic nerve and ganglia were removed in a rabbit's ear some increase in growth was noted after 100 days, and those authors suggest that it may be the higher temperature of the limb that acts as a stimulus.

The exact cause of the hypertrophy is still far from clear, and the presence of the lymphatic discharge in the above case must remain unexplained until a recurrence of the discharge allows later investigation, or further cases have been observed.

My grateful thanks are due to Sir Thomas Lewis for the interest he has taken in the case and the help he has given in writing these notes.

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Medical Memoranda

Isotonic Glucose Solution in the Treatment of Fibrositis

J. H. Kellgren (1938), in an account of referred pain arising from muscle, recommended the infiltration of a 1% solution of novocain into the tender spots. The success attending this method of treatment is no doubt the reason for its adoption by an increasing number of observers. Various 'proprietary' preparations of cocaine, under different names, have since made their appearance, and all seem equally efficacious. They all, however, labour under a common disadvantage in their liability to produce general as well as local effects, to say nothing of the risk of the formation of a habit, which might easily occur. Complaints of a "muzzy" sensation after injection are by no means uncommon, while in susceptible individuals the systemic disturbances thus evoked may be decidedly unpleasant.

Kellgren mentioned that in instances in which novocain infiltration abolished the symptoms this effect often outlasted the actual anaesthesia and was more or less permanent. This can readily be confirmed by anyone who has used this treatment, and the question naturally arises whether an injection solution possessing local anaesthetic properties is really necessary.

An isotonic solution of glucose seems to have very much the same effect, and I have been using it for some time with equally good results. A 5-c.cm. syringe fitted with a very fine needle is employed. The parts are carefully palpated in order to find the exact spot from which the pain radiates. The patient will usually flinch when the finger presses the tender area, and inquiry should be made whether the pain "shoots" along the limb or part in any given direction. It must be emphasized that the mere presence of pain in a limb or elsewhere is not in itself a sufficient indication for the injection unless it can be clearly shown that the source of the pain is a palpable tender spot. Diffuse pain in a limb without localized tenderness should be treated in other ways. When the tender spot has been found it is well to mark it with a skin pencil and then continue the search for similar areas. These will no doubt be found and marked in like manner.

With the syringe charged with 5 c.cm. of isotonic solution of glucose the fine needle is introduced for about an inch into the marked spot and 1.5 to 2 c.cm. is slowly injected. If the patient experiences some pain radiating from the site of injection it is pretty certain that the correct spot has been chosen. The remainder of the fluid in the syringe can then be distributed among the other spots that have been marked. Usually three injections are enough.

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Nova et Vetera

DR. GEORGE BIRKBECK, 1776-1841

December 1 marked the centenary of the death of Dr. George Birkbeck, the eminent philanthropist and physician. He was born at Settle in Yorkshire on January 10, 1776, the son of a well-known merchant and banker. He studied medicine first at Leeds, and then in London, where he became a pupil of the celebrated Matthew Baillie, and lastly in Edinburgh, where he qualified in 1799 with a thesis on the blood. Shortly afterwards he succeeded Dr. Garnet as professor of natural philosophy at Glasgow, where he instituted a free course of lectures on philosophy for the labouring classes. This work met with remarkable success and formed the basis of a system of mechanics' institutes to which he devoted most of his life. He left Glasgow in 1804, and after lecturing in Birmingham, Liverpool, and Hull, settled in London, where he soon acquired a large practice. In 1822 he helped to found the London Mechanics' Institute in Chancery Lane, to which he lent £3,000 for the erection of a lecture theatre. He was made director of the institute, to which his name was given, and held this office until his death. A brief memoir of him by Dr. Henry Clutterbuck was published in the following year.

THE FOLK-LORE OF ALCOHOLISM

In a recent paper (*Brit. J. Inebriety*, 1941, 39, 30) on this subject Dr. J. D. Rolleston remarks that with the exception of Hovorka and Kronfeld, who devote some pages to it in their work on comparative folk-medicine, no writers, to his knowledge, have dealt at length with folk-lore in relation to alcoholism. He has therefore collected the folk-lore of this condition, as he has recently done in the case of pulmonary tuberculosis and other diseases (see *Journal*, 1941, 2, 417). His paper deals with the nomenclature, popular phraseology, superstitions, and leechcraft connected with alcoholism, the term "leechcraft" being that commonly employed in the language of folk-lore to indicate popular methods of prevention and cure. In his paper on "Alcoholism in Classical Antiquity" read before the Society for the Study of Inebriety in 1926 (see *Journal*, 1926, 2, 702) he had drawn attention to the numerous synonyms for bibulous and inebriated persons both in Greek and Latin as well as in English, which, according to Roger's *Thesaurus*, contains about seventy such terms, only a minority of which could be regarded as slang. In a recent perusal of Farmer and Henley's work on *Slang and its Analogues* he had found over 600 terms for the substantive and verb "drink" and various forms of alcoholic intoxication. The number of slang synonyms connected with alcoholism was only exceeded by those of even greater popular interest—namely, "money" and words connected with the anatomy and physiology of the generative organs in both sexes. Popular interest in the consumption of alcohol, especially in excess, was further demonstrated by the great variety of similes and proverbs connected with excessive drinking. The number of superstitions and popular errors associated with alcoholism was legion.

Dr. Rolleston classified the folk-lore remedies for the prevention and cure of alcoholism as follows: (1) animal remedies, many of which were to be found in Pliny; (2) plant remedies, of which the chief were cabbage (highly esteemed by Cato the elder), almonds, and betony; (3) mineral remedies, including the agate, amethyst, and pumice stone; and (4) water. Unlike pulmonary tuberculosis, for which there were many patron saints, alcoholism had few religious associations apart from Dionysus or Bacchus in classical antiquity.

Reviews

CANCER IN COTTON WORKERS

Mule Spinner's Cancer: Epithelioma of the Skin in Cotton Spinners. By E. M. Brockbank, M.D., F.R.C.P. (Pp. 26, 4s.) London: H. K. Lewis and Co., Ltd., 1941.

Epithelioma, or cancer of the skin, occurs in a number of industries, especially those in which tar or mineral oils are handled. To-day it is probably the commonest notifiable industrial disease, with the highest mortality rate. In 1938 165 cases were notified to the Factory Department, of which 21 were fatal; of these cases 58 occurred among cotton mule spinners, with 12 deaths. In 1940, 41 mule spinners were known to have contracted the disease, and 20 deaths were reported. These facts speak for themselves, and the short illustrated monograph issued recently from the pen of Dr. E. M. Brockbank is therefore all the more welcome, and is a valuable contribution to the literature on the subject. The author's experience of this occupational disease extends over many years in his capacity both as a medical referee for industrial diseases and as chairman of the Manchester cancer research subcommittee since its foundation in 1925. With such unusual opportunities for studying the problem of mule spinner's cancer it is no wonder that this book is a mine of information, most of it of a severely practical nature. Its contents should be fully known to all those whose work brings them in any way into contact with the cotton industry, masters and men as well as the medical profession. As the author claims, if systematic preventive measures are generally adopted the incidence of the disease should diminish greatly and eventually it should disappear completely.

Dr. Brockbank discusses the history of the disease with special reference to its incidence in the cotton mills of Lancashire. It is a matter of considerable significance that the University of Manchester established a special research unit to deal with the problem, and the work of Iwont and others in this connexion is well known. Perhaps the most interesting parts of the book are where the author discusses the causation of scrotal cancer, the scrotum being that part of the body most frequently affected, and outlines certain preventive measures. It is obvious that the author has an intimate knowledge of the industry and has based his observations on close investigation of the various processes within the actual factory. His description of the mule spinning machine, for example, is a model of clarity. Among the preventive measures advocated are regular periodic medical examination of operatives; talks with the men on personal hygiene; propaganda by means of lantern lectures and handbills; and careful selection of oils so that only those with the lowest carcinogenic properties are used in the industry. There is never a better case for setting up factory medical services than where a specific health hazard exists. In our view more could have been made of this point by the author, because if individual firms in the cotton industry are not large enough to appoint their own medical officers in a whole-time capacity, or are anxious to have them in a part-time capacity, there appear to be good economic and humanitarian grounds for the industry itself to make special appointments of one or more whole-time doctors.

In these days when industrial health is of such vital importance to the national effort it is refreshing to know that senior members of the profession outside the ranks of industrial medical officers are taking an active interest in the problem. More of this practical interest is urgently wanted from both medical and surgical specialists as well as from members of the research and teaching units

attached to our main hospitals. The example of Manchester University, which incidentally is one of the very few in this country having on its staff a lecturer in industrial hygiene, is one to be followed by others; an example not only of the practical application of medical research to factory needs but of a policy carried out with the close collaboration of the actual industry concerned.

REVIEW OF BIOCHEMISTRY

Annual Review of Biochemistry. Edited by James Murray Luck, Associate Editor, James H. C. Smith. Volumes IX and X (Pp. 341 and 692, 2/6s. (d. each volume) California: Stanford University P.O., Annual Reviews, Inc.; London: H. K. Lewis and Co., Ltd.

In these two volumes we observe the influence of wartime conditions in tending to remove the international character from a scientific publication hitherto noted for that quality. There is, however, no fundamental departure from customary form and standard, nor is there any blurring of the clear picture which the publication has yearly presented of biochemical progress.

To readers of this *Journal* the 1940 volume attests a greater proportion of interesting material than most of its predecessors; three contributions have very direct bearing on clinical work—one, in fact, being entirely devoted to the clinical applications of biochemistry. This contains a useful and timely survey of tests introduced into service in recent years, but which have called for extensive study in order that their significance might be properly defined. While the chapter on the application of microchemistry to biochemical analysis will concern only the laboratory worker, that by Prof. Dodds and Dr. Dieken on the biochemistry of malignant tissue has a distinctly wider appeal, for it is out of such authoritative evaluations of the literature that most of us must gauge the extent to which scientific research is penetrating the cancer problem.

The striking claim that the proteins of cancer tissue are characterized by the presence of amino-acids of "unnatural" configuration receives critical treatment in the article just mentioned, and it is further examined in more than one connexion in the current volume. The evidence now accumulated seems to dispose of the validity of the original contention. In the past the *Review of Biochemistry* has provided some remarkably able contributions in the hormone field, but none have surpassed that of E. C. Kendall in the latest volume for its combination of clarity and conciseness. The hormones of the adrenal cortex receive rather special attention, in aspects ranging from their chemistry and physiological effects to their clinical applications.

The value of the current volume could not be fully emphasized without reference to the chapter on nutrition—a topic which now challenges the interest of the whole community. Here is summarized in very readable form the results of various big-scale investigations carried out in the U.S.A., designed to give an accurate appraisal of the nutritional status of different sections of the population. The lessons to be derived from such studies are clearly of immense importance to all engaged in tackling the food problems of our own country.

IMPERFECT MAN AND HIS FUTURE

Medicine and Mankind. By Arnold Sorsby. (Pp. 246; Illustrated. 12s. (d. net.) London: Labor and Labor, Ltd., 1941.

Man: The Mechanical Midget. By G. H. Vassallo. (Pp. 251, 10s. (d. net.) London and New York: The Macmillan Company, 1941.

At this crisis in world affairs it is not surprising that the application of biology to sociology, using both terms in their widest sense, should make a wide appeal. The two

books before us are concerned with the influence of the manifest imperfections in man's physical and mental equipment on the future of civilization; but here their resemblance ends. It is curious that two authors starting from the same premises should reach such contrary conclusions. Mr. Arnold Sorsby's *Medicine and Mankind* is a sober review of the nature of disease under the headings of "The Ill-formed Body," "The Ill-balanced Body," "The Abused Body," and "The Assaulted Body"—titles which indicate his method of approach. Then follow chapters on treatment by individual and collective measures, leading up to a consideration of social achievements and frustrations. The teaching of Galen stressed the perfection of the body; later authorities laid emphasis on its corruptibility; both these views postulated an unchanging body in a changeless environment. To-day we visualize the body as in an unstable physico-chemical equilibrium, constantly responding to the shifting equilibria of the outer world. Medicine must take into account both the internal structure of man and his external environment. The author recalls the views of Heraclitus 2,500 years ago that everything is in a state of "becoming"; we might add that Bergson's modern revival of that philosophy in a forcible form has been forgotten all too soon. The whole argument is couched in such language as to appeal to the ordinary educated reader; technical jargon has been skillfully avoided, while the illustrations and graphs are a decided help. Apart from his fears as to a decline in the population of the civilized world, Mr. Sorsby's conclusions are on the whole hopeful, as indeed the achievements of man justify, despite recurrent setbacks due to the cave-man who is still always with us. The bearing of mental activities on health and disease and their derangements are deliberately excluded from this survey because the author felt it impossible to do justice to such a complex subject within the compass of his book. Nevertheless he has produced a thought-stimulating piece of work, with a forwardly directed gaze which faces the problems of the future courageously.

Dr. G. H. Estabrooks is an anthropologist and not a medical man. The jaunty and jocular style of his *Man: The Mechanical Misfit* accords ill with his pessimistic conclusions. He is convinced that man began to deteriorate from the time he adopted the upright position. He appears to look to unopposed action of natural selection as the only remedy for the parlous state into which mankind is falling. This book is a positive mine of inaccurate information.

SCHIZOPHRENIA IN CHILDHOOD

Schizophrenia in Childhood. By Charles Bradley, M.D. (Pp. 152. 10s. 6d. net.) New York and London: The Macmillan Company. 1941.

The Emma Pendleton Bradley Home admits "difficult" children with mental and physical disabilities, and Dr. Bradley, as medical director, has had a full opportunity of studying children's psychological reactions over a long period. The subject he has chosen for his monograph is a difficult one, for schizophrenia as a whole is still a battleground of theories out of which, unfortunately, all too little practical achievement has emerged.

Schizophrenia is a fairly common disease of youth but not of childhood; indeed, some authorities declare that the onset of puberty is necessary for its development. This, however, is apparently not true, for in the literature, which is amply reviewed in this book and correlated with the author's own experience, cases are described which are now sufficiently numerous to establish what the author in his

last chapter calls a "practical concept of childhood schizophrenia." This chapter, in fact, admirably sums up the whole of the systematic discussion of the subject which makes up the rest of the book. Schizophrenia to fit in with this concept must occur in childhood—that is, before the age of 13—and must be severe enough to constitute a psychosis, for many "schizoid" traits may be observed in children who are certainly not psychotic. The appearances of the disease will differ from those in the adult by reason of the child's restricted mental development and of the fact that his mind is developing all through the progress of the disease. The author suggests as a short definition "a rare but severe distortion of the personality, peculiarly distinguished by a diffuse retraction of interest from the environment."

Many factors may be cited as having causative significance, but none of them is found to be universal or even statistically valid, and we must admit that we do not know the cause. Primary symptoms are extreme seclusiveness, excessive day-dreaming, regression of personal interests, bizarre inappropriate behaviour. Autistic thinking and dissociation, emotional blunting, and intellectual deterioration are less marked than are these symptoms in adults. Outbursts of temper, negativism, and psychomotor activity are secondary to thwarting of primary symptoms. Clear-cut examples of the four adult types are not seen in childhood, and it is probably better to describe acute and chronic types. Laboratory tests, whether pathological, neurological, or psychological, are not helpful, and diagnosis depends on the combination of symptoms. Treatment, whether by psychotherapy, shock therapy, or other means, is uniformly disappointing, and the prognosis is bad.

This is a well-documented review of a difficult subject, with a good bibliography, and it may be confidently recommended to the attention of all psychiatrists and paediatricians.

Notes on Books

Plant Science Formulae, by R. C. McLEAN and W. R. IVIMY COOK, is described as "A Reference Book for Plant Science Laboratories (including Bacteriology)," but the bacteriologist will find only a few very simple stains and culture media described which fall within his province. Mycology and botany are much more fully served, as is to be expected both from the main title and from the fact that both authors are botanists. The book consists entirely of formulae and practical instructions, and those concerned with fixing, embedding, museum work, and photography have wide applications and will be generally useful, as are such things as the log tables, a chapter of physical and chemical formulae and equations, and a list of scientific suppliers. Most original and useful of all is a chapter entitled "Workshop Receipts," which gives instructions for painting black-boards, cleaning mercury, silvering glass, making putty, size, and polarity paper, and many other useful things not often found in books. The publishers are Macmillan and Co., and the price is 7s. 6d.

Dental Materia Medica, Pharmacology and Therapeutics, by Prof. W. J. DILLING and Mr. SAMUEL HALLAM, has now appeared in a new edition (Cassell and Co., 13s. 6d.). The drawback of this book is that it attempts to cover almost the whole field of materia medica, and gives insufficient attention to the information which the dentist really requires. There is no mention of the sterilization of syringes, and no discussion of the difficulties of sterilizing solutions of procaine, except to say that solutions of procaine can be boiled, which many consider unsafe. Nor is there any mention of the danger of boiling adrenaline when diluted unless precautions are taken to keep the reaction acid. There is no mention of the increasing appreciation of the value of percaïne, or indication that it stands out in usefulness above other local anaesthetics. These and other similar points are of great importance for the dentist.

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CERTIFICATION AND NOTIFICATION

The winter session of the General Medical Council which has just been held draws attention once more to the thorny question of certificates, especially to those which are signed carelessly or in a misleading manner. Of late, our correspondence columns have borne witness to the growing irritation among doctors at the multiplicity of forms they are called upon to sign. And last week a correspondent in our contemporary recorded that he had had to sign a certificate so that a child with congenital dislocation of the hip could be supplied with a rocking-horse. Those who have to carry this additional and vexatious burden deserve our sympathy. But however the demands for certificates may grow they must be signed with good faith, care, and exactitude. In the *Journal* of April 19 of this year we printed a warning notice issued by the General Medical Council on the signing of certificates. As the notice stated: "Unverified assertions made by the patient himself, personal opinions as to his fitness or unfitness for various forms of service, or for particular hours of work, and other statements not founded on a careful examination of the patient immediately before a certificate is given, or supported by ascertained facts or conditions, are not proper material to support a certificate signed by a registered medical practitioner as his testimony to facts within his professional knowledge." The notice went on to emphasize that a certificate should be granted *only on medical grounds*, and from the practitioner's personal knowledge of the health and physical condition of the applicant at the time of granting the certificate.

These are clear and, indeed, obvious desiderata. Nevertheless we have good reason to believe the military authorities have been disturbed by numerous instances of apparent laxity in the granting of certificates to soldiers. At Liverpool Assizes last month a practitioner was sentenced to four years' penal servitude for issuing a number of deliberately untrue certificates to members of H.M. Forces. Such an offence, apart from gravely infringing the professional code, is a serious obstruction of the war effort and rightly called for the stern comment of the judge in passing sentence. Last week in the House of Commons the Minister of Labour and National Service, in reply to a question, said that he was prepared to take ruthless action against anyone falsely certifying men unfit for military service. But it is less in the deliberate untruth than in the careless and inaccurate statement that harm is being done. All practitioners would do well to search their own hearts on this score. For example, serious interference with war production may be caused by certifying men unfit for night work on apparently very slender medical

grounds. A list could easily be made of minor evasions from various forms of national service and wartime restrictions. There is the fire-watcher who seeks exemption for a trivial disability; the housewife who wangles extra milk for an alleged illness; the soldier who wants an extra day's leave. In many such cases the granting of a certificate may be perfectly justified, but in far too large a minority it is not. The certifying doctor must be sure of his grounds and remember that an unjustified certificate not only causes a weakening of the war effort but exposes him to the jurisdiction of the General Medical Council.

Three penal cases concerning irregular certification were considered at its recent session, and some of the points arising therefrom are worthy of comment. One defence suggested that the document in question was not a certificate in that the words "This is to certify" or some such phrase did not appear on it. In its warning notice to the profession the G.M.C. speaks of "any such certificate, notification, report, or document of a kindred character which is untrue, misleading, or improper." Clearly, then, any written statement about a patient's health which is backed with the authority of the signature of a medical man as such falls into the same category, however it may be worded and whatever title it may bear. Another line of defence was that the document did not contain any statement that the patient had been examined. Whereas the official certificates used in relation to national health insurance must state categorically that patients have been examined on a particular day, other forms of certificate, less precisely drafted, are in common use, and in these the question of whether such certificates are misleading may, and often does, arise. The party for whose information the certificate is issued is entitled to assume that the facts cited therein are within the doctor's own knowledge. It should never be the practice for a doctor to give a certificate for the substance of which he relies on the statement of someone else, especially when members of the Forces are seeking extension of leave or exemption from service on medical grounds. "What the soldier said" or "what the butler saw" is not evidence. Failure to keep proper records or books of accounts is not professional misconduct, but its inconvenience to practitioners who may need evidence from such records or accounts for their assistance in legal or other proceedings was illustrated by another case before the Council in which the charge was not found proved. It is a matter of elementary prudence to keep what is generally known as the "day book," in which the name and address of the patient and such details as prescriptions given are recorded under the exact date of the visit. Such a serial record of work done provides evidence that cannot be disputed.

In addition to signing certificates the practitioner has a statutory duty, under various Acts of Parliament, to notify certain events. A practitioner charged with failure to notify the medical officer of health of his district, as required by the Puerperal Pyrexia Regulations, 1939, in a case attended by him in a maternity ward on May 26 and subsequent days, stated in evidence that he never notified cases of puerperal pyrexia occurring in his hospital practice, although he always did so in his private

practice. His patient had obstructed labour, and he performed Caesarean section seven hours after admission to hospital. She suffered from thyrotoxicosis and dilatation of the heart, and later developed acute pneumonia and died on the seventh day after delivery. Although over most of the period the temperature was raised considerably, the practitioner did not consider that his patient suffered from a septic condition arising from the confinement. He had not, however, made any bacteriological examination of the lochia or of the blood. Facilities for making these examinations were available in his district. The G.M.C. found that the facts alleged against him in failing to notify had been proved to its satisfaction. The Minister of Health, in Circular 722, issued in 1926, when notification of puerperal pyrexia was first introduced, and again in Circular 1765, issued in March, 1939, sought "to impress upon all those concerned with the administration and clinical conduct of maternity institutions that the presence of a febrile condition, however slight in degree, in a patient or member of the staff should be considered as liable to give rise to an outbreak of virulent infection." Circular 1765 also stated that "if notification of puerperal pyrexia is to have practical value it should be early and complete. It should be followed by investigation into individual cases and by intensive study of the causation and course of outbreaks of infection, whether in domiciliary or in institutional practice." These regulations under the Public Health Act, 1936, are made solely in the public interest. Regulation 2 defines puerperal pyrexia as "any febrile condition occurring in a woman within twenty-one days after childbirth or miscarriage in which a temperature of 100.4° F. or more has been sustained during a period of twenty-four hours or has recurred during that period." Whatever may be the medical attendant's belief as to the causation of this rise of temperature in any specific case, it is his plain duty to notify every case and to take the steps necessary to establish a definite diagnosis by modern bacteriological methods, so that the newer forms of treatment are not denied to his patient and that the community may be protected against the further spread of streptococcal infections when these have been found to exist.

It is much to be hoped that practitioners—in their own interest as well as in that of the public—will make themselves fully acquainted with their legal obligations and take heed of the obvious lessons that can be learnt from the cases recently before the G.M.C. and recorded in the *Supplement* to this *Journal*.

PRUNING THE PRESCRIPTION

In the more spacious pre-war days cases of excessive prescribing were not infrequently brought before Panel Committees, but the fault was generally regarded as venial, and only in the worse examples was any severe penalty imposed. The importance which patients, insured or not, attached to drugs or other medicaments as an outward and visible sign of medical treatment was always remembered. Unusual demands for drugs, even the use of more expensive preparations when cheaper ones would suffice, were regarded as an unwarranted

trespass upon national health insurance funds, but not as a misdemeanour from the point of view of national economy. With the nation at war, however, the situation is entirely altered, and what was an excusable indulgence becomes a grave dereliction of duty. Our attention has again been drawn to the great need for economy, especially in the phenol derivatives and, linked closely with those, in alcohol, glycerin, glucose, mercury salts, and liquid paraffin.

It has been an unhappy experience during this war to find, with regard not only to drugs but to foods and other commodities, that when the public is urged to practise restraint in buying some particular article many people immediately make a run upon it, with the consequence that sometimes it disappears from the market altogether. It is only necessary to say that there is a shortage of some commodity, and forthwith individuals, foreseeing rationing and control, lay in exceptional stocks. That has been the experience with drugs, so that instead of a hoped-for slackening in requirements there has been an increased demand, and the slender margin of supply has been obliterated. When the Therapeutic Requirements Committee of the Medical Research Council mentioned that economy in liquid paraffin was desired the effect was actually to increase the call for that substance.

One economy now specially urged is in the use of aspirin and the salicylates generally. There is believed to be a considerable amount of aspirin addiction in this country. We hesitate to give the quite astonishing figures quoted to us by a well-informed official concerning the amount of aspirin regularly taken by young women in Government offices. It seems to be as usual to swallow an aspirin tablet as it is to use a cosmetic. Purchases of aspirin and kindred remedies over the counter without a prescription may have to be regulated, but meanwhile medical practitioners can help to set an example by exercising some restraint in ordering such drugs, putting down only 5 grains, for instance, if 5 grains will serve, instead of the accustomed 10. The difference in the individual case is negligible, but it must always be multiplied by the thousand or hundred thousand of similar cases and thought of in terms of shipping space or the use of a particular substance for war needs. Practitioners might also consider whether they are ordering larger quantities of mixtures at a time than they need. In Scotland the standard mixtures are made up in 6-oz. bottles, but in England in 8 oz. It has been possible here and there to cut down the size of containers, also to limit the variety of sizes offered. One manufacturer formerly used to put up aspirin in twenty-five different sizes of packing; he now puts it up in four, with no particular disadvantage to the purchaser. Unfortunately one cannot, by the wave of a glass rod, alter the size of the medicine bottle. It is true that the bottle need not be filled up to the cork, but, there again, there is supposed to be some obscure value in the full bottle brought back from the drug store or dispensary. The public would probably not object to a smaller bottle, but a bottle which was only three parts full would have a sadly depreciated merit in their eyes. All that can be done in this matter is to appeal to the public spirit of the medical profession. If any

doctor still insists on exceeding his real requirements and rejecting proffered substitutes—and there is no shortage of articles for which there is no substitute—we must be left, for the present, to his conscience. Such action makes inevitable a control imposed from without, which will have to be endured not only by those who have put their own interests to the front but by those who have loyally responded to the appeals made to them. But if the profession does incline sympathetically to official guidance in this matter there will be enough drugs to go round. On the other hand, if any considerable number of practitioners rush in to stake out excessive claims difficulties will at once arise and some sort of control may become necessary—an expedient which, in spite of the supposed love of Whitehall for bureaucracy, the Ministry of Health is anxious to avoid. There is believed also to be a good deal of wastage of drugs in hospitals and other institutions, and the Ministry has done well to circularize not only the medical but the nursing staffs of E.M.S. hospitals, and, we believe, of the municipal hospitals as well.

The War Memorandum prepared some time ago by the Therapeutic Requirements Committee and issued by the Medical Research Council on "Economy in the Use of Drugs in Wartime," followed as it has been recently by the *National War Formulary*,¹ as well as by the latest Addendum to the *British Pharmacopoeia*,² which was compiled with the war situation in view, gives indications as to the "limited" drugs, the replacements available, and the economies which may be practised. With these the practitioner should have little difficulty in reconciling his duty as a citizen with his duty to his patient.

DERMATITIS FROM NAIL LACQUER

Little has been heard in this country of dermatitis due to cosmetic preparations for the nails. Cuticle removers, which often have for their active ingredient liquor potassae suitably diluted, are sometimes known to give rise to onychia, but the manufacturers are well aware of this risk and often make their product so weak as to be rather ineffective. But in America during the last few years a good many cases have been recorded of dermatitis due to the employment of nail lacquer, whether dyed or colourless. One of the first cases was reported by Sulzberger in 1937; in this the diagnosis was confirmed by positive patch tests. Palmer³ now reports nine cases in about a year. In each instance the dermatitis began on the face and only subsequently and much later spread to the peri-ungual skin. It appears to be caused by contact between the lacquered nails and the cheeks, chin, or eyelids. Recovery ensued when nail lacquer was discontinued, but resumption caused a relapse. Palmer made considerable efforts to discover the toxic agent in the lacquer and tried to secure the co-operation of one of the manufacturers, but without success. He was merely assured by the firm applied to that its product was above suspicion. Nail lacquers appear to be composed of four constituents: (1) a body, usually consisting of nitrocellulose with a resin; (2) a plasticizer, an oily body with a high boiling-point; (3) a solvent, which may be a ketone, an alcohol, or an ester; and (4) a dye—

but some nail lacquers are colourless. There is no evidence that the highly coloured lacquers which many women prefer are any more likely to give rise to symptoms than the colourless varieties. Although Palmer tested no fewer than twenty-nine different compounds with a view to discovering the toxic ingredient, his results were inconclusive. It can only be said that a few substances known occasionally to give rise to dermatitis in other circumstances may sometimes do the same when included in a nail lacquer. Such are formaldehyde, cresol, and turpentine. The use of nail lacquer appears to begin at an earlier age in America than it does here. Palmer states that girls of 5 years and upwards are found to use it, but as yet he has found no cases of lacquer dermatitis in children, or in women who lacquer their toe-nails, or in men who employ colourless lacquer for their finger-nails.

DEATH FROM MERCURIAL DIURETICS

The mercurial diuretics represent the most noteworthy advance in the treatment of dropsy since Withering rationalized the employment of digitalis. It is probable that they are still not widely enough used, more particularly in cases of left heart failure in which oedema and congestion are localized to the pulmonary circulation, and in which the presenting symptom is dyspnoea or cardiac asthma. With remedies so powerful as this it is not surprising that, as with digitalis itself, untoward symptoms occasionally occur. The older physicians were well aware of the accidents of diuresis and were wont to advise that the heart should be supported by digitalization before diuresis was encouraged. There is, however, nothing to suggest that mercurial diuretics increase the work of the circulatory system, apart from the mechanical effort of urination. The kidney, like the large bowel, acts as a condenser in which most of the large volume of fluid filtered out of the circulation is restored to it, and the mercurial diuretics act essentially by diminishing the efficiency of the recovery process. It is, in fact, the duty of the kidney to aid in conserving the internal milieu of the organism, and one of the dangers of diuretics lies in interference with this process. It is no light matter for the body, even the oedematous body, to adapt itself to a total loss of five litres or more of fluid a day—the resulting disturbance, both in the balance of electrolytes and in the partition of water between cells and body fluids, may express itself in symptoms of physical malaise and mental disturbance. These ill effects can to some extent, though perhaps not entirely, be avoided by regular examination of the blood plasma, more particularly for chloride, bicarbonate, and urea content; and biochemical tests of this kind are absolutely essential if mercurial diuretics are supplemented by a salt-poor diet or by acidifying agents. These biochemical disturbances give warning of their development, and in the hands of the careful physician they should never end fatally. Unfortunately they do not exhaust the dangerous potentialities of this form of treatment.

In a discussion at the annual meeting of the Association of Physicians of Great Britain and Ireland this year several speakers mentioned the occurrence of sudden death after treatment with mercurial diuretics, and a fully documented account of such accidents has now been published from American experience by Mary Tyson.⁴ She has collected the histories of five cases of fatal or almost fatal reactions to intravenous injections of mercurial diuretics; all of these were associated with nephrosis. The shock dose was never more than 1 c.cm., and in some cases only 0.5 c.cm. In every instance the intravenous injection was made slowly.

¹ *British Medical Journal*, November 8, 1941, pp. 656, 662.

² *Ibid.*, September 27, 1941, p. 453.

³ *Arch. Derm. Syph.*, Chicago, 1941, 44, 13.

⁴ *J. Amer. med. Ass.*, 1941, 117, 595.

The reaction was almost immediate and was characterized by convulsions, dyspnoea, cyanosis, coma, and death. In the cases recorded this reaction never came after the first dose, but after the second, third, and fifth. Tyson therefore believes that the reaction is anaphylactic and connected in some way with the alteration of the blood proteins in nephrosis. She believes that the use of mercurial diuretics is contraindicated in nephrosis. Here, in our opinion, she goes too far. Massive oedema is a severe handicap to a patient and a strong predisposition to infection and premature death. If there was a successful operative treatment for nephrosis we should not forgo it because of the inevitable hazards of operation. For the same reason we cannot believe that there is justification for putting a general interdict on the use of mercurial diuretics in nephrosis. Two other conclusions seem more legitimate. The first is that no practitioner should ever treat a case of nephrosis with mercurial diuretics without warning the patient's relatives of the risks entailed. The second is that restoratives such as adrenaline and nikethamide should always be at hand before the injection is given. Finally, evidence should be obtained whether similar fatalities have followed injection of the drug by the intramuscular route.

CHEMOTHERAPY FOR TUBERCULOSIS

Neither the known properties of the tubercle bacillus nor the character at least of the chronic lesions produced by it encourage the belief that the ever-widening scope of chemotherapy will come to embrace this disease. A micro-organism so slow in its growth, so impermeable by noxious agents, and producing a destructive and comparatively avascular lesion, is the very antithesis of those fully susceptible to the sulphonamides. Nevertheless the search for a chemotherapeutic agent effective in tuberculosis continues in at least two directions. A well-worn path has been pursued with characteristic German thoroughness by Prigge,¹ who tested the action of twenty-three chaulmoogra derivatives on experimental tuberculosis in guinea-pigs. One of these compounds—4-n-hexylresorcin-dichaulmoogroyl-ester—prolonged the life of infected animals for an average of 14.2 days, a result which is considered encouraging enough to warrant further study on these lines. A very much more striking result from experiments of the same nature is reported by W. H. Feldman and his colleagues,² who have continued their studies of promin (the sodium salt of *p,p'*-diamino-diphenyl-sulphone-N,N'-dextrose sulphonate). It has been known since the early observations of Rich and Follis³ with sulphanilamide that compounds of this nature have some retarding effect on the development of experimental tuberculosis in the guinea-pig, but the degree of effect now described for promin is of a different order. In these experiments the animals were given a dose of 0.005 mg. of human tubercle bacilli subcutaneously, and all controls had died of the disease in 189 days. In the treated animals administration of the drug was begun either at the time of inoculation or at intervals after it varying from three days to no less than six weeks. The extraordinary feature of the results is that from the information given they appear to differ little whether treatment was begun immediately or after this long delay. At the time of death of the last control 57 of a total of 68 treated animals were still alive. Of these, 41 showed no gross signs of tuberculosis at all, including a high proportion of those in which treatment was begun after a delay of two, four, or six weeks. In the remainder the lesions were confined to the site of inoculation, or included glandular or slight

splenic involvement. These results were achieved by large doses of the drug, 300 mg. or more being consumed with food daily; this dosage caused blood changes, but no loss of weight or condition. It would be most unwise to conclude even from such results that the human disease will respond in the same way, but they are certainly more definite and encouraging than any which have gone before or than might have been expected on theoretical grounds from treatment with any such compound in this disease.

NEW VIEW ON PINK DISEASE

So long as the aetiology of pink disease remains obscure treatment of it cannot be expected to be satisfactory. Any views on the subject are therefore welcome, and what T. A. Ratcliffe has to say⁴ about a possible psychological origin must be viewed with respect, although possibly with reserve, since no alternative seems to have been generally accepted. He bases his experience on fifteen cases—six girls and nine boys—with an age of onset varying from 3½ months to 1 year and 5 months. They had all been full-time babies and all breast-fed at some time, ten of them up to the moment of admission to hospital. There did not seem to be any dietary deficiency, but, as other workers have recorded, in a high proportion some upper respiratory tract disease was associated with the onset. From the psychological aspect, Ratcliffe points out that excessive irritability is a striking symptom in most cases, and several types of mental upset are also found. In one of these the child lies in the "knee-elbow" position, crying if disturbed and showing photophobia, considered to be nothing more than a particular exhibition of irritability. In the second type there appears to be an increase of motor activity. The child is continuously crawling about its cot, or rocking itself to and fro for hours at a time. Such a child is stated to be reasonably co-operative and will "show off" to visitors. A third and rare type exhibits what is almost a catatonic state, lying for hours in strange positions in extreme lethargy. Another psychological factor to be borne in mind is the influence of the mother, and Ratcliffe states that all the mothers of the children with pink disease who were interviewed were of the "extrovert" type, with a continual cry of, "Will he be all right, doctor?" As, from experience gained in the psychological clinics for older children, this type of mother is well known to be associated with the behaviour problem child, it is argued that she may well be a factor in the production of changes in the child with pink disease. Ratcliffe asserts that the skin changes, the sensory changes, and muscular hypotonia might well be of mental origin, and that this is certainly true of the anorexia. Other changes, less easy to explain on a psychological basis, might be due to associated conditions apart from the pink disease. He argues against encephalitis as a cause of the nervous disturbances on the grounds of the complete absence of sequelae. But for a similar reason it is also difficult to accept a psychological origin, and Ratcliffe himself failed to find any history of pink disease in a small number of children seen at a child-guidance clinic. The value of this psychological theory as regards treatment would appear to lie in prevention. As a therapeutic measure Ratcliffe is an advocate of calcium lactate, administered in order to deal with the nervous irritability which is so marked in pink disease. He recommends a dose of 2½ to 5 grains three times a day, if necessary over a long period, claiming that there is an immediate improvement in appetite and sleep.

¹ *Klin. Wschr.*, 1941, 20, 633, 657.

² *Proc. Mayo Clin.*, 1941, 16, 187.

³ *Johns Hopk. Hosp. Bull.*, 1938, 62, 77.

⁴ *J. mental Sci.*, 1941, 87, 545.

REHABILITATION SERVICES

The Minister of Health, Mr. Ernest Brown, in a speech at a luncheon given by the Corporation of Brighton during his tour of the borough's health services, spoke at some length on the Emergency Hospital Service, in particular on the arrangements for rehabilitation, defined by the Delevingne Committee in 1939 as "the restoration of the working capacity of people injured by accidents."

Mr. Brown reminded his audience that at the beginning of hostilities all countries made plans to meet large-scale air attack. The part the hospitals were assigned to play was to receive the thousands, even the hundreds of thousands, of casualties to be expected. But there was a lull until the last four months of 1940, during which four months the emergency casualty services dealt with over 80,000 patients in hospitals and first-aid posts. The lull extending over the first year of war, and the fact that even when it ended the total of casualties which the enemy had been able to inflict was less than that for which preparation had been made, enabled the Emergency Hospital Service to strengthen and extend itself. In addition to air-raid casualties and Service patients, it took in civilians who had left evacuation areas for reception or neutral areas, members of the civil defence organizations, and the Home Guard, transferred workers in industry, members of the Merchant Marine, sick and away from home, and members of the Women's Land Army.

Types of Treatment Centres

The scheme could now be fairly described no longer as a casualty scheme, but as one that tried to meet all the new war needs as they arose. Specialist treatments were developed in selected centres, to which staff and equipment were brought, and patients were transferred to one or other centre as their medical needs required. Leaving aside other specialist treatments, the Minister concentrated on the rehabilitation scheme, in which the Emergency Hospital Service had endeavoured to translate into action the main principles laid down by the Delevingne Committee. The scheme had taken shape in four types of special treatment centres:

1. Orthopaedic Centres to the number of twenty-one. These gave the most highly developed service, covering all aspects of fracture treatment from the initial resetting of the injured part through all modern stages of physiotherapy and remedial exercises to complete occupational therapy.
2. Fracture Departments (A) to the number of fifty-six, with more in preparation. These differed from the centres only in that they did not contain all the very specialized provision for certain more difficult types of case. It was far better, said Mr. Brown, from the point of view both of the patients and of making the best use of medical experts, to concentrate them in this way.
3. Fracture Departments (B) to the number of 213, mainly hospitals with facilities which in peacetime might be suitable for the second category above, but were at present unsuitable for long-stay cases owing to their vulnerable situation, though useful for short-stay and walking cases.
4. Fracture Clinics (C) to the number of 136, to fill the gaps in areas which the hospitals did not conveniently cover. Both in these clinics and at the hospitals, after discharge from the latter, a patient may within convenient reach of his home be followed up and take part in rehabilitation activities.

Restoration to Working Capacity

This organization with its 426 establishments, and more in preparation, and with eminent surgeons to advise the headquarters staff at the Ministry and the staff in every region, was the embodiment of the first and second of the Delevingne Committee's principles and part of the third. The third principle was the fullest possible restoration to working capacity, and this was bound up with labour and employment questions.

Three strands had to be brought together: the preference of the ex-patient, depending a good deal on previous occupation; the nature and degree of disablement, on which the judgment of the patient's doctor was of first importance; and the demand or opportunity in particular trades and industries. The Minister

of Labour (in his interim scheme published in October for the training and resettlement of disabled persons) had made arrangements whereby contact was made in hospital between the patient, the surgeon, and the Ministry of Labour officer. The last-named would have an interview with the patient before he left the hospital, and also with his doctor, records would be made on the basis of which the Ministry of Labour would offer advice, and when the patient had made up his mind what trade he was going into he could go to a training course. Thus the Emergency Hospital Scheme had been used to effect a transition from the pre-war situation in which the patient's treatment varied according to the initiative and resource of the local hospital to one in which the entire treatment and re-training was correlated.

Of this rehabilitation organization Mr. Brown said in conclusion: "In essentials it has come to stay. I cannot imagine that, whatever administrative arrangements may be made, we shall disperse all the medical and nursing skill that have been built up or discontinue the methods of concentrating it to the best advantage. Continuity of treatment under specialist surgeons, aggregation of special types of cases for long-stay treatment and rehabilitation will remain, and in my view so should the link with the employment machine which the Ministry of Labour has been busy forging."

These essentials of the scheme fitted in with the plans for hospital policy as a whole which the Ministry of Health recently outlined in the House of Commons.

Correspondence

The Sprue Syndrome

SIR.—I was much interested in the leader on the sprue syndrome in your issue of November 22 (p. 731), as I have just completed a paper on the same subject, which will appear in the next number of the *Guy's Hospital Reports*. My conclusions are as follows:

1. Tropical sprue, non-tropical sprue (or "idiopathic steatorrhoea"), and coeliac disease are varieties of the same disorder—the "sprue syndrome"—which differ only in the part of the world in which the disorder originated and in the age of the patient.

There are three characteristic and constant features of the sprue syndrome: (1) the stools contain excess of split fat, but no excess of neutral fat, meat fibres, or starch, and no inflammatory material; (2) radiography demonstrates the disappearance of the normal feathery or herring-bone aspect of the duodenum and jejunum produced by the valvulae conniventes; (3) no pathological changes are found in the intestines after death if post-mortem changes have been prevented.

With adequate treatment normal absorption of fat is restored together with the normal radiographic appearance of the small intestine.

2. It is suggested that the characteristic features of the sprue syndrome are the result of paralysis of the muscularis mucosae, which would lead to the loss of the pumping action of the villi, by means of which fat is conveyed from the lacteal radicles of the villi into the larger lacteals, and to flattening of the valvulae conniventes without changes in the normal appearance of the mucous membrane. Paralysis of the muscularis mucosae may be secondary to loss of the normal stimulant of Meissner's (submucosal) plexus or to the effect of vitamin deficiency or some toxæmia on the plexus.

3. An exception must be made for those cases of the sprue syndrome associated with disease of the mesenteric glands: in these the hindrance to fat absorption occurs at the level of the mesenteric glands instead of in the villi.—I am, etc.,

Oxford, Nov. 27.

ARTHUR HURST.

Economy in Dressings

SIR.—The letter of my old friend Beckwith Whitehouse in your issue of November 29 (p. 787) has incited me to put pen to paper in spite of your scarcity of the latter.

Human nature being what it is, I should be gratified to know that I may have been the first to save the purchase by hospitals

of yards and yards of flannel bandage and gauze, and the nursing staff of hours and hours of measuring, cutting, and sewing, and to have decreased the discomfort of many, many patients. It is a trite saying that "there is nothing new under the sun." Probably, therefore, I cannot "lay this flattering unction to my soul," more especially since it was a hospital sister who put me wise. I was to perform a hysterectomy on this lady, who had previously undergone an abdominal operation. She begged me not to constrict her by an abdominal binder, as this was so hot and uncomfortable, especially the retaining pieces round the thighs. I agreed and went one better, stating that I would not cover the incision with any dressings.

Thus during some twenty years I dispensed with flannel binders and gauze dressings, except when a drainage tube was necessary, being satisfied with painting the incision with tincture of iodine and later with Bonney's violet-green. The patient was returned to the ward or in private to her room, clothed only in her nightgown, and her curiosity as to the position and length of the incision was satisfied after one investigation. I never remember any harm resulting. I was fortunate in my colleagues who administered the anaesthetic, since in the great majority of cases I did not have to anticipate post-anaesthetic vomiting. If by chance such occurred, or was likely to occur, an abdominal binder was put on *pro tem*.

I seem to remember the facetious remarks of my seniors, comparable to those when I first introduced indiarubber gloves and masks to my department, but the great loyalty of my immediate colleagues, so evident during a long tenure of office, was a sufficient stimulation.—I am, etc.,

London, S.W.1, Nov. 30.

COMYNS BERKELEY.

Night-blindness: A Psychological Study

SIR,—In their paper on night-blindness in recent issues of the *Journal*, Wittkower, Rodger, Scott, and Semeonoff come to the conclusion that most cases of this disorder in this country "are probably of psychological origin." They submit both negative and positive evidence in support of this contention. The former consists in their inability to detect any ocular causes for the night-blindness of their 52 subjects, and in their assumption that the soldier's diet allows of no vitamin A deficiency. As positive evidence they submit their finding of "severe psychological disorders" in the great majority, and it is presumably on this that they expect their readers to accept their conclusion.

In their account of these alleged psychological disorders the authors provide an illuminating example of what—for them—constitutes evidence, and of how easily this may be collected. As they present it, their evidence consists in "what the soldier said" and their interpretations thereof, the two being inextricably mixed as though they were of equal evidential value. In any scientific discipline this confusing of facts of observation with the deductions drawn therefrom would be inadmissible. Yet even when the reader succeeds in separating "facts" from fancies, the nature of each as presented by the authors will astonish him.

As studied by the authors, the subjects of night-blindness are said to belong to two superficially distinct personality types: an over-dependent and an ostentatiously independent type. A residue is made up of men showing both characteristics in minor degree. The over-dependent consist of men who as boys were "mummy's darlings" (at least so apparently they were found willing to confess); of men who did not play games for fear of being hurt, who had such "girlish" habits as helping their mothers about the house, and who were shy, timid, and self-conscious. This type was represented by 27 men, who are divided into four subclasses: 6 who were totally unemployable, 7 who were shiftless workers constantly losing their jobs, 11 who did moderately well in life, and 4 who even excelled. It will be noted that in this analysis the original 27 have become 28, for even arithmetic seems to have lost its character as an exact science in the authors' hands.

In the interpretation of the competent 4 men we see the beginning of those procrustean proclivities that stamp this psychological study increasingly as it proceeds, for since they were not in fact "over-dependent" their efficiency has to be dubbed "anxiety-motivated." The ostentatiously independent type is represented by 12 men whose boyhood and later life

is described as active, energetic, and masculine. As boys they were robust, stubborn and cheeky, inquisitive, leaders in games, and sports, good mixers. The third mixed group had 13 representatives, who appeared almost normal.

If we take the engagingly candid confidence of these 52 subjects at their face value, an act of faith that not everyone will be able to perform, we seem to see in them the expression—exaggerated possibly—of every type of human personality. Not so for the authors, however, for, bent on tidying up reality in the paramount interests of psychological hypothesis, they tell us that all three types are but one: for the ostentatiously independent 12 are really "soft-hearted" dependent creatures, who have over-compensated for the "inherent passive feminine trends" of which they "were vaguely aware" in themselves. The apparently normal 13 were also of this category and were simply covering up their morbid fears by trying to emulate their strong male relatives. There was no evidence of these morbid fears, but theory decides that they must have cherished them.

Thus by a free use of the notion of "over-compensation" a most satisfying—if not satisfactory—psychological harmony is introduced into this untidy human diversity. Whatever he may appear to the world the night-blind soldier is but a "mummy's darling" of a larger growth. That a few of these men had distinguished themselves in the field by gallant conduct is thus explained. They were brave simply because they were so excessively over-compensated. No man, it appears, is a hero to his psychologist.

When we come to study more closely the elements in this thesis the trail of rationalizing thinking is seen over it all. Thus, the small boy who—like most of his kind—falls off fences and trees and cuts himself in the course of his juvenile adventures is really only "helpless"; the domesticated small boy who does not scorn to help his mother is "girlish"; the small boy with a healthy inquiring mind is addicted to "prying interests and the wish to be taken notice of"; while the hollow-ness of the small boy who appears an unqualified success is revealed in his over-compensation. Thus, our night-blind soldier denied normality *a priori* becomes inevitably the victim of severe psychological disorders. It is difficult to believe that under an inquisition of this fantastic order even the keenest of night-sighted soldiers would escape intact, or with his ego untarnished, if it were deemed expedient to present him as psychoneurotic. The astonishing autobiographical reminiscences made by this collection of soldier patients leave one with the uncomfortable suspicion that some at least of them had their tongues in their cheeks, and that that incorrigible wag the British soldier was leading his naïve questioners up the garden.

On the negative side, the authors' failure to find adequate physiological causes cannot be accepted as excluding the possibility that such exist. The assumption that the soldier's diet renders a vitamin A deficiency an impossibility is a convenient one that saves the authors the trouble of ascertaining the facts. There is no such single thing as a soldier's diet, except possibly on paper.

As the matter is left by the authors, every soldier now complaining of night-blindness comes under the suspicion that he is a soft-hearted, dependent "mummy's darling." Whatever be the role of psychogenic factors in the incidence of defects of night vision, it would surely be wrong to accept the authors' thesis on no better evidence than they provide. One need not sentimentalize the soldier, who, after all, is but a sample of the population, but one cannot write him off in this cavalier fashion. The tasks of medicine are not fulfilled in this easy verbal manner, and it is to be hoped that the problem will be reinvestigated in a more balanced and scientific way by observers less swayed by psychological dogmas.—I am, etc.,

London, W., Dec. 4.

F. M. R. WALSH.

Testing Night Vision

SIR,—The second letter of Mr. E. W. Godding (November 29, p. 789), with his comments on the "disk-spotting test" of night vision, seems to make it plain that he has no personal experience of this particular test. He does not appear to have made any trial of its method. So that his remarks thereon are somewhat akin to the assertion in the last but one paragraph of his letter: "the 'standard candle' has not been used as the standard of

illumination since about 1900." If that statement be true, it is strange that there is still a first-class firm that makes and markets the standard sperm candle.—I am, etc.,

Edenbridge, Dec. 4.

N. BISHOP HARMAN.

X Rays in Treatment of Inflammations

SIR,—In your issue of November 15 (p. 700) there appeared an annotation on the treatment of inflammatory conditions by radiotherapy, based on an article by Pendergrass and Hodes in the *American Journal of Roentgenology*.

It would be inappropriate for us to express an opinion on the merits of this method of treatment, but we do most strongly deprecate the suggestion contained in the annotation that it could safely be carried out by casualty officers. Radiotherapy is a highly specialized branch of medicine, and requires skill, judgment, and experience in those who practise it. Proficiency in it comes only after a lengthy training, and in our opinion to allow "hospital and armaments works casualty officers" to treat these cases by x rays after having been "taught the essentials in a few weeks" would be to incur grave risk of x-ray injuries. The statistics of the medical defence societies show how real this risk is. A shortage of radiotherapists would not justify the exposure of patients to the danger of unskilled treatment. The danger is so real that it would be better not to use the method at all if no radiotherapist was available. This position has in fact not yet been reached.—We are, etc.,

S. COCHRANE SHANKS,

President.

WALTER M. LEVITT,

Vice-President, and Chairman of the
Radiotherapy Section Committee

M. H. JUPE,

Honorary Secretary.

The Faculty of Radiologists,
London, W.1, Nov. 23.

SIR,—The Executive Committee of the British Association of Dermatology views with much concern the statements made in the annotation "X Rays in Treatment of Inflammations" (November 15, p. 700). While not desirous of discussing the question of the value of x-ray treatment in acute inflammations of the skin, the committee considers that the statement made in this article that there is no risk of radiation injuries in giving doses of 100 to 200 r for three to five consecutive days is not in accordance with common experience. With the apparatus generally employed for superficial therapy the doses recommended would be capable of producing severe and permanent injury to the skin.

Further, the committee considers that the recommendation made that casualty officers should be encouraged to treat their patients with x rays is dangerous to a degree. Past experience has clearly shown that this form of therapy should only be applied by those who have had long training in the use of so powerful and potentially dangerous an agent. Serious after-effects may not show themselves for many years after treatment, and without an intimate knowledge of these after-effects irreparable damage may be done to patients.—I am, on behalf of the Committee, Yours faithfully,

H. W. BARBER,

Hon. Secretary, British Association of Dermatology.

SIR,—In the *Journal* of November 15 (p. 700) you draw attention to the recent review of Pendergrass and Hodes of the use of x-ray treatment in inflammations. Radiologists themselves are not yet agreed on the best technique for the treatment of inflammations, and your statement that "any registrar or house-surgeon who is in the habit of referring such cases to the x-ray therapy department can testify not only to the shortening of the period of incapacity but also to the restoration of useful function in fingers that would otherwise have been amputated" is a surprising one, and raises a doubt as to the value of the testimony that would be given.

Under these circumstances it is most undesirable to suggest that x rays should be used widely in the treatment of inflammations until much more research has been done in those clinics where it is possible to use accurately measured doses under conditions that can be strictly defined and repeated, and where results can be impartially recorded and controlled by comparison with patients treated by other means.

It is especially dangerous to suggest that "casualty officers could be taught the essentials in a few weeks." Some surgeons

have recently learned to their cost that x rays not controlled by competent radiologists can be dangerous, and it should be accepted that x-ray therapy should only be practised under the direction and continuous supervision of a fully experienced radiologist. I am the last to suggest that radiotherapy should only be practised by those who can do nothing else, but I do maintain that it should not be regarded as equivalent to minor surgery, but as needing as much training, care, and thoroughness as major surgery.—I am, etc.,

London, S.E.11, Dec. 1.

GEORGE F. STEBBING.

Haemoglobinometry

SIR,—Permit me to add some more practical hints to the important and interesting discussion by Dr. R. D. Campbell (November 22, p. 747) on the difficulties of everyday haemoglobinometry.

I have found by personal experience that blood kept under an atmosphere of CO will preserve its colour and CO capacity for as long as twenty-five years. I have had a Haldane tube since 1912, and it has in no way lost its accuracy and usefulness. With the Sahli apparatus, on the other hand, I have not had the same good experience. The suspension in his tube forms a sediment in time, and this cannot be redispersed even by shaking with the enclosed bead. This settling out and the discoloration give rise to inaccurate and incommensurable results. Leitz attempted to remedy these defects by using a coloured glass rod in place of the tube, but this model proved a failure.

In any case, why should one use an apparatus which gives only an arbitrary measure instead of an instrument giving an absolute functional value? The chief aim of haemoglobinometry is the determination of the oxygen-carrying capacity of the blood. We know that 1 gramme of haemoglobin can absorb 1.34 c.cm. of O₂. Sahli arbitrarily assumed that the average normal blood contains 17% of haemoglobin. He arrived at this figure by mixing together a certain quantity of blood from each of his assistants, and declaring this as the standard haemoglobin concentration in the blood of the healthy normal man and defined it as the 100% standard. This standard blood would represent an oxygen capacity of 23 vol. % O₂. Contrary to Sahli, Haldane took for his 100% standard a blood having an O₂ capacity of 18.5 vol. %. Considering, however, that Sahli's standard was the blood of persons living at Berne, 1,600 ft. above sea-level, it is obvious that his average haemoglobin concentration was considerably higher than is the average at zero altitude. Quite naturally the different values of the "100%" standard have caused some confusion, and it is not surprising that, when using Sahli's haemometer, we often find "anaemias" where in fact none exist.

Another source of error in the acid haematin method is the time of the dilution. The instruction to dilute after one minute is very vague, because after half a minute only 80% of the terminal colour reaction is reached; after one minute the change is 83%; after two minutes 88%; after five minutes 93% of the darkening of the haematin is reached. After this time the change goes on very slowly, and it takes hours for it to become complete. For this reason it is advisable to dilute the acid haematin after five minutes, when the curve of change has become less steep.

The Haldane apparatus complies with all requirements of a satisfactory haemoglobinometer, and, moreover, matches better the normal erythrocyte figures and thus gives a more accurate colour index. The difficulty of obtaining coal gas for the Haldane apparatus can be overcome by keeping a large bottle of water which is shaken with coal gas and thus becomes saturated with CO. If the water is covered with liquid paraffin this keeps the dissolved gas practically indefinitely. This water contains quite sufficient CO to convert the small samples of oxyhaemoglobin with which we deal in tests. For our daily requirements of CO water we may fill an old insulin bottle with a rubber cap from the large stock.—I am, etc.,

London, W.1, Dec. 1.

J. PLESCH.

E.N.T. Instruments

SIR,—When the E.M.S. was organized for prospective casualties from enemy action an ear, nose, and throat service was not considered an essential part of that service. As the character and functions of the E.M.S. hospitals changed and expanded to embrace all services, ear, nose, and throat work

was naturally included. It will be appreciated that in the early months of the war the "Services" had first choice of any equipment in the country, and when large numbers of special instruments for many hospitals were required a marked scarcity was revealed. The task of arranging for manufacture of those instruments was heavy and has taken many months, and, indeed, some of the orders have not yet been completed.

Ear, nose, and throat surgeons are of an ingenious turn of mind, and it is rare to find two who use the same instruments; so that disappointments are bound to be found in a standard set.—I am, etc.,

London, W.1, Dec. 3.

W. M. MOLLISON.

Endoscopic Resection of the Prostate

SIR.—Mr. W. E. M. Wardill (November 22, p. 749) has been kind enough to take notice of my description of the adjustable check method of performing endoscopic resection (October 25, p. 583). He offers three reasons for his disbelief in the efficiency of this method. I give his criticisms below, together with my replies.

1. "The necessity to make frequent references to the verumontanum as a guide to the external sphincter during the course of the operation." As I pointed out, I believe this procedure—the orientation of the entire operation around a small structure easily totally or partially obscured by slight haemorrhage—is responsible for the small but almost universal incidence of incontinence following resection. If the internal meatus-verumontanum distance is accurately measured as the initial step in the operation and therefore at a time when there is no haemorrhage, and if this distance is fixed on the resectoscope rack, it is only necessary during the operation to refer to the internal meatus, not the verumontanum. This method appears superior, as the internal meatus is a landmark far more easily identified and less easily obscured than the verumontanum; indeed, one can scarcely miss it. Further, as the cutting process starts at the internal meatus it has to be identified in either case. Mr. Wardill states that it is manifestly impossible to retain the resectoscope in a fixed position if an efficient operation is to be carried out. He has, I fear, misunderstood my remarks on this point. I said, "For obvious reasons the resectoscope sheath must be held stationary during the resection"—not during the operation. It is during the actual cutting of the prostatic strip that it is dangerous to move the resectoscope outwards the smallest degree. I have neither advocated nor attempted to practise retaining the resectoscope in a fixed position during the operation—a completely impossible achievement by any standards.

2. "Measurement by any gadget must be entirely misleading where a middle lobe exists and where the prostatic urethra varies in length from side to side." Before publishing this method I gave it a reasonable trial by removing 537 grammes from twenty-seven patients in forty-eight resections, including adenomatous, fibrous, and carcinomatous prostates. The majority of these patients had middle-lobe enlargements or variable prostatic urethras; and therefore belong to that type in which Mr. Wardill claims the use of a gadget must be entirely misleading. It is this very type that has formed the basis for its successful trial. The details of the procedure are difficult to describe but easy to perform. Suppose the right lateral lobe measures 2 cm. from the internal meatus to the verumontanum and the left lateral lobe (or middle lobe) has an intravesical projection of 1 cm. and therefore measures 3 cm. With the check set for a cutting distance of 2 cm.—that is, the shorter cutting distance—both lobes are resected. Prostatic tissue 1 cm. in length now remains from the left lateral lobe adjacent to the verumontanum. The resectoscope is held so that the loop lies at the level of the internal meatus of the right lateral lobe but facing the left lateral position (verified by rotating the instrument). The pinion is now rotated, withdrawing the loop until the remaining projecting 1 cm. of tissue comes into view (the loop will have travelled 1 cm.). The loop is engaged in this tissue, which is resected. It is impossible to resect more than this 1 cm. and therefore damage the external sphincter because the check is still set for its original cutting distance of 2 cm.

3. "It appears to me to be bad practice to cut if haemorrhage obscures the view." After the resection of some 15 grammes associated with the most careful coagulation of all

large and medium-sized spurting vessels, haemorrhage, although slight, is still sufficient to render difficult the identification of such a small structure as the verumontanum, while the identification of such an obvious landmark as the internal meatus remains easy. Further coagulation of every single oozing point in order to produce a completely clear medium is undesirable, as it leads to increased sepsis.

Occasionally a portion of the prostatic rim at the internal meatus is sharper and more prominent than the remainder (which I referred to as the prostatic ledge) and is therefore more easily identified. If this is removed last an obvious landmark is retained during the operation. I take it Mr. Wardill is referring to this point when he accuses me of the recommendation "to leave the most prominent part of the prostatic ledge at the internal meatus"—a recommendation that I never made. This, I think, is clear to anyone who reads the whole of my original sentence, of which the above few words are Mr. Wardill's incomplete and very misleading quotation.—I am, etc.,

Manchester, Nov. 27.

H. T. COX.

Industry and Lactation

SIR.—In the *Journal* of November 29 (p. 783) there is a summary of the B.M.A. Report on Medical Supervision of Industrial Workers, in which the statement is made that "withdrawal from employment four weeks before confinement is usually sufficient"—on that I make no present comment—but in many cases it will be desirable for her (presumably the mother) "to remain away from work for more than four weeks afterwards." Sir, what a commentary on our civilization—while we are fighting to save! "More than four weeks." Have we jettisoned the most elementary of the rights of Man, that his mother should feed him during his first 300 days? Few are the factories where the conditions are compatible with lactation.—I am, etc.,

Holmes Chapel, Nov. 30.

LIONEL JAS. PICTON.

Publicity for Preventive Medicine

SIR.—A friend of mine is doomed to die a slow, painful death of torture to both herself and her friends and relations; she is dying from carcinoma of the cervix, which in spite of operation and x-ray therapy progresses. This patient suffered for many years from post-menopausal vaginal bleeding, of which, being a busy wife and mother, she took no notice. Had this woman realized the implication of her condition and sought medical advice earlier this tragedy might have been averted. But she did not know, and thousands of her sisters to-day do not know, just as thousands are still treating acute appendicitis with purgatives.

It is high time the medical profession abandoned its conservative attitude to this matter and made use of the facilities offered by the Press, the cinema, and the radio to educate the general public in some of the principles of preventive medicine, and not to allow the field to be monopolized any longer by the patent medicine vendors. One good talk on the radio per week would probably save thousands of lives and prevent a proportionate amount of suffering in a year. Let us use modern weapons in the fight against disease.—I am, etc.,

W. B. JAMISON, M.B., B.Ch.,
Surgeon Lieutenant, R.N.V.R.

Nov. 25.

Food Advice for Working-class Mothers

SIR.—I hoped that an abler critic than myself would have written to comment on Mr. W. C. W. Nixon's letter (November 1, p. 633).

"Any practitioner in any industrial district knows the profligate waste of good food of which the majority of working-class mothers are guilty. This gross waste is largely the result of ignorance on the part of the women, who have little or no idea of how to choose wisely or cook properly foods of the highest nutritive value. I suggest that every hospital and every maternity and child welfare clinic should have a food advice bureau with a demonstrator of cooking, similar to the one at the Soho Hospital for Women. In this way many thousands of women would learn how to avoid throwing vitamins down the sink, and make their own contribution to one of the greatest measures in preventive medicine—proper nutrition.—I am, etc.,

Bristol, Nov. 23.

N. A. MARTIN.

Control of Diphtheria in Schools

SIR.—It would be a pity if the excellent work reported by Prof. G. S. Wilson and his team of laboratory workers (*Journal*, November 29, p. 759) should give the impression among practitioners that there is a single panacea for the control of diphtheria among school children. The procedure likely to be both effective and practicable depends on such variables as the nature of the school (day or residential), its site (town or country), the stage of the outbreak (early or late), the age distribution of the children at risk, and the hospital and laboratory facilities available. To give two contrasting examples: in a residential school for older town-bred children where the outbreak has been smouldering for some weeks the incidence of carriers is likely to be high and the proportion of susceptible children low. In such a case the procedure of choice is Schick-testing followed by combined passive-active immunization of the positive reactors, without recourse to routine swabbing or isolation of carriers. On the other hand, at the onset of an epidemic in a country day-school detection and early segregation of the carriers would be most useful; but how many laboratories in the country could cope suddenly with the bacteriological examination on tellurite blood-agar plates of nose and throat swabs from 200 to 300 children? Between these extreme examples there are many gradations of circumstances, and in most instances we feel that Schick-testing is "necessary and desirable." If the small "passive" dose of antitoxin is given four to six hours after Schick-testing it will not affect the skin-response, and the restriction of active immunization to straight positive reactors lessens the risk of untoward inoculation reactions which occur most frequently among pseudo-reactors, whether Schick-positive or -negative.

The routine policy of detection and segregation of carriers raises laboratory and hospital problems, and even if hospital accommodation were available there is in England and Wales no legal power to remove carriers as such to an isolation hospital. Besides, some of them are only transient carriers whom it would be unfair to admit to a diphtheria ward. It seems to us that if the positive reactors, especially those of school and pre-school age, are given passive-active immunization and kept under medical supervision for a month, there is little point in seeking to detect and isolate carriers, whose presence in the community may help to maintain an adequate general level of immunity.

Incidentally, the noteworthy finding reported by these workers that the diphtheria bacillus was confined to the nose in more than half the carriers emphasizes what is often forgotten outside hospital practice—the prevalence of the nasal carrier and the need, where circumstances demand swabbing, for examining both nose and throat.—We are, etc.,

WILLIAM GUNN.
ROBERT CRICKSHANK.

London, N.W.3, Dec. 6.

Obituary

T. HENRY WILSON, F.R.C.P.I.

Late King's Professor of Midwifery, Trinity College, Dublin

We regret to announce the death on November 20 in Dublin of Prof. T. Henry Wilson, formerly one of the leading obstetricians and gynaecologists of that city, who practised for many years in Merrion Square, and had been President of the Royal College of Physicians of Ireland.

Thomas Henry Wilson was born in Dublin on January 1, 1865, the elder son of Captain John Wilson of the XIV Regiment. His schooldays were passed at Trinity College, Stratford-on-Avon, and at Foyle College, Londonderry; he then entered Trinity College, Dublin, as a student of arts and graduated M.A., but did not take the medical degrees of the university. He obtained the licences of the Irish Royal Colleges in 1886 and the L.M. of the Rotunda Hospital, became M.R.C.P.I. in 1897, and F.R.C.P.I. a year later. He spent some time after qualification in postgraduate study at Leipzig.

After serving as senior master of the Rotunda Hospital Henry Wilson was appointed gynaecologist to the Richmond Hospital and to Sir Patrick Dun's Hospital, Dublin, and some years later was elected to the King's Professorship in Midwifery at Trinity College. He was for a long time examiner in gynaecology and midwifery for the Royal College of Physicians of Ireland and also external examiner in midwifery for the University of Durham and for Queen's University, Belfast. The Royal Irish Academy elected him into its membership, and for many years he took an active part in the proceedings of the Obstetrical Section of the Royal Academy of Medicine in Ireland, of which he had been honorary secretary. He held office as President of the Royal College of Physicians of Ireland in 1926-7, and had been vice-president of the Section of Gynaecology and Obstetrics at the Annual Meeting of the British Medical Association in London in 1910. He contributed several papers on gynaecological subjects to the *Transactions of the Royal Academy of Medicine in Ireland*, and on complications of labour to the *British Medical Journal*.

Prof. Wilson married in 1922 Gladys Mary, elder daughter of the late Colonel W. Lyster-Smythe of Barbavilla, Co. Westmeath. He retired from his chair in Dublin University on account of failing health.

Dr. JAMES DAVIDSON MACKAY has died at Aberdeen as the result of an injury received last May while carrying out his duties as A.R.P. medical officer in the North of England. He graduated M.B., Ch.B. of the University of Aberdeen in 1908, and after serving as house-surgeon at the Aberdeen Royal Infirmary entered the part-time public health medical service, working first as assistant in the Aberdeen Health Department, then as deputy M.O.H. to the Kincardine County Council. Later he was appointed M.O.H. for the Borough and Rural District of Bridport, the Borough of Lyme Regis, and the Rural District of Beaminstor. He joined the British Medical Association in 1910 and took the D.P.H. in 1932.

Dr. ALGERNON EDWARD LUXE WEAR, for over thirty years chief medical officer to the Leeds Education Committee, died on November 30 at his home in Harrogate. He was born at Newcastle-upon-Tyne in June, 1866, and was educated at the Newcastle Royal Grammar School, at Durham University, and at University College, London, graduating M.B., B.S. in 1891, M.D. three years later, and taking the D.P.H. in 1912. He held resident posts in Leeds and was appointed school medical officer for the city in 1910. Dr. Wear was an old volunteer, and on the formation of the Territorial Force in 1908 became lieutenant-colonel, 1st West Riding R.A.M.C. He went to France on the outbreak of the last war as commanding officer of No. 7 Casualty Clearing Station, was mentioned in dispatches, awarded the C.M.G. in 1915, and promoted to the rank of Colonel A.M.S. He had been a member of the British Medical Association for thirty years, and was a past president of the Yorkshire Branch of the Society of Medical Officers of Health.

We regret to announce the death on December 1 of Mr. FREDERICK NESFIELD COOKSON, F.R.C.S., at the Staffordshire General Infirmary, which he had served long and faithfully as surgeon and afterwards as consulting surgeon. He was born in 1871 and studied medicine at the Middlesex Hospital, where he won the Freer-Lucas Scholarship and acted as house-surgeon after graduating M.B. of the University of London in 1894. He held the posts of clinical assistant at the Chelsea Hospital for Women and house-surgeon at the Bristol General Hospital, and proceeded to the M.D. degree in 1898, taking the Fellowship of the Royal College of Surgeons in 1899. Mr. Cookson was a member of the British Medical Association throughout his career at Stafford, and his local colleagues nominated him to serve as representative of the Division on three occasions—in 1906 in London before the Annual Meeting held that year at Toronto, in 1908 at Sheffield, and in 1909 at Belfast. He retired from active work a year or two ago.

One of the many directions in which South African money gifts to this country are being used is to provide a weekly meeting for women and children undergoing hospital treatment for air-raid burns which have caused bad disfigurement.

The Services

HONORARY SURGEON TO THE KING

Major-General R. E. Barnsley, M.C., late R.A.M.C., has been appointed Honorary Surgeon to the King, in succession to Major-General W. B. Purdon, D.S.O., O.B.E., M.C., late R.A.M.C., who has retired.

NAVAL AWARD AND MENTION IN DISPATCHES

The D.S.C. has been awarded to *Temporary Surgeon Lieut. Benjamin Crawshaw, R.N.V.R.*, for bravery and devotion to duty when H.M.S. *Grimsby* was lost.

Surgeon Lieut. Charles John Roberts, R.N., has been mentioned in dispatches for bravery and devotion to duty when H.M.S. *Auckland* was lost.

EFFICIENCY DECORATION, TERRITORIAL ARMY

The Efficiency Decoration of the Territorial Army has been conferred on Lieut.-Colonel Ranfurly Percival Stanley Kelman and Major Alfred Badenoch, R.A.M.C.(T.A.).

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

Wounded

War Substantive Captain William Robert Gemmell.

Universities and Colleges

UNIVERSITY OF WALES

WELSH NATIONAL SCHOOL OF MEDICINE

The " " have satisfied the examiners at the exam

M.B., B.Ch.—*Obstetrics and Gynaecology*: H. J. Houghton, Dorothy M. Hyde, Tessie Phillips, Annie M. Rees, Dilys M. Rees, Dorothy Roberts, D. G. H. Tutton, A. K. Toufeeg, S. E. Williams. *Surgery*: Beryl Bevan, W. M. Jones, Monica Parry-Morton. *Pathology and Bacteriology*: E. R. Edmunds, Phoebe J. M. Griffiths, T. Jones, H. D. Walters, A. A. Yauniskis.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—J. H. Ebbetts, M. C. Hannon, C. H. Kitchen.

MEDICINE, PATHOLOGY, AND FORENSIC MEDICINE.—C. Farès, R. Gunewardena, J. T. Hemingway, C. H. Kitchen, F. G. Leekam, S. A. MacDonald.

MIDWIFERY.—S. E. Gordon, R. J. C. Hutchinson, H. G. King, S. A. MacDonald, R. Mather, N. Rao, C. J. O. Taylor.

The diploma of the Society has been granted to M. C. Hannon and F. G. Leekam.

FACULTY OF RADIOLOGISTS

The following candidates have satisfied the Fellowship Board at the examination for the Fellowship of the Faculty: *Radio-diagnosis*.—Eric Samuel, M.D., F.R.C.S., D.M.R.E. *Radio-therapy*.—Alice Margaret Ross, M.B., Ch.B., F.R.C.S.Ed., D.M.R.E.

Medical Notes in Parliament

Conscription of Women

In the House of Commons on December 2 Mr. CHURCHILL moved a resolution stating that, in the opinion of the House, for the purpose of securing the maximum national effort in the conduct of the war and in production, the obligation for National Service should be extended to include the resources of woman-power and man-power still available, and that the necessary legislation should be brought in forthwith.

Explaining the new proposals, the Prime Minister said that there would be three important changes in the case of males. Hitherto reservation from military service had been by occupational blocks. It was now proposed to change over gradually from this system to that of individual deferment. The sole test would be the importance to the war effort of the work on

which the man was engaged. It was proposed to raise the age of reservation by one-year steps at monthly intervals, beginning on January 1, 1942. The age for compulsory military service would be raised from 41 to 51. Men called up over 41 would not be posted for the more active duties with the Forces. It was not intended to call on anybody to do tasks for which he was physically unfitted. It was proposed to lower the age of military service to 18½, and to register boys and girls between the ages of 16 and 18.

It was not proposed at present to extend compulsion to join the Services to any married woman, though they could, of course, volunteer. The existing power to direct married women into industry would continue to be used with discretion. It was proposed to take powers to require women to serve in the uniformed auxiliary Forces of the Crown or Civil Defence. All those affected would have exactly the same rights and safeguards as men subject to compulsory service. The new power would be applied in the first instance, and probably for some time to come, only to unmarried women between 20 and 30. This special movement of young women must be directed to the A.T.S. It was not proposed, when once they had joined the A.T.S., to compel them to serve in the lethal or combatant branches. Women would have the right to volunteer, but no woman in the A.T.S. would be compelled to go to the batteries.

In the great field of married women and women doing necessary household work, comprising about 11,000,000 persons, the Government saw their largest reserves for industry and home defence in the future. The part-time employment of women in industry had already been developed, but on nothing like the scale which must be reached in the months before us. To this matter employers would be wise to give their immediate attention, to see how they could adapt their businesses. There was an immense variety of arrangements to enable women to divide up domestic tasks and be free to work close at hand in the factory or the field. In some cases women would arrange to "Box and Cox," in others a group of five or more might arrange for each to cook a day in turn, or, again, the development of crèches and public nurseries or combined nurseries might free or partially free mothers of families from domestic duties. Wherever practicable work would be brought as near to the homes as possible.

Mrs. TATE said that there was a deplorable degree of absenteeism in the factories, and it was greater among women than men. One of the main reasons for the absenteeism of women was the inadequate number of nursery schools and day nurseries in which women could leave their children while they worked in the factories.

On December 4, after three days' debate, the House of Commons carried by 326 to 10 a motion declaring that the obligation for National Service should be extended to include the resources of woman-power and man-power still available. Replying to the debate Mr. BEVIN said it had been arranged that women doctors would serve on medical boards to take care of the women called up. The proposed registration of boys and girls at 16 was the first beginning in dealing with the adolescent in an organized manner. After the division Mr. Bevin introduced the National Service Bill, and it was read a first time.

Alleged Incorrect Medical Certification

In a reply on December 4 to Captain C. S. Taylor, Mr. BEVIN said that last year the police investigated a number of cases in which members of the medical profession were alleged to have provided incorrect medical certificates for men of military age, stating that they were unfit for military service. The evidence was not sufficient for a prosecution. Further cases were under investigation. He could not say whether particulars of these cases had been reported to the General Medical Council. He assured Sir Henry Morris-Jones that, in the interests of the medical profession, he would adopt ruthless measures in the case of anyone found guilty. Mr. Bevin added: "I have to get evidence before I can bring a prosecution. Doctors are very fortunate; they can bury their mistakes."

Captain TAYLOR gave notice that he intended to raise this matter on a subsequent day on the motion for the adjournment of the House.

No. 47

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 22.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	114	5	32	1	2	139	10	45	1	3
Deaths	11	1	—	—	—	1	1	2	—	—
Diphtheria	1,032	35	324	56	43	1,366	50	495	28	27
Deaths	27	—	7	2	1	42	3	12	1	—
Dysentery	209	7	66	—	—	91	1	30	7	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	2	1	1	—	—	4	—	1	—	—
Deaths	—	—	—	—	—	—	7	—	—	—
Enteric (typhoid and paratyphoid) fever	—	—	—	—	—	26	—	10	2	—
Deaths	—	—	—	—	—	2	—	1	—	—
Erysipelas	—	—	55	5	2	—	34	64	10	14
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	35	2	7	17	4	35	3	13	7	1
Deaths	—	—	—	—	—	—	—	—	—	—
Measles	639	47	32	49	4	13,561	302	536	—	16
Deaths	—	2	—	1	—	25	3	2	1	—
Ophthalmia neonatorum	59	2	23	—	—	67	2	19	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	18	—	6	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† Deaths (from influenza)	1,100	45	15	1	2	713	46	16	7	6
Deaths	25	5	5	2	1	25	2	1	—	1
Pneumonia, primary	—	—	205	14	—	—	189	14	—	—
Deaths	—	34	11	4	—	—	39	12	—	5
Poli-encephalitis, acute	—	—	—	—	—	2	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	13	1	2	4	—	33	1	4	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	—	13	—	—	—	—	5	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	142	11	13	1	—	131	3	20	—	2
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,417	46	256	59	40	1,750	89	237	40	54
Deaths	3	—	—	1	—	5	—	1	—	2
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	10	1	3	6	3	—	—	—	—	—
Deaths	1	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	1,995	210	53	39	5	2,324	19	220	—	16
Deaths	9	2	4	1	—	13	—	—	—	—
Deaths (0-1 year)	358	22	74	44	19	325	21	69	42	13
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths)	4,461	624	630	193	121	5,310	1,075	684	213	140
Annual death rate (per 1,000 persons living)	—	—	13.7	13.1	5	—	—	13.8	14.2	12.3
Live births	4,773	392	809	249	221	4,709	353	720	307	239
Annual rate per 1,000 persons living	—	—	16.5	16.5	5	—	—	14.6	20.5	20.9
Stillbirths	192	15	34	—	—	176	9	28	—	—
Rate per 1,000 total births (including stillborn)	—	—	40	—	—	—	—	37	—	—

* Notification in certain administrative areas only.

† Includes primary form for England and Wales, London (administrative

area) and B for Northern Ireland.

— other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

The chief features of the returns for England and Wales for the week were the increased incidence of pneumonia, 103 cases, and scarlet fever, 65 cases, and the decline (71) in the notifications of whooping-cough. The rise in the pneumonia figures was contributed by the West Midlands, North Midlands, and North-Western Counties. The weekly number of cases from this disease has been doubled since the week ending November 1. The rise in the incidence of scarlet fever was confined to Wales and the South-Western and North-Western Counties: the notifications reached the largest weekly total recorded this year. Although the notifications of whooping-cough declined for the country as a whole, two counties showed substantial rises: Lancashire had an excess of 40 cases compared with the preceding week, due to the experience of the county boroughs; London had an increase of 33 cases, the largest returns for the metropolitan boroughs being those of Islington 23, Lambeth 20, and Wandsworth 25.

In Scotland the number of cases of diphtheria reported, which was 324 and an increase of 62 on the preceding week, reached a new high level. The increase was due mainly to the western area, where 253 cases were notified against 193 in the previous week.

Dysentery

Although the notifications of dysentery in England and Wales exceeded those of the preceding week by only 5, the total was the largest recorded for three and a half years, over one-third being contributed by two counties—Surrey 42 and Lancashire 34. The largest of the new outbreaks were in Bedfordshire, Biggleswade R.D. 25; Hertfordshire, Berkhamsted U.D. 14 and St. Albans R.D. 4; Shropshire, Ellesmere R.D. 20.

In Scotland there was an increase of 21 cases. Glasgow, where notifications rose from 4 to 21, was the only area in which they differed appreciably from the preceding week.

Paratyphoid and Typhoid Fevers

For the twelfth consecutive week a drop in the number of notifications has been recorded in England and Wales, and the incidence now tends to the usual endemic level. A relatively large number of notifications, arising from local outbreaks of paratyphoid, has been the feature of the returns during the summer and early autumn. During the six months beginning May 18 the number of cases notified was 4,066, as compared with 1,039 and 727 for the corresponding periods of 1939 and 1938 (when paratyphoid and typhoid were still notified together under "enteric fever"). The various outbreaks were due to infected food, and the largest of these local epidemics of paratyphoid were those in the districts of Liverpool and Bristol. The former, which originated in a multiple bakery, spread through the surrounding districts, and 883 cases were notified between June 7 and September 13, 530 of them in Liverpool. In Bristol 195 cases were notified during the four weeks from August 17 to September 13. The outbreaks have been generally of a mild type, and in the 126 large towns, for which the number of deaths is available, the ratio of deaths to cases during the present year was 1 to 34, compared with the rate of 1 to 22 in 1940.

Quarterly Returns for Eire

The returns of the Registrar-General for the third quarter of 1941 have been issued. The birth rate was 20.1 per 1,000, 0.7 above the rate for the third quarter of 1940. Infant mortality was 64 per 1,000 births, as compared with 50 for the corresponding period of 1940. A death rate from puerperal causes of 2.7 per 1,000 births was recorded, 0.2 below the rate for the September quarter of last year. The general death rate was 11.6 per 1,000, being 0.1 in excess of the third quarter of the preceding year. Of the 317 deaths from diarrhoea and enteritis under the age of 2 years, 223 were recorded in the city of Dublin.

Returns for the Week Ending November 29

The number of notifications during the week in England and Wales included scarlet fever 1,415, whooping-cough 1,959, diphtheria 1,047, measles 850, pneumonia 1,101, cerebrospinal fever 140, poliomyelitis 15, dysentery 197, paratyphoid 16, and typhoid 7. Thirty-seven deaths were due to influenza.

Medical News

Colonel H. Letheby Tidy will deliver a lecture on "Non-tuberculous Infections of the Chest" at the Weston Hotel, Bath, on Thursday, December 18, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

The next annual general meeting of the British Orthopaedic Association will take place in Oxford on January 2 and 3, 1942. The scientific sessions will be held in the lecture theatre of the Department of Human Anatomy at 9.30 a.m. on both days. The programme includes an address by the president, Prof. T. P. McMurray, on "Conservatism in Orthopaedic Surgery," and a paper by Prof. Philip Wilson (New York) on "Arthroplasty."

The first training course for industrial accident prevention organizers ever held in this country, arranged by the Royal Society for the Prevention of Accidents on behalf of the Factory Department of the Ministry of Labour and National Service, was such an outstanding success that a second course will be held at Balliol College, Oxford, from January 2 to 13. Programme and syllabus may be had from "Rospa," 52, Grosvenor Gardens, London, S.W.1, or 426, Strand, Cheltenham, Glos.

Scotland is brought into line with England and Wales by an Order which the Secretary of State has issued limiting the proportion of liquid paraffin in emulsions. On and after December 15 it will be illegal for an emulsion to be manufactured containing more than 25% volume in volume of liquid paraffin. The new Order—Paraffin Emulsion (Reduction of Liquid Paraffin) (Scotland) Order, 1941, issued under Regulation 55 of the Defence (General) Regulations, 1939—deals with manufacture, but still leaves a doctor free to prescribe for the requirements of individual cases.

The first specimen of radium in Spain has been found in Cordoba and has been given to the Spanish Cancer Institute.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS of their articles should communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

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TELEPHONE NO.—B.M.A. and B.M.J.: EUSTON 2111.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

X-ray Therapy in Peptic Ulcer

Dr. CHARLES HORWITZ (London, N.1) writes: I have been wondering if it would not be possible for our x-ray specialists to work out some formula for the treatment of peptic ulcer by means of carefully graduated doses of x rays. The healing and curative properties of carefully controlled and graduated doses of x rays in selected cases in other conditions are now well established, but I do not recall having read or heard of any experiments in this connexion. The present medical treatment of peptic ulcer is long and tedious and unsatisfactory in many cases, and entails an exacting regimen for the patient. It might well prove that a combined treatment of rest, diet, alkalis, and a course of graduated doses of x rays might materially shorten the time required to bring about the healing of these ulcers of the stomach.

Stabbing Heel Pains

Dr. J. BUCHANAN (Killyclogher, Omagh) writes: In answer to W. R. S. (November 15, p. 716) it seems possible that the pain may be caused by senile arteriosclerosis in the leg and foot. The details given are too few for a definite diagnosis. My reasons for

forming this opinion are: (1) It comes on at "night." (2) It seems to be a "rest" pain, coming on when the patient is still and quiet. (3) It comes when the patient is in the horizontal position, and not when the leg is dependent. (4) It seems to come on in the heel (or sole) without any obvious "cause." The presence or absence of obstructed arteries, paraesthesia, or claudication, etc., should be considered. Prof. Learmonth of Edinburgh (in the *Practitioner*, March, 1939, p. 247) says Dr. Buerger's exercises are of definite value: (a) leg up, 60 degrees, (b) leg down, (c) leg horizontal; change every two or three minutes; one hour thrice daily.

Income Tax

Repairing Lease

"EPSILON" inquires whether, if he hires a house on a full repairing lease for ten years, he can have a deduction for so much of his expenditure on repairs as is not set against his professional earnings.

* * The relief for maintenance of property is given to the owner, and "Epsilon" can therefore claim the residue only to the extent to which he has to pay tax as the owner of some beneficial interest in the property. If, for instance, the rent is, say, £100, and the net assessment under Schedule A is, say, £120, he can claim against the £20 (£120-£100) which represents amount of his interest in the yearly income from the property.

Two Cars Maintained—Obsolescence

J. F. has kept two cars for his work for about twenty years and has always been allowed obsolescence on both. This year the local inspector of taxes takes the view that owing to the decrease of income he can only allow it on one car. J. F. proposes to appeal.

* * We cannot see the justification for the inspector's attitude. Rule 6 relating to Cases I and II, Schedule D—which is the relevant provision—refers to "machinery or plant used for the purposes of the trade" [or profession], and the inspector has no right to object on the ground that more plant and machinery is in fact used than he or some other persons may think is economical or necessary.

Removal to Another Practice

T. M. sold his practice in the North of England and bought a practice in the South. Can he deduct the cost of removal?

* * In our opinion—No. In a case decided in 1905 (*Granite Supply Association v. Kilton*) it was held that the expense of removing a business from one place to another was inadmissible; it seems to follow, *a fortiori*, that an expense incurred in relinquishing one business (or practice) and removing to another would also be inadmissible.

Construction of Air-raid Shelter

J. D. has had an air-raid shelter constructed at his residence so that he "can be available to patients in cases of emergency." The inspector of taxes has refused to allow a deduction for a proportion of the cost.

* * We understand that some allowance is given where the protection takes the form of strengthening but not altering the structure—for example, by strutting with steel or timber, bricking-up windows, etc.—but is refused where the protection takes the form of some additional structure. The ground of distinction is that, whatever be the position as regards expenditure of the former kind, the latter is clearly capital outlay. There seems to be adequate legal ground for that view.

LETTERS, NOTES, ETC.

Scabies

Dr. W. J. YOUNG (Harston, Cambridge) writes: Much is written in the *Journal* about the use of sulphur in this trouble. I should like to point out that whereas one and all advocate the use of sublimed (flowers of) sulphur, the precipitated sulphur is much more active. I notice, too, in the recent correspondence no mention has been made of Vlemingck's solution, a solution of sulphides of calcium, which was almost universally used fifty years ago.

Confusion of Names

Dr. A. TANDY CANNON writes: Certain newspapers published reports relating to the recent appearance of Dr. Alexander Cannon before the General Medical Council, and due to the fact that his registered address is shown as 38, Harley Street, proceeded to describe him as "a Harley Street psychiatrist." Apparently, however, this is not his present address, and it would seem that I am the only psychiatrist of that name now practising in this area. In view of the above circumstances certain persons have been led to believe that I am the Dr. Cannon referred to, and I would therefore be grateful if you would publish this letter, as of course I have no connexion with the Dr. Cannon in question and I am in no wise related to him.

DUODENAL INTUBATION

SIGNIFICANCE OF THE CELLULAR CONTENTS OF BILE IN THE DIAGNOSIS OF DISEASES OF THE BILIARY TRACT

BY

A. FIDLER, M.D.

JAMES INNES, M.B., Ch.B., M.R.C.P.Ed.

AND

L. S. P. DAVIDSON, B.A., M.D., F.R.C.P., F.R.C.P.Ed.

(From the Department of Medicine, Edinburgh University)

In cases of suspected disease of the biliary tract three methods of investigation are available. The first is a thorough clinical examination, the second the radiological investigation of the biliary tract, and the third the examination of the bile obtained by duodenal intubation after the use of magnesium sulphate or some other biliary stimulant. The bile is then submitted to cytological, bacteriological, and chemical examination, reliance being placed mainly on the former, since the most important diagnostic criterion is held to be the presence of cells and flocculi in the bile. It is with this particular aspect that this communication is mainly concerned.

The method of duodenal intubation was introduced into clinical medicine by Lyon in 1923. The underlying basis of the test was the observation by Meltzer in 1917 that the entrance of magnesium sulphate into the duodenum caused a relaxation of the sphincter of Oddi. Following the publication of Lyon's monograph the test was widely used throughout the world, though probably to a greater extent in America and on the Continent than in Great Britain. Although reference to the method is still found in many standard works dealing with diseases of the biliary tract, improvements in the technique of cholecystography have resulted in the test being less frequently carried out than formerly. Nevertheless in some clinics duodenal intubation is still retained as part of the full investigation for all types of disease of the biliary tract. In Great Britain, however, it is held to be of particular value for the diagnosis of simple catarrhal cholecystitis in which structural changes in the gall-bladder wall have not developed to such a degree as to be demonstrable by radiology. As recently as 1937 McNee, writing on catarrhal cholecystitis, states that it cannot be diagnosed by simple clinical methods or by cholecystography, and that "duodenal intubation is at present the only diagnostic method on which we can positively rely. It is too little used in Britain, but is a routine method in America and elsewhere."

During an investigation into the possible value of sulphonamide drugs as biliary antiseptics we noticed that many cells were present in the bile recovered when magnesium sulphate was used as a biliary stimulant, whereas cells were absent in the same patients when certain other stimulants were employed. This observation suggested that magnesium sulphate might have produced the cells by irritation of the mucous membrane of the duodenum and

that in consequence their presence did not necessarily indicate pre-existing inflammation in the biliary tract. To test this hypothesis we thought it necessary to carry out the following procedures:

1. Intubation of cases with no clinical evidence of biliary or gastro-intestinal disorder, using magnesium sulphate as the stimulant. The cases in this group would act as a control series, since for the purposes of this investigation these patients may be considered as normal persons. The finding of cells in the bile would suggest that the magnesium sulphate was acting as a local irritant.
2. Intubation of the same cases, using as stimulants substances which appeared unaltered in the duodenum in the course of normal digestion, such as peptone or olive oil. The absence of cells in the bile after the use of these physiological stimulants, under exactly similar circumstances and in the same cases, would suggest a local irritant action of the magnesium sulphate.
3. Intubation, prior to operation, of patients with disease of the biliary tract, and examination of the bile aspirated at operation from the gall-bladder and, where possible, from the common duct.
4. Observation of the effects of a similar solution of magnesium sulphate on the mucosa of different parts of the human gastro-intestinal tract exposed at operation, or in fistulae.

Methods

The tube was introduced into the stomach and the contents were evacuated. The patient was then made to lie on the right side with the pelvis elevated on pillows. Usually within one hour the first sample of bile, so-called Bile A, appeared and was collected. One of three stimulants was then injected through the tube. These were 30 c.cm. of 33% magnesium sulphate, 30 c.cm. of 10% peptone, and 30 c.cm. of olive oil warmed to body temperature before injection. Lyon (1923) recommended the introduction of 75 c.cm. of a 33% solution of magnesium sulphate, but since 30 c.cm. of a 33% solution has been found by ourselves and others to produce a good biliary reflex and to yield a free flow of dark bile (Bile B), we are satisfied that the smaller quantity is adequate. After injection, 20 c.cm. of air was blown through the tube to ensure that all the stimulant reached the duodenum, and then the tube was clipped for three minutes to prevent reflux. After this the bile was allowed to flow freely into test-tubes.

Where possible, intubation was performed in each patient on three occasions, but in some cases only one or two

examinations could be undertaken. Nearly all the patients were intubated at intervals of two days, a different stimulant being employed on each occasion, but in five cases magnesium sulphate was used immediately after the reaction following peptone had finished.

We considered as Bile B (so-called gall-bladder bile) the dark bile, which was collected until its colour returned to that seen before the stimulant was introduced. In the few cases in which this dark bile did not appear, the bile collected within forty-five to sixty minutes after injection of the stimulant was called Bile B.

Estimations of the bilirubin and protein content of the various samples of bile were made, but as the results do not affect the subject of the present report they are not given here.

Where flocculi suspended in the bile were visible to the naked eye they were removed by pipette for examination. Where flocculi were absent the bile was centrifuged and the deposit examined microscopically. Whereas the cells in the bile can be easily seen in the deposit of fresh specimens, considerable difficulty was experienced in staining them. We note that Lyon and most other workers report only on such unstained material. Attention is drawn to the fact that digestion of the cellular elements in bile takes place rapidly on standing, hence the need for early examination of the deposit.

Through the courtesy of Prof. J. R. Learmonth the opportunity was taken of observing the direct action of magnesium sulphate on the mucosa of the human stomach, duodenum, jejunum, and ileum exposed during the course of various surgical procedures. A small glass cylinder containing the test solution of magnesium sulphate was placed on the mucosa, and samples were removed at intervals of three, five, eight, and ten minutes. Controls with saline or peptone were first carried out.

Material

Duodenal intubation was performed on 33 subjects. Of these, 21 were chosen as control cases because they suffered from no disease of the gastro-duodenal or biliary tract, while 12 were proved cases of chronic cholecystitis with cholelithiasis. Of this latter group 8 were submitted to cholecystectomy subsequent to duodenal intubation. In all, 68 intubations were performed. Details of the

TABLE I.—Duodenal Intubation of Subjects with no Symptoms or Signs of Biliary or Gastro-intestinal Disorder, showing Relative Numbers of Cells in Bile obtained after Various Biliary Stimulants

Case	Mag. Sulphate	Peptone	Olive Oil
1	+++	0	0
2	+++	No bile obtained	0
3	+++	+	0
4	No bile obtained	+	Not done
5	+	0	" "
6	+	0	" "
7	++	0	Not done
8	++	0	0
9	++	0	0
10	++	0	0
11	0	0	Not done
12	+	0	" "
13	+	0	" "
14	+	0	" "
15	Not done	R.B.C.s only	" "
16	+++	0	" "
17	+++	0	" "
18	+++	0	" "
19	+++	Not done	" "
20	+++	" "	" "
21	+++	" "	" "

0 = Clear bile. No flocculi seen. Centrifuged deposit shows no cells, or only a very few small flecks of mucus containing small groups of cells.
 + = Clear bile. No flocculi seen. Centrifuged deposit contains moderate number of cells occurring in groups with mucus.
 ++ = Flocculi seen in small numbers.
 +++ = Flocculi seen in large numbers.
 Flocculi vary in size from a pin-head to a match-head, and consist of a mass of round cells bound together by mucus. Each flocculus usually contains very large numbers of cells.

TABLE II.—Cases of Cholecystitis and Cholelithiasis, Showing Relative Numbers of Cells in Bile obtained after Various Biliary Stimulants by Duodenal Intubation and by Aspiration at Subsequent Operation

A.—Bile removed by Duodenal Intubation				B.—Bile aspirated at Operation	
Case	Mag. Sulph.	Peptone	Olive Oil	Gall-bladder	Common Duct
1	+++	0	0	No operation	
2	0	0	Not done		
3	Not done	0	" "		
4	++	0	" "		
5	+++	0	0	No bile (a)	0
6	Not done	+	0	0	0 (b)
7	++	0	Not done	No bile (c)	—
8	Not done	0	" "	0	—
9	+++	Not done	" "	0 (d)	—
10	++	" "	" "	(e)	+
11	+++	0	" "	0	+
12	+++	0	" "	0	0

(a) = Gall-bladder full of stones with no bile.

(b) = Bile contaminated with blood from operative trauma.

(c) = Gall-bladder full of stones, with no bile.

(d) = A few R.B.C.s only.

(e) = A few columnar epithelial cells not seen in previous medical drainage.

Symbols indicating number of cells as in Table I.

biliary stimulants employed and the results obtained are shown in Tables I and II. In the 8 cases in which operation was performed bile was aspirated from the gall-bladder, and in 4 of them it was possible to obtain bile from the common duct as well. The direct effect of a solution of magnesium sulphate on the human alimentary mucosa exposed at operation was observed in 5 patients, seven tests being carried out.

Results

1. *Cytology of the Bile obtained by Duodenal Intubation Before the Use of Biliary Stimulants.*—Cells were usually absent from the centrifuged deposit of Bile A of all patients, though in a few cases occasional flecks of mucus containing small groups of cells were seen.

2. *Cytology of the Bile obtained by Duodenal Intubation in Normal Cases After the Use of Biliary Stimulants.*—From Table I the following results may be summarized:

Of 19 cases in which bile was obtained after magnesium sulphate 12 showed numerous flocculi containing large numbers of cells, 5 showed no flocculi but the centrifuged deposit contained a moderate number of cells occurring in groups with mucus, and in the other 2 cases no flocculi and only very scanty cells were found on centrifuging.

Of 17 cases in which bile was obtained after peptone 14 showed no flocculi and only very scanty cells in the centrifuged deposit, while 2 cases had no flocculi but a moderate number of cells in the centrifuged deposit.

In all 8 cases in which bile was obtained after olive oil no flocculi were seen, and only very scanty cells were found in the centrifuged deposit.

3. *Cytology of the Bile obtained by Duodenal Intubation in Cases of Chronic Cholecystitis and Cholelithiasis After the Use of Biliary Stimulants.*—From Table II, A, the following results may be summarized:

(a) *Cases not submitted to Operation (Cases 1 to 4).*—In 2 cases out of 3 (Cases 1, 2, and 4) of cholecystitis and cholelithiasis in which magnesium sulphate was used as a biliary stimulant numerous flocculi containing many cells were found. In all 4 cases (Cases 1 to 4) in which peptone was used, and in Case 1, in which olive oil was employed, no flocculi were seen and only very scanty cells were found in the centrifuged deposit.

(b) *Cases submitted to Operation (Cases 5 to 12).*—In the 6 cases (Cases 5, 7, 9, 10, 11, and 12) in which magnesium sulphate was used as a biliary stimulant before operation numerous flocculi containing a large number of cells were found. In only 1 case out of 6 of this group in which peptone was used were there a moderate number of cells in the centrifuged deposit.

In the 2 cases (Cases 5 and 6) in which olive oil was employed only very scanty cells were seen in the centrifuged deposit.

4. *Cytology of Bile aspirated at Operation from the Gall-bladder or Common Duct of Patients in Group 3 (b).*—From Table II, B, the following results may be summarized:

In 5 cases of cholecystitis and cholelithiasis (Cases 6, 8, 9, 11, and 12) confirmed at operation and by subsequent pathological examination of the gall-bladder no cells were found in the bile aspirated directly from the gall-bladder at operation. In Case 10 only a few columnar epithelial cells were present in the gall-bladder bile, such cells not having been recovered previously by medical duodenal drainage. The failure to obtain bile from the gall-bladder in two cases (Cases 5 and 7) at operation was attributable to the fact that it was completely filled with calculi.

Common-duct bile was obtained from 4 cases (Cases 5, 6, 10, and 12) of this same group. In two of these (Cases 5 and 12) no cells were found in the bile; in Case 6 there was contamination with blood but no excess of leucocytes or epithelial

MORPHOLOGY OF CELLS IN THE BILE REMOVED BY DUODENAL INTUBATION

In all cases an attempt was made to establish the nature of the cells observed in the bile. In the fresh preparations



FIG. 2.—Cells as in Fig. 1 stained with Leishman, simulating polymorph leucocytes. ($\times 400$.)

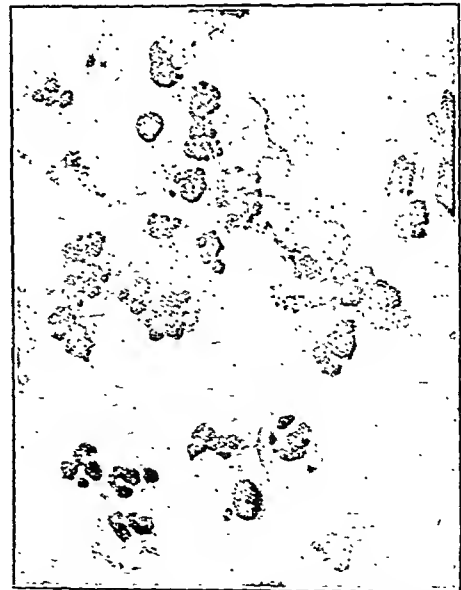


FIG. 3.—High-power photomicrograph of cells as in Fig. 2, showing that the cells which appear to be polymorph leucocytes are in reality epithelial cells with disintegrating nuclei. ($\times 1,000$.)

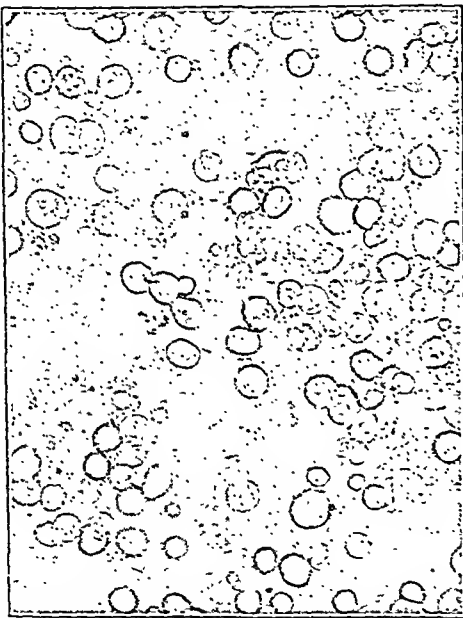


FIG. 1.—Photomicrograph of wet preparation of cells in flocculi in bile obtained by duodenal drainage after the use of 50 c.c.m. of 33% magnesium sulphate. ($\times 400$.)

cells; and in Case 10 only a few columnar epithelial cells were present, though these had not been found on previous medical biliary drainage.

It is of interest to note that in Cases 5, 9, 11, and 12 no cells were present in the bile aspirated from either the gall-bladder or the common duct, whereas large numbers of cells were found in the bile obtained by duodenal intubation after magnesium sulphate.

5. *Effect of Magnesium Sulphate on the Human Alimentary Mucosa exposed at Operation.*—In the 5 cases in which the investigation was made it was noted that a marked congestion of the mucous membrane with exudation of red blood cells occurred after a few minutes' exposure to magnesium sulphate, whereas normal saline and peptone solution had no such effect. In one experiment involving a portion of ileal mucosa of a patient, samples studied after three, five, and eight minutes contained an increasing number of cells similar in appearance to those recovered from the duodenum by intubation after magnesium sulphate.

the vast majority of cells appeared to be round cells (Fig. 1), and only a very small number were recognizable as columnar epithelial cells. The round cells were approxi-

mately the same size as leucocytes, and to begin with we considered them to be leucocytes. This first impression received support from examination of the deposit stained with methylene blue, neutral red, and Leishman, as many of the nuclei appeared to be lobulated. The stained preparations were, however, far from satisfactory, and accordingly we decided that it was necessary to remove the cells from the influence of bile, digestive juices, and hypertonic magnesium sulphate solution by washing the flocculi immediately in saline and then suspending them in serum. A considerable improvement in staining effects was thus obtained, which enables us to say with confidence that the vast majority of round cells seen in the wet preparations were in reality cuboidal epithelial cells whose cytoplasm had largely disappeared and whose nuclear chromatin was rapidly undergoing degenerative changes (Figs. 2 and 3). Examination under the oil-immersion lens clearly reveals the difference between the detached broken-up portions of nuclear chromatin and the lobulated nucleus of a leucocyte. Bile-stained cells were noted in about 40% of our cases. The occurrence of fatty acids and salts in the deposit of bile obtained after olive oil must be remembered, as they may be mistaken for cellular elements.

Summary of Results

1. Bile removed from normal persons by duodenal intubation before the administration of biliary stimulants contained a negligible number of cells.

2. Bile removed from normal persons after the administration of magnesium sulphate usually contained many cells; whereas bile removed from the same patients after the administration of peptone or olive oil contained a negligible number of cells.

3. Bile removed by duodenal intubation from cases of chronic cholecystitis and cholelithiasis, following the administration of magnesium sulphate, usually contained many cells, whereas after other biliary stimulants cells were absent or scanty; furthermore, bile aspirated from the gall-bladder and common bile duct of the same patients at subsequent operation contained a negligible number of cells.

4. The irritant effect of a concentrated solution of magnesium sulphate on the human alimentary mucosa exposed at operation was demonstrated.

It can be concluded from the above experiments that bile removed by duodenal intubation, following the administration through the tube of 30 c.cm. of a 33% solution of magnesium sulphate, may contain large numbers of cells produced by the local irritation of this concentrated solution on the duodenal mucous membrane.

Discussion

It is not the primary object of this communication to evaluate the Meltzer-Lyon test in the diagnosis of disease of the biliary tract. Its purpose is to draw attention to a finding not previously recorded so far as we are aware—namely, that magnesium sulphate can cause desquamation of duodenal epithelial cells in large numbers and that a real danger exists of mistaking such degenerating cells for pus cells, as will be clearly realized from a study of the photomicrographs depicted in Figs. 2 and 3. We do not deny that pus cells and columnar epithelial cells may appear in the bile obtained after the introduction of a biliary stimulant in cases of acute or subacute inflammatory conditions of the biliary tract. We do suggest, however, that a concentrated solution of magnesium sulphate is not a suitable stimulant for use in the Meltzer-Lyon diagnostic

test, because the interpretation of the cytological findings in the bile is complicated by the presence of cells produced locally in the duodenum. It would appear that 30 c.cm. of a 10% solution of peptone would be a satisfactory non-irritating biliary stimulant to employ.

The reasons for our belief that the duodenal mucosa is the source of the cells present in the bile obtained after the administration of magnesium sulphate are based on the experiments and cytological studies already described. In addition it should be noted that the appearance of the cells shown in Fig. 1 would seem to be identical with the cells shown in photographs 23 and 25 in Lyon's *Atlas of Biliary Drainage Microscopy* (1935), which are stated to be cuboidal duodenal cells obtained by intubation of a case of duodenitis. No mention is made by Lyon of the possibility that magnesium sulphate might itself give rise to a duodenitis with a consequent desquamation of epithelial cells.

Lyon states (1923, p. 319): "In all normal gall tracts all three of these different-coloured bile fractions (A, B, and C) should be perfectly clear and transparent and contain no microscopical cytology in the uncentrifuged specimen." He also writes that the first criterion as regards diseases of the biliary tract is "furnished by the gross observation of the amount of floccules which can be seen in uncentrifuged specimens. If these criteria are accepted, then the majority of our control cases were suffering from disease of the biliary tract.

Lyon also lays stress on the type of cells in the specimens of bile as indications of the site and degree of inflammation. Thus he holds that columnar epithelial cells alone are indicative of catarrh of the superficial layers of the mucosa of the biliary tract and are associated with leucocytes when the deeper layers are affected. Moreover, he maintains that the cells must be bile-stained before their origin from the biliary tract can be accepted, although he admits that if there is dysfunction of the sphincter of Oddi desquamated epithelial cells and pus cells from the stomach and duodenum may be bile-stained. If these criteria are accepted, then in the majority of our cases the flocculi observed in Bile B and Bile C (flowing after Bile B and lighter in colour), which contained large numbers of round cells unstained with bile, could not have come from the biliary tract.

The absence of flocculi and cells in the yellow Bile A obtained before the administration of magnesium sulphate and their presence in the dark Bile B (gall-bladder bile) after the administration of magnesium sulphate naturally suggest that the site of derivation of the cells must be the gall-bladder or the bile ducts. We believe that this assumption is not necessarily justified, because similar results would occur if the time required for the development of the irritant action of magnesium sulphate on the duodenal mucosa coincided with the time needed to cause a relaxation of the sphincter of Oddi. In our experience this is precisely what happens in most cases. In some instances, however, duodenal irritation develops rapidly, and in others slowly, after the injection of magnesium sulphate, as is illustrated by the following cases:

In two cases (Cases 7 and 17, Table I) a white opalescent fluid, strongly alkaline and showing no visible trace of bile pigments, was collected five minutes after the injection of magnesium sulphate and was followed by Bile B. In Case 17 the absence of bilirubin was confirmed by chemical examination. In both cases flocculi containing a very large number of cells were present in this white bile-free fluid. In another case (Case 12, Table II) a large number of flocculi containing many cells first appeared in Bile C, which flowed after Bile B. Thus the time of appearance of flocculi and cells in the bile after

the injection of magnesium sulphate would appear to vary, the above cases being the extremes in the present series.

A study of the literature available to us suggests that only two groups of workers have undertaken the necessary control observations—namely, examination of the bile aspirated at operation from the gall-bladder and common duct in patients who had previously been intubated, concentrated magnesium sulphate being the biliary stimulant employed. Knott and Bowell (1924) investigated five cases, and their reports do not show any constant parallelism between the findings in the bile removed at operation and that obtained by medical drainage. In parenthesis it should be noted that Venables and Knott (1924) introduced into the duodenum only 10 c.cm. of a 25% solution of magnesium sulphate instead of 75 c.cm. of a 33% solution as recommended by Lyon. It is not surprising, therefore, that they were unable to confirm Lyon's claim that three distinct types of bile could be recovered (Bile A, B, and C). The small amount of the stimulant used may also explain why the number of cells present in the specimens was often much less than was found by us. Mateer and Henderson (1926) could not find any leucocytes or epithelial cells in the bile aspirated direct from the gall-bladder at operation in 54 cases, though in 51% of the same group they found bile-stained cells in the bile recovered by duodenal drainage after the administration of magnesium sulphate before operation. They regarded these cells as evidence of inflammation of some part of the biliary tract other than the gall-bladder; but this assumption lacks proof, since they did not examine bile obtained from the common or hepatic ducts.

The work of the above authors strongly supports our contention regarding the local irritating effect of magnesium sulphate on the duodenal mucosa and that the cells do not come from the gall-bladder. It should be noted that the necessary comparison of the cytological effects of other biliary stimulants with that of magnesium sulphate in the same patients was not undertaken as an additional control. Our repeated failure to find cells in the bile removed by intubation after the administration of peptone and olive oil, in cases in which many cells were present in the bile obtained after magnesium sulphate, suggested at once a possible fallacy in this diagnostic method.

Summary and Conclusions

A study has been made of the cellular content of: (a) bile removed by duodenal intubation after the administration of magnesium sulphate, peptone, and olive oil in patients with and without disease of the biliary tract; (b) bile aspirated at operation from the gall-bladder and common duct in patients suffering from cholecystitis and cholelithiasis; (c) fluid removed from the mucosa of the human stomach, duodenum, jejunum, and ileum, exposed at operation, which had been submitted to the local effect of saline, peptone, and magnesium sulphate.

From the above experiments it is concluded that the cells present in the bile obtained by duodenal drainage after the administration of magnesium sulphate may be produced by local irritation of the duodenal mucosa, and hence do not necessarily indicate pre-existing inflammatory disease of the biliary tract. Attention is drawn to the fact that the degenerating oval or cuboidal duodenal epithelial cells may closely simulate pus cells.

We wish to express our thanks to our surgical colleagues in the Royal Infirmary for permission to investigate their cases, and in particular to Prof. J. R. Learmonth for his advice and help in the experiments connected with the action of magnesium sulphate on the exposed mucous membrane of the alimentary tract. One of us (J. I.) was in receipt of the McCosh Bursary and Crichton Scholarship in Medicine during the period of this investigation.

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[NOTE.—Since the completion of this paper for publication we asked some of our medical colleagues on the staff of the Edinburgh Royal Infirmary to select patients in their own wards who were not suffering from disease of the gastro-duodenal or biliary tracts, in order that we might demonstrate the irritant effects of magnesium sulphate as used in duodenal intubation. Our colleagues watched the technique being carried out and personally made a microscopical examination of the specimens of bile recovered. The results obtained were similar to the findings shown in Table I.]

OBSERVATIONS ON SOME NORMAL AND INJURIOUS EFFECTS OF COLD UPON THE SKIN AND UNDERLYING TISSUES

III. FROST-BITE

BY

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Frozen Skin

Skin can be frozen in the living subject very readily by bringing it into contact with sufficiently cold metal or by allowing a jet of very cold air to impinge upon it. These methods I used extensively to study the effects of freezing (Lewis and Love, 1926). Freezing of the skin in a current of cold air is recognized by an observer the instant it happens. The patch of skin affected seems at once to become pale, dull, opaque, and of a yellowish colour. The attentive subject recognizes freezing at once when it is due to metallic contact, the formation of ice crystals in the skin being accompanied by a very definite pricking sensation. In a jet of cold air freezing may happen without subjective sensation; or it may be signalled by a little short stinging pain that is felt abruptly in the part. All these observations of the laboratory conform with the experience of sufferers from frost-bite in the open air. Skin that is frozen without involvement of the subcutaneous tissue forms a hard plaque in the skin, with edges which are sharply defined and by which the plaque can be lifted. It feels like a coin embedded in the skin. When the frost extends deeply the frozen tissues are solid and immovable.

Freezing-point of Skin

Although very accurate determinations of the living skin's freezing-point have never been made, this point is known accurately enough for our purposes. It is certain that it lies below the freezing-point of water, and it is equally certain that it is not far from -1°C . The freezing-point of blood serum is -0.53°C ., from which that of skin is unlikely to be far removed. If metal bars at exactly known temperatures are applied to the human skin, freezing can be shown to occur on occasion at a surface temperature as high as -2°C . (Lewis and Love, 1926). Such an observation fixes a temperature between which and 0°C . the actual freezing-point of skin lies.

Supercooling

It is now to be said that skin when cooled very rarely freezes at its true freezing-point. It exhibits in very

remarkable degree the property called supercooling (Lewis and Love, 1926). If the skin is cooled by contact with cold metal it is unusual for it to freeze unless its surface temperature is reduced below $-5^{\circ}\text{C}.$, and it often happens that this temperature is lowered to as much as $-10^{\circ}\text{C}.$, and sometimes to -15° or even to -20° , without the occurrence of freezing. It is not merely a matter of surface temperature; the whole thickness of the skin may at times be reduced to $-10^{\circ}\text{C}.$ and remain unfrozen. Freezing will generally occur between -5° and $-10^{\circ}\text{C}.$ if such temperature is maintained; but the actual temperature required and the time for which cold metal must be applied vary greatly, not only from one skin to another, but from point to point of the same skin, and even in successive observations on one and the same small area. Freezing begins with difficulty, but once started it spreads rapidly throughout all the chilled tissue, progressing the more quickly the lower the point to which preliminary cooling has been carried. As in the case of a cooled vessel of water, the formation of the first ice crystals encourages the formation of more, and so water or skin that has already been supercooled quickly becomes solidified once freezing starts.

This power to supercool is normal; it is a very important protection against freezing and the injurious effect that would arise out of this physical change. It has been found that supercooling displays itself in greater degree in skin that remains unwashed. Washing the skin encourages, while rubbing the skin with spirit and anointing it with oil discourages, freezing. The capacity to supercool greatly would seem to be connected with relative dryness of the horny layers of the skin. It is well known that Arctic explorers leave their skins unwashed.

The level of temperature at which skin freezes does not seem to be influenced appreciably by the presence or absence of a blood flow to it; but, naturally, blood flow according to its degree will affect the rate at which the preliminary cooling of the skin occurs.

Natural Frost-bite

The conditions under which natural frost-bite occurs are known to us from the observations of those who have lived in very cold climates. When atmospheric temperature is below $0^{\circ}\text{C}.$ the air contains no moisture. Frost-bite occurs only when the air is dry and when the ground is snow-clad or frozen. It is frequent in people moving about out of doors when the temperature is as low as $-30^{\circ}\text{C}.$ ($-22^{\circ}\text{F}.$). The radiant heat of the sun protects against frost-bite. Wind favours its occurrence, for in a still atmosphere the skin tends to become enveloped in a layer of air which the skin itself has warmed; thus Brahdy (1935) speaks of frost-bite as frequent with a temperature of $-13^{\circ}\text{C}.$ ($8^{\circ}\text{F}.$) if there is wind. Natural frost-bite occurs chiefly in parts of the skin that are exposed and in those parts of such skin that cool most readily. When both are exposed the hands cool more readily than does the face; the fingers, the ears, and the nose cool fastest, and in the order stated. It is customary to give special protection to hands and ears; consequently frost-bite of the nose is relatively more frequent than it otherwise would be. Frost-bite of the feet is relatively unusual, for circulation in the feet is generally maintained active by walking; the feet will suffer if they are kept still in very cold air or in snow for long periods, for when still the feet cool as quickly as the hands. Tight coverings of legs or feet by interfering with circulation encourage cooling and increase the chance of frost-bite. Freezing of feet while immersed in sea-water can hardly occur; for the temperature of the water cannot fall below $-1.9^{\circ}\text{C}.$, its own freezing-point.

Effects of Freezing

These lesser effects have been described in full detail in my original article with Love (Lewis and Love, 1926). When the skin has been frozen its invariable response when thawed is a state of hyperaemia. The local redness of the skin, due to dilatation of all its small blood vessels, occurs after the lightest freezing. If the skin has been frozen harder—namely, at -10° to $-15^{\circ}\text{C}.$ for about twenty seconds—the local redness is shortly followed by itching and by swelling, and a full wheal develops precisely over the area frozen. This wheal is surrounded on all sides for some centimetres by a bright red flare, the result of reflex vasodilatation. The local reddening, the wheal, and the flare compose what I have called (Lewis, 1927) the "triple response." They are due to the release of a histamine-like substance or substances from the cells of the skin, the release resulting from the injury caused to the skin cells by the ice crystals formed in it; and they together constitute a simple acute inflammation, the typical immediate reaction to physical injury. The wheal gradually subsides within a period of a few hours, leaving behind it an area of local redness. This redness persists, and next day at latest the corresponding skin is a little swollen, is tender to friction, and gives pain when warmed. Sections of the human skin taken twenty-four hours after the injury display a little oedema of both epidermis and dermis, and a perivascular infiltration of the superficial layers of the dermis with lymphocytes, extravasated red blood cells, and some polymorphonuclear cells (personal observations). This infiltration may in some instances be intense enough within a few days to give to the affected skin a yellow colour. Within about a week the tenderness of the skin has subsided and the epidermis has proliferated and presents a crinkled pigmented surface, which soon peels. After peeling, the redness of the skin gradually fades, though pigmentation often persists for many weeks or even months.

Such are the simplest reactions to freezing in the human skin. If freezing has continued at $-15^{\circ}\text{C}.$ for thirty to sixty seconds, or at $-20^{\circ}\text{C}.$ for fifteen or thirty seconds, then the lesion that follows is more severe. Usually the wheal which at first forms gives place within an hour or two to blister, which, curiously, is predicted in the stage of thawing by the occurrence not of itching but of burning pain. Such blisters are associated with a more pronounced exudative inflammation than that described as following the wheal.

Still greater damage occurs when freezing is more severe and more prolonged, for the skin is frozen harder and the frost penetrates more deeply. Corresponding lesions are well illustrated by the effects of freezing the skin with CO_2 snow (the temperature of which is about $-57^{\circ}\text{C}.$) and by severe frost-bite in man (Hodara, 1896a, 1896b). The results of such freezing have also been extensively investigated in animals, especially in the rabbit's ear, by Cohnheim (1873) and others (Brahdy, 1935; Fuerst, 1893; Hodara, 1896a, 1896b; Kriege, 1889), observations that have enlightened us particularly as to the train of events leading up to loss of tissue. The end-result of severe freezing, where there is deep penetration of the tissues, is necrosis. The blood flow in the milder lesions is not interrupted, but there is general agreement that necrosis is brought about largely through injury to the blood vessels of the skin and subjacent tissues; it is the rule to find thrombi within them* (Kriege, 1889; Hodara, 1896a, 1896b). These are of various kinds—platelet, hyaline, and

* Recklinghausen (1883) is cited to the same effect, but it is not clear that the gangrene in this case followed directly on frost-bite. Rischpler (1900) believes that necrosis can occur without thrombosis.

fibrinous in both the smaller arterioles and the larger arteries and veins—and appear within a few hours of freezing; they have been found in human frost-bite not only in tissue in the process of undergoing necrosis but in tissue on the border of such necrosis, and in tissue where necrosis is threatened.

It is clear from past observation and experiment that freezing at such temperatures as -15° to -20° C. must be continued for a matter of minutes if necrosis of the frozen tissues is to follow. But it is not clear that damage to a given tissue progresses beyond a certain point when freezing in it is prolonged. It would seem probable that freezing brought about at -15° or -20° C. soon enters a stable condition so far as a given small group of cells is concerned, and that damage to the cells concerned is full for that temperature and does not increase steadily with time. It is known in general that lesions become severer with lengthening exposure. But the increased severity of damage to skin as freezing is prolonged is probably due, once a hard frost has been ensured, to extension of freezing to deeper layers of skin and to subjacent tissues, rather than to progressive damage of individual cells. There is, at all events, no evidence to show that a severely frozen limb in which freezing has after a time ceased to extend becomes subsequently damaged in proportion to the time which it remains frozen. Some progress there may be, but almost certainly the chief factors governing the degree of damage are the hardness of the frost and its extent: time, apart from its influence in increasing the freeze, is not known to be a material factor.

Secondary Injury.—There is some evidence that when the skin has been frozen the damage sustained may be added to in the stage of the reaction itself by the rapid outpouring of fluid between the tissue elements (Lewis and Love, 1926). If the venous return from a limb on which a small area of skin has been frozen is obstructed during the stage of thawing and for five minutes afterwards, subsequent whealing is much diminished and seemingly the return of the tissues to a normal state afterwards is expedited (Lewis and Love, 1926).

Treatment of Frost-bite

Our knowledge of frost-bite and the manner in which the skin reacts to it suggests certain measures in its treatment, which will be dealt with briefly.

When the patient is seen at a stage at which the tissues are frozen the first step will be to induce thawing. There are two reasons why this should not be done too rapidly. First, rapid thawing will be followed by intense swelling of the tissue, and this is probably in itself injurious. Secondly, the more rapid the warming the greater will be the pain, and following thawing it may be very severe. The long-established custom of rubbing the frozen part with snow will ensure slow thawing, and its reputed effectiveness probably depends on this fact. But friction is not to be recommended in itself: thawing will not occur unless friction is brisk, and such friction will tend to damage the skin and to increase the reaction. It would seem preferable, when it is practicable, to apply warmth of reasonable amount. It should be no more than suffices to induce thawing under strict control. Thus if the skin is unbroken, cold water, rising to no higher temperature than 10° or 15° C., may be applied safely and will answer the purpose, precaution being taken then and subsequently to prevent the return of a full circulation to the damaged tissues. In the case of a limb, its arteries may be compressed until thawing is complete, and the compression then be relaxed gradually to allow the blood to return to the limb little by little. The temperature of the part that has been frozen can in

this way be raised very slowly, as is desirable, and warmth mainly allowed to come to it through the returning blood. If in the process pain becomes severe it can be moderated by cooling the part once more as the circulation returns to it. The object should be to restore the blood flow and warmth gradually and thus restrain vascular and accompanying reactions.

When this has been effected the limb may be protected by wrapping it lightly with cotton-wool or lint, covering it with a cradle, and maintaining around it a reasonably cool temperature. Further treatment will be demanded by blisters and by necrosis with ulceration. From this standpoint it should be recognized that between the lesions following freezing and those following heat there is no fundamental distinction. All such lesions are the result of greater or lesser injury of cells of the skin and of deeper integuments, injury which brings partial or complete disintegration of the cells. The reactions that follow are not properly regarded as reactions to frost or to heat, but to tissue injury. The heating and the freezing are transient, and the reactions we see are the reactions to what heat and frost leave behind them. In both instances the reaction is a response to substances released largely from living cells and in part from killed cells. It is true that heat differs from frost in that it has the power to coagulate the tissues and in the end to consume them; but the important fact remains that the reactions, as we trace them through different grades of severity and compare equal grades, are fundamentally alike: local redness, wheal, flare, blister, cellular exudate, vascular thrombi, and necrosis appear in each, as do the appropriate processes which isolate and separate off dead tissue and lead to repair.* The presence of incinerated tissue in the case of injury by fire is the only notable difference and one that has no high importance; this difference does not exist in a comparison of freeze and scald.

It follows from what has been said that the rational treatment of the lesions of frost-bite and scald have much in common. The appropriate routine treatment of one or other state must of course be governed ultimately by one consideration only—namely, by its proved effectiveness. But in considering new means of treating, theoretical considerations can guide. A guide to the treatment of lesions following frost-bite which I would strongly recommend is that they should be dealt with in the same way as are similar lesions resulting from heat, in respect of the treatment of which we possess much recent experience.

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* For detailed evidence of this similarity a number of papers may be consulted (Cohnheim, 1873; Gans, 1925; Lewis, 1927; Lewis, Grant, and Marvin, 1927; Lewis and Love, 1926; Samuel, 1865; Uchinsky, 1893).

S. B. Lovelady, J. R. McDonald, and J. M. Waugh (*Amer. J. Obstet. Gynec.*, 1941, 42, 309) made a study of thirty-four benign growths of the vulva which had been removed at the Mayo Clinic from 1906 to 1939 inclusive. The commonest types were fibromas, lipomas, and haemangiomas. Two neurofibromas, two leiomyomas, a ganglioneuroma, and a lymphangioma were also encountered. A striking feature was the lack of symptoms produced by the tumour in the majority of cases.

AN EXPERIMENTAL STUDY OF THE WOUNDING MECHANISM OF HIGH-VELOCITY MISSILES

BY

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The fact that the amount of tissue destruction caused by small high-velocity bomb splinters may be out of all proportion to their size has been recognized for some time; and was the subject of correspondence in this *Journal* (1940, July 13 and 27). More obvious explanations of the disproportion between size of wound and size of missile—for example, that it is due to the irregular shape of the splinters and to their rotary movement (Wilson, 1940)—appear inadequate to explain the phenomenon, and it was therefore suggested (Zuckerman, 1940) that a more reasonable interpretation lies along the lines suggested by Cranz and Becker (1921) in their analysis of the effects of high-velocity missiles in soft media. If the physical explanations of Cranz and Becker are applicable to splinter wounds in flesh it would appear that the destructive effect of a small splinter is due to the motion imparted to the soft medium through which it passes, as a result of which the tissue is moved away violently from the track of the missile, an effect being produced similar to that of an internal explosion.

Observation also shows that splinters have little rotary effect in those media in which their effect has been studied. It has been found, too, that non-spinning projectiles fired from a smooth bore have an explosive effect in media such as mud (Cranz and Becker). It is thus improbable that the damage which occurs in the neighbourhood of the actual track of a splinter would be seriously altered by any peculiarities of shape or by any rotation. On the other hand, shape and rotation could undoubtedly have an effect on the track itself.

The experiments described in this paper have been designed to test this interpretation.

Method

The investigation was carried out on rabbits and on blocks of 20% and 5% gelatin. The former dilution was chosen as it corresponds to the dilution of protein in the body.

With the facilities available to us it proved impracticable to devise a splinter gun capable of firing irregular-shaped fragments of metal at high velocities in such a way that they could be accurately aimed. It was also impracticable to perform the experiments with model bombs. Accordingly a gun was devised (by Colonel P. Libessart of the Free French Forces) capable of firing, with a cordite charge, a 3/32-inch steel ball weighing 53 mg. at velocities varying between 500 and 5,000 f/s. The choice of this standard missile was to some extent arbitrary. In weight it corresponds to a very large proportion of the splinters which are shot off from any bomb or shell. It is possible, by means of relationships that have been worked out in other fields of ballistic study, to equate approximately some effects of the ball with those which would result from the penetration of any irregular-shaped splinter.

The velocity of each shot was measured by means of the Boys spark-photography method. The essential feature of this method is that the missile cuts a wire forming part of an electrical circuit, and thereby, through a relay, discharges a condenser across a spark gap. By using 10,000 volts enough light is obtained from an exposure of less than 1 microsecond to throw a shadow of the missile and target upon photographic paper. The impact and residual velocities of the missile are measured from the sound waves which are thrown off and which are photographed on the paper. By varying the interval between the impact of the missile on the target and the cutting of the wire, shadowgraphs of the target can be obtained at varying times after it is hit. Using identical targets for successive shots, it is thus possible to photograph the successive changes which take place in a target during the fraction of the second after it is struck. The present paper deals with such records.

Results

Blocks of gelatin 4 cm. by 4 cm. by 5 cm. were made by pouring a warm 20% solution of gelatin in water into moulds. Figs. 1 to 6 show silhouettes of the gelatin at varying times after the ball hit the front face of the block. Before each shot was fired control shadowgraphs were made, and these are outlined in each figure to give a measure of the distortion undergone by the gelatin block after its penetration by the ball. The magnification of the stages in each series of photographs varies; the dotted outline in each case, however, represents the same size of target. Unfortunately it was impossible to follow the cycle of changes through to the end because the blast of the gun, which follows behind the missile, forms a shadow that obliterates the gelatin block in the photograph. The blast actually helps to blow the gelatin block away. Each target was, however, recovered immediately after the shot was fired.

It will be seen that as soon as the ball enters the target a tail splash develops. This increases in size in the interval taken by the ball to traverse the block. As the ball emerges it pushes before it a head-cone which it ultimately leaves. This is the only distortion which occurs during the few microseconds taken by the ball to pass through the target. Immediately after complete perforation has been achieved, however, the block of gelatin undergoes considerable expansion, until it becomes some three to four times its original volume. In spite of this distortion the blocks return to their original size and shape. The only permanent visible effect of the shot is the small thread-like track made by the passage of the ball. This track is the same in appearance as that caused by pushing a needle through the block. Occasionally a few small bubbles of air and small radial fractures may be seen in the track. Experiments with similar blocks of 5% gelatin gave the same result.

A corresponding series of photographs were made of cylindrical 20% gelatin blocks shot diametrically. The changes demonstrated were the same as those shown by the rectangular blocks. In this series of observations shadowgraphs of the same target were made simultaneously in a plane at right angles to the usual plane of photography. This was done by reflecting, by means of a mirror, the light from the spark on to recording paper placed beneath the target. These additional shadowgraphs showed that the size of the target increases in all directions.

A third series of observations on identical cylindrical blocks of gelatin enclosed in a skin made of the inner tube of a bicycle tyre showed that the distortion for similar time-intervals after the first impact of the shot was considerably reduced, the reduction presumably being due to the resistance of the "skin" to the expansion of the gelatin.

Figs. 1 to 6 show shadowgraphs of rectangular gelatin blocks 4 cm. by 4 cm. by 5 cm. during and immediately after penetration by a 3/32-inch steel ball travelling at velocities between 700 and 1,000 m/s (2,296 and 3,280 f/s). In all the figures the dotted line shows the outline of a shadowgraph of the target immediately before shooting.

Fig. 7 shows the outline of the hind limb of an anaesthetized rabbit immediately before and a shadowgraph of

whole process occurring with explosive violence. In this way a central cavity, the pressure of which is presumably sub-atmospheric, is formed within the target. The peak of the change occurs after the missile has completely penetrated the target. It can be estimated from the series of tests on the 4 cm. by 4 cm. by 5 cm. gelatin blocks that 800 microseconds after impact the gelatin is distributed in a peripheral layer averaging about 0.5 cm. thick and surrounding



FIG. 1.—30 microseconds after impact. ($\times 0.70$)
Direction of shot —————



FIG. 5.—340 microseconds after impact. ($\times 0.48$)
Direction of shot —————

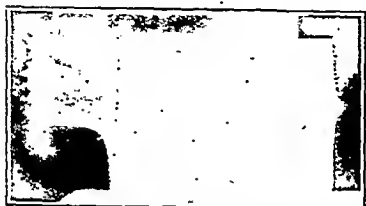


FIG. 2.—126 microseconds after impact. ($\times 0.65$)
Direction of shot —————



FIG. 6.—860 microseconds after impact. ($\times 0.47$)
Direction of shot —————

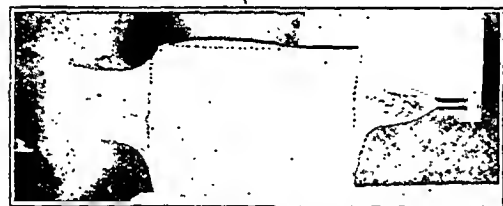


FIG. 3.—207 microseconds after impact. ($\times 0.64$)
Direction of shot —————



FIG. 4.—300 microseconds after impact. ($\times 0.56$)
Direction of shot —————

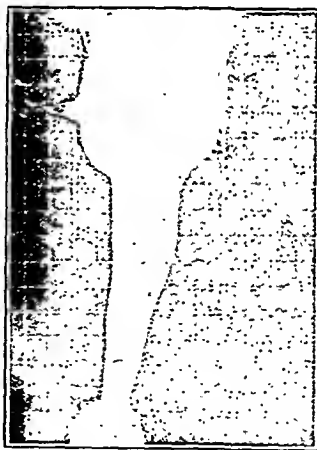


FIG. 7.—Shadowgraph of rabbit's hind limb taken 550 microseconds after impact. The 3/32-inch steel ball passed through the hamstring muscles. The impact velocity was within the same range as the previous shots. ($\times 0.56$)
Direction of shot. —————

the limb 550 microseconds after the impact of the steel ball. The limb shows the same type of distortion as the gelatin blocks. At the time of the shadowgraph the ball had completely traversed the limb.

Discussion

The changes which occur in the gelatin blocks can only be explained as being due to the formation of a cavity within the blocks with explosive violence. As the missile passes through the block it imparts motion to the particles in its track, and these fly off radially, imparting their momentum in turn to further particles (and so on), the

a central cavity approximately 5 cm. in diameter. The stresses imposed on the gelatin when struck must be great compared with those that it would be able to resist for a period longer than that in which the cycle of changes occurs. Nevertheless, it is surprising that there is so little evidence of damage in the gelatin blocks when the cycle of distortion is complete.

It has been shown experimentally that the cavitation caused in soft clay by high-velocity missiles is not due to the pressure of air drawn in behind the bullet (see Cranz and Becker). Thus there is no cavitation when a bullet is fired into a clay target down a prepared tubular track

with a diameter slightly greater than the calibre of the bullet. Furthermore, the explosive effect is also observed when a bullet is fired through a soft medium kept in a vacuum. But, on the other hand, the cavitation which occurs in a soft medium is almost certainly responsible for the drawing in of air, some of which may be pushed out again when the target returns to its previous shape. Air may be left in the track, as is shown by the subsequent presence of a few minute bubbles in the gelatin blocks. Small bubbles are also sometimes observed in splinter wounds in flesh.

The fact that the shadowgraphs of animal limbs are essentially similar to those of the gelatin blocks suggests that precisely the same changes occur in human or animal tissues that are traversed by high-velocity missiles. The distortion to which they are subjected can only be likened to that of an internal explosion, and at the height of the deformation, which occurs after the missile has left the part, the tissues must be stretched around a central cavity of relatively large dimensions. Under such conditions it is obvious that structures at great distances from the track of the projectile can suffer damage.

It is a common clinical observation, and one which we have confirmed experimentally, that minute puncture wounds, caused by small bomb splinters, in the skin on the entry and exit surfaces of a limb or other part of the body are often the only external signs of relatively serious internal injury. Our experiments with rubber-coated cylindrical blocks of gelatin provide a parallel to this observation in so far as only minute punctures are made in the rubber covering, in spite of the considerable immediate distortion of its contents. On the other hand, when the steel ball is fired at high velocity at the skinned limb of a dead rabbit or at a slab of meat a large crater is formed in the flesh on the entry side, and the destruction is much greater than in a corresponding part covered by skin.

The explosive character of the forces set up by the high-velocity ball in its passage is manifested not only by the amount of tissue destruction caused but also by the fact that we have often observed comminuted fractures of the femur of a rabbit even when the path of the projectile lay more than 1 cm. from the bone. These fractures can be explained by the fact that bone is relatively non-elastic, and that it fractures as a result of the stresses to which it is subjected by the explosive formation of the cavity along the path of the missile. In the same way we have found that heavy glass plates placed in contact with the gelatin targets, and at a distance of 2 cm. from the track of the ball, are shattered. It would be of interest to discover whether similar indirect fracturing of bone occurs in war casualties.

In contrast with bone, highly elastic structures such as arteries, veins, and nerves are apt to escape injury in wounds caused by high-velocity missiles. Thus post-mortem examination of exposed animals shows that larger vessels and nerves may run intact through regions in which muscle and smaller vessels are often much damaged. It is only rarely that we have observed relatively severe haemorrhage from larger arteries in wounds caused by the ball travelling at 2,500 f/s and upwards, whereas the impression so far gained in our work is that such haemorrhage is not uncommon in wounds caused by the ball when travelling at, for example, 1,500 f/s.

In further experiments we have found that a steel ball, travelling at a velocity of 2,400 f/s through a gelatin block in which is embedded an excised strip of artery containing fluid maintained at a pressure of 100 mm. Hg, will not rupture the vessel, in spite of the distortion of the block, except when the ball actually hits it.

Although larger nerve trunks appear to remain anatomically intact in high-velocity wounds, it should be remembered that they have momentarily undergone considerable stretching around the cavity caused by the missiles. This stretching may be a cause of the transient paralysis and analgesia which is sometimes said to occur as a result of bomb-splinter wounds, for it is known that a nerve can lose its conducting properties for some time after such distortion.

Summary

Experiments suggest that the disproportionate degree of tissue destruction caused by small high-velocity bomb splinters is due to the fact that particles lying in their path are thrown radially with sufficient violence to leave a central cavity around which tissues at some distance from the track are momentarily stretched. While blood vessels are usually elastic enough to experience this strain without anatomical and apparent functional injury, and nerves without obvious anatomical injury, bones are often broken at some distance from the track.

Our warmest thanks are due to Colonel P. Libessart, Free French Forces, whose design of the gun and assistance with the photographic technique made this work possible. We also wish to express our gratitude to Miss B. Hunt for her technical assistance.

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BLOOD-PRESSURE-RAISING REFLEXES IN HYSTERICAL ANAESTHESIA

BY

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This paper is concerned with a study of two blood-pressure-raising reflexes in a case of hysterical anaesthesia. These are: (1) a reflex from skin described by Hines and Brown (1932), who showed that when the hand and forearm are plunged into water at 4° C. the blood pressure is raised reflexly as a result of the stimulus; (2) a reflex from muscle described by Alam and Smirk (1937), which depends on the fact that if ischaemic muscles are exercised the accumulation in them of metabolites leads reflexly to an increase of the blood pressure.

It was thought that it would be of interest to investigate a patient with hysterical anaesthesia by observing whether stimuli applied to an anaesthetic area gave rise to objective manifestations such as increase of the blood pressure. In the case described the skin was at first anaesthetic, later analgesic but not anaesthetic, and the muscle was hyperaesthetic.

The subject of our investigation was a married woman aged 35, with one child. There was a long history of various ill-defined abdominal complaints, which had been treated with little improvement by a number of gynaecological operations. The personal history revealed a background of much domestic friction, the patient having been twice married, and seemingly being little happier with the second husband than with the first. Following a domestic crisis she again became ill, and was admitted for investigation, when it was found that there was a complete cutaneous anaesthesia to pain, heat, and cold over the whole body surface supplied by spinal segments. The patient stated that she had been unaware of this condition until her attention was drawn to it during examination in hospital. There were no other signs to suggest any organic lesion of the nervous system. The Wassermann reaction was negative. Explanation to the patient

that the disorder was functional and suggestion that skin sensation would return be succeeded by a prompt renewal of the capacity to detect pin-pricks and some slight return of the capacity to distinguish differences of temperature; but the complete cutaneous analgesia remained undiminished, and neither deep pin-pricks nor prolonged contact with ice led to pain, discomfort, or change in facial expression.

Method of Investigation

With the patient lying in bed a series of measurements of the blood pressure were made on the right arm; the left arm (which in common with other parts was devoid of superficial sensation) was placed out of view of the patient. When the blood pressure had reached a steady level a sphygmomanometer cuff placed previously around the upper arm on the left side was inflated to 170 mm. Hg—a pressure well above the patient's systolic pressure—thus completely arresting the circulation through the left arm. For the elicitation of the Hines and Brown blood-pressure-raising reflex small blocks of ice were packed around the patient's left arm, taking care that the operation was inaudible as well as invisible. The general blood pressure was measured again in the right arm while the left arm was being stimulated by the application of ice. To investigate the effect of the blood-pressure-raising reflex from muscle the patient opened and closed the left hand with the circulation through the left arm completely arrested until pain of the intermittent claudication type prevented further movement. During the exercise and for some time afterwards measurements of the general blood pressure were made on the right arm.

Results and Discussion

It was found that after the application of ice to the left arm the blood pressure in the right arm began to rise, although the patient felt no discomfort whatsoever from the ice. The increases in blood pressure averaged 17 mm. Hg systolic and 11 mm. diastolic. The protocol of one of these investigations is here set out; three such investigations were made on different days, always with a rise of blood pressure. In order to ensure that the rises of blood pressure were not of psychological origin care was taken to prevent the patient seeing or hearing that anything was being done to the limb. During the investigation the patient's reports of her sensations were either that she felt nothing whatsoever or that something was felt, though not of a painful nature. In the normal person the pain arising from the application of several blocks of ice to the hand and forearm usually becomes almost intolerable

Protocol showing the Effect upon the Blood Pressure of the Application of Ice to a Limb with Skin Anaesthesia of Hysterical Origin

Time	B.P. Readings in Right Arm	Time	B.P. Reading in Right Arm
4.12 p.m.	138/105	4.17 p.m.	150/118
	142/104	4.18 p.m.	156/120
Sphygmomanometer cuff round left arm inflated to 170 mm. Hg			
4.13 p.m.	144/104	Ice removed and cuff round left arm deflated	
4.14 p.m.	144/105	4.19 p.m.	138/106
Ice applied to left forearm and hand		4.20 p.m.	144/110
4.15 p.m.	148/98	4.21 p.m.	146/110
4.16 p.m.	147/110	4.22 p.m.	141/107
		4.23 p.m.	140/104

within less than one minute. In this hysterical patient no pain or discomfort whatsoever followed the application of ice to the hand and forearm, yet the normal reflex increase of blood pressure was not abolished by hysterical loss of the patient's capacity to feel this painful stimulus. It was concluded that the rises in blood pressure were of a reflex nature, since, with the circulation of the limb arrested, nerves form the sole channel of communication between the limb and the rest of the body. While eliciting the reflex from muscle it was observed that muscle pain was induced with unusual ease, since twenty-five contractions of the left forearm muscles, effected by opening and closing the left hand during arrest of the circulation in the left arm, gave rise to strong pain of the intermittent claudication type, which was associated, as is usual, with a reflex rise in blood pressure. In a normal person twenty-five

strong clenchings of the hand with the forearm ischaemic will not elicit appreciable claudication pain.

Investigations have shown (Alam and Smirk, 1938) that the blood-pressure-raising reflex of Hines and Brown (in which cold is applied to an arm) cannot be elicited from an area in which there is local loss of sensation of organic origin, and it would appear, therefore, that if the observation we have made is of general application the presence or absence of this blood-pressure-raising reflex from skin might provide evidence in doubtful cases as to whether an area of skin anaesthesia was the result of an organic lesion below medullary level or was hysterical in nature. The observation is of further interest in that it demonstrates the integrity of certain nervous pathways in a patient with hysterical skin anaesthesia, and indicates that a similar method of study is applicable to cases in which there is loss of muscle pain.

Should observations such as these be employed in the differential diagnosis of nerve lesions it is of importance to recognize that emotional stimuli also produce striking changes in blood pressure and that the degrees of reflex increase in blood pressure vary considerably, but are seldom less than 10 or more than 50 mm. Hg.

Summary

Observations have been made on a patient with superficial anaesthesia of a hysterical nature, including the skin of the left arm. It was observed that the application of ice to the left arm caused a rise of blood pressure which was shown to be of reflex origin.

If the patient is unaware of the application of the stimulus a rise of blood pressure on applying cold to an anaesthetic area may be taken to demonstrate the presence of a nervous connexion between the anaesthetic area and the central nervous system, and in some cases would suggest that the anaesthesia is of a hysterical nature.

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TEMPORARY VASCULAR OCCLUSION ENDING FATALLY IN URAEMIA

BY

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In view of the recent work on renal failure after compression injuries a case in which temporary occlusion of the vessels to the right leg was followed by uraemia and death seems worth recording.

Case Report

A workman aged 39 was admitted to hospital shortly after falling some twenty feet through a factory roof on to a concrete floor. He had not been unconscious, was only mildly shocked, and complained of pain chiefly in the right thigh. On examination little was found apart from a contusion over the right greater trochanter and marked limitation of movement of the right hip-joint. He was removed to the ward, and while waiting to be radiographed his condition began to deteriorate rapidly. The routine shock treatment was therefore supplemented by the rapid intravenous administration of two pints of blood plasma, with much benefit—the pulse rate dropping to below 100 a minute and the systolic blood pressure rising to 95 mm. Hg. A third pint was then given by slow drip.

At this time the right lower limb was noticed to be slightly blue and swollen and somewhat colder than its fellow. The inguinal ligament of that side felt tense and appeared to be pushed up from below. Above it the external iliac vessels

were pulsating strongly, but below it no impulse could be elicited in the femoral, popliteal, or post-tibial regions. The limb was flexed slightly at the hip-joint, and the foot was raised in the hope that this might relieve the obstruction; but the bluish tinge persisted, the leg grew colder, and cutaneous sensation was gradually lost. The patient complained of desire to pass water and of inability to do so, but was discouraged from making any attempt until damage to the bladder and urethra could be ruled out. A soft rubber catheter was passed into the bladder easily and 5 oz. of clear urine withdrawn.

X-ray examination revealed a central dislocation of the right hip-joint, with comminution of the floor of the acetabulum, and fractures of both pubic rami of the same side. The head of the femur appeared to be entirely within the cavity of the pelvis. It seemed reasonable, therefore, to assume that the external iliac vessels had either been torn across or been compressed between the fractured superior pubic ramus and the inguinal ligament.

Four hours after admission the external iliac vessels were exposed by extraperitoneal approach under local anaesthesia and found to be undamaged and pulsating strongly. Just below this level they were completely obstructed by being forced upwards against the inguinal ligament by the fractured superior pubic ramus. The inguinal ligament was therefore divided at its midpoint and the circulation in the femoral vessels re-established, but almost immediately the patient collapsed. The pulse disappeared at the wrist, his colour became ashen, and his breathing was gasping in character. Pressure was at once reapplied to the released vessels, the head of the table lowered, and 1/2 grain of ephedrine given intramuscularly. In a few minutes the pulse returned at the wrist, his colour improved, and the breathing became quieter. The vessels were therefore intermittently released for a few seconds at a time and the horizontal position gradually reassumed. A further pint of serum was given, making a total of four pints, and the wound closed. The patient returned to bed in good condition, and overnight received a litre of 5% glucose saline intravenously.

The following day he appeared well, complaining only of the tingling in his leg, which was a good colour and about the same temperature as its fellow. It had, however, a peculiar feeling of hardness, almost as if the underlying muscles were being held in contraction. The femoral pulse was satisfactory, but no pulse could yet be elicited in the popliteal or ankle regions. Under local anaesthesia a Steinmann pin was passed through the tibial tubercle and an initial traction of 10 lb. applied with the hip abducted and slightly flexed. By evening the colour had returned to normal, the posterior tibial artery was pulsating, and cutaneous sensation was beginning to return.

In spite of a fluid intake of over two pints a day by mouth, the amount of urine secreted on the three days following operation was 6 oz., nil, and 2 oz. respectively. Both samples were acid in reaction and heavily blood-stained. The bowels were somewhat loose, and moved twice daily. There was no evidence of oedema. On the evening of the third day his condition began to deteriorate. He became drowsy, with intervals of acute and increasing anxiety and short attacks of dyspnoea. The following morning there was occasional retching but no actual vomiting. He was more drowsy, but still had intervals of acute anxiety, and frequently expressed fear of impending death. Examination revealed no evidence of oedema or of pulmonary complications, but a blood-urea test made at 10 a.m. gave a reading of over 200 mg. per 100 c.cm., and at midday the patient died, just under four days after the accident.

Post-mortem Examination

A necropsy was performed two hours after death and the findings are briefly as follows:

The peritoneal cavity contained a small amount of free blood, probably due to two small superficial lacerations of the spleen. The comminuted fracture of the pelvis was confirmed, and the upper pubic ramus was found thrust against the inguinal ligament with the external iliac vessels arching over it. These vessels were undamaged. The head of the femur was entirely within the pelvic cavity, and there was a fairly extensive retro-peritoneal haematoma in the pelvis and extending up the posterior abdominal wall. The muscles of the affected leg appeared normal. The bladder, ureters, and kidneys were un-

damaged, though the last-named appeared extremely congested. All other viscera were healthy. Microscopical examination of sections taken from both kidneys revealed gross pathological changes. The glomeruli for the most part seemed normal, though in a few the capsular space contained clear structureless material staining pink with eosin. The tubules, however, showed profound degenerative changes of the lining cells, with pyknotic nuclei and granular degeneration of the cell contents, most pronounced in the proximal tubules. More distally the tubules contained darker-staining reddish-brown material, for the most part coarsely granular but some of it homogeneous, and in a few suggestive of clumped degenerating erythrocytes. The proportion of tubules so affected increased as the pelvis was approached, and in many fields towards the apex of a pyramid over 80% of the tubules seen appeared to be choked with this granular material.

Summary and Comment

This is a case of central dislocation of the hip with fracture of the pubic rami of the same side causing obstruction of the external iliac vessels. Relief of the obstruction by dividing the inguinal ligament was followed by sudden and profound collapse comparable to that resulting from the sudden release of a tourniquet left over-long in position.

Death resulted from uraemia within four days of the accident, and the microscopical appearances of the kidneys corresponded closely with those recently described in cases of crush injury (Bywaters and Beall, 1941; Beall, Bywaters, Belsey, and Miles, 1941; Mayon-White and Solandt, 1941).

The hardness of the limb noticed after operation is interesting in view of the theory recently put forward by Patey and Robertson (1941) that the syndrome may be due to loss of substances from the circulation into the injured limb. Unfortunately no particular attention was paid to this aspect at the time.

It is hoped that the findings described may prove of interest to those investigating such cases and to others who may have to deal with similar injuries.

I wish to thank Mr. G. A. Bagot Walters for his advice and for permission to publish this case; also Mr. Chandler for the blood chemistry and the preparation of sections.

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The province of Sind in North-West India, the population of which is just over four million, has a lower birth rate, death rate, and infant mortality rate than any other Indian province. The latest annual report on public health in Sind gives the birth rate as 20.88, the next lowest being Assam with 29.92; the death rate is 11.55, the next lowest being the North-West Frontier with 18.74; and the infant mortality rate 105 per 1,000 births, as against 130 in the North-West Frontier. For the second year in succession the chief city, Karachi, enjoyed immunity from plague in 1939. What are described as "fevers" accounted for the greatest number of deaths; this category includes many of the deaths due to malaria. Malaria is the disease most prevalent in the rural areas, and is one of the major problems of the province. Its prevalence has been accentuated by the enormous increase in the area brought under cultivation since the opening of the Lloyd barrage. Vigorous anti-malaria measures are being taken, and during the year under review nearly two million 5-grain tablets of quinine sulphate and four and a half million 2-grain tablets, manufactured at Hyderabad central prison, were supplied for distribution. Next to "fevers," respiratory diseases account for the largest number of deaths. An active anti-tuberculosis campaign is in progress, and clinics in charge of fully trained tuberculosis medical officers are being established in each of the district towns. Cholera was restricted to one village in the Hyderabad district, and only six cases and three deaths were reported. Small-pox is prevalent and accounted for 365 deaths. Trouble is encountered in administering the vaccination laws.

Medical Memoranda

Iodine Ointment for Epidermophytosis Interdigitale

Epidermophytosis interdigitale, or "athlete's foot," is one of the commonest minor ailments encountered in the Army, and the more severe cases occupy a large number of beds in the skin wards of military hospitals—at least in the Transvaal. I have not had experience of the incidence among soldiers in temperate climates, but one would be safe in assuming that it is much more common under the tropical and subtropical conditions of the African continent. In temperate zones its occurrence is almost confined to the summer months, whereas in warmer climates it occurs in winter as well as in summer. Sweating of the feet, unavoidable when long route marches are undertaken in hot weather, predisposes to epidermophytosis interdigitale, and a considerable incidence of the condition is inevitable in any tropical campaign.

A period as a regimental medical officer, followed by a period in charge of the skin beds at a large military hospital serving a South African military camp, has provided me with the opportunity of seeing large numbers of cases of both the earlier and the more severe stages. It was my impression that the incidence was at least 30% in the regiment to which I was attached. The regiment had been called up six weeks previously. The institution of simple precautionary measures, such as scrubbing the floors of the showering cubicles with disinfectant, the issuing of boric powder, with instructions to powder the feet in the morning before donning the socks, the washing of feet after excessive sweating, and thorough drying between the toes after washing, served to reduce the incidence considerably. Despite all these precautions a large number of men still developed the condition.

At first Whitfield's ointment was the routine treatment used, but cases arose which failed to respond to it. Castellani's paint was not obtainable, and in view of the fact that iodine is a good fungicide I decided to try ung. iodi denigrescens (iodine 87½ grains, arachis oil 288 minims, yellow soft paraffin ad 4 oz.). The edges of the opaque white sodden skin were cut away and the ointment was rubbed in well but gently; the affected area was then dusted with boric acid powder. Many of the cases which had failed to respond or were responding tardily to Whitfield's ointment cleared up rapidly with the iodine ointment. It was then decided to try the effect of this ointment in the early stages, and it was found that often in early cases with commencing fissures two and sometimes one application resulted in the complete disappearance of the condition.

Subsequently, in the more severe cases admitted to hospital it was possible to institute a more controlled investigation. In bilateral cases Whitfield's ointment was used on one foot and iodine ointment on the other. Almost without exception the iodine ointment was more effective than, or at least as effective as, Whitfield's ointment. A similar experiment was then conducted using iodine ointment on one foot and Castellani's fuchsin paint on the other. Here the results were not so unequivocal. Most of the cases responded more rapidly to the iodine ointment, but there were some severe cases which responded sooner to Castellani's paint. The ointment has the advantage of being cheaper, more easily obtainable, and not so readily spilled. At the very least it provides a useful alternative treatment for a condition that can be a source of great trouble under Army conditions.

Ung. iodi denigrescens was also tried in the treatment of cheilopompholyx of fungous origin, with very satisfactory results.

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M. M. Baumgartner and T. O. Nuzum (*Wisconsin med. J.*, 1941, 40, 579) review the literature and record a case of infectious meningitis in a woman aged 39 who had a good recovery after spinal drainage and oral administration of sulphanilamide.

Reviews

A TEXTBOOK OF ENDOCRINOLOGY

Essentials of Endocrinology. By Arthur Grollman, Ph.D., M.D. (Pp. 480; illustrated. 36s. net.) Philadelphia, London, Montreal: J. B. Lippincott Company. 1941.

Textbooks of endocrinology appear so frequently that it is legitimate to inquire the reasons for yet another one. We can supply Prof. Grollman with better reasons than those he gives in his own preface. In the first place we approve of his biological approach, which is not sufficiently stressed as a rule. As an example he groups the thyroid, parathyroids, and thymus together as the branchiogenic organs in a way which will appeal to those who feel that the comparative anatomist can throw much light on the evolution of the endocrine system. Then he is not afraid to be both dogmatic and sceptical; the former quality is necessary for the student, the latter for the practitioner. Also he devotes more than a third of the book to the gonadal hormones, which is appropriate, for this is the most actively advancing branch of the subject, and one which it is difficult to find related so coherently. This is the best section of the book. In some respects Prof. Grollman has not allotted the rest of his space so successfully: thus only a single page is devoted to the history of endocrinology in general; only half a page is given to the therapeutic uses of adrenaline, and nearly three pages to the rare tumours of the adrenal medulla. Diabetes is included, as is logical, and it enables him to contrast it with hyperinsulinism and von Gierke's disease. The whole work is more readable than some textbooks on the subject, and it can be recommended to students and practitioners alike.

OTO-RHINO-LARYNGOLOGY

Diseases of the Nose, Throat and Ear. A Handbook for Students and Practitioners. By I. Simson Hall, M.B., Ch.B., F.R.C.P.Ed., F.R.C.S.Ed. Second edition. (Pp. 446; illustrated. 15s. net, postage 7d.) Edinburgh: E. and S. Livingstone. 1941.

There has been a call for a second edition of this book within the space of four years. The author has made no important change and the increase in size is very slight, due to some fresh illustrations. The excellent coloured plate showing diseases of the tympanic membrane—the frontispiece of the first edition—has been eliminated, but some less instructive photographs have been retained, such as Fig. 25, which shows puncture of the antrum with trocar and cannula but without the aid of a nasal speculum. In spite of this we are not persuaded that the author really practises this blind procedure. Tracheotomy is now illustrated. A very long incision is shown extending over the larynx. Certainly the incision should be long enough, but not longer than is necessary. The tube recommended, and now shown in a figure, is Jackson's. This model does not conform to the configuration of the neck and is a constant source of trouble. Durham's tube has long been recognized in Great Britain as possessing the proper shape and should almost always be used, though it is more expensive to manufacture.

For laryngotomy the author advises a tracheotomy tube. It may be necessary to resort to this makeshift in an emergency, but for laryngotomy a laryngotomy tube should be used. In the section on the ear a generous amount of space is devoted to the intracranial complications of otitis media, but otitic encephalitis still receives no mention. Failure to recognize it leads to unnecessary and often harmful explorations of the brain for abscess, and the omission indicates that aural surgeons in general remain

unaware not only of its importance but even of its occurrence. The catch-phrase "oedema of the glottis" should be as obsolete as "perityphlitis" or "bronchocele." Was it not in Edinburgh that the swelling of the lax tissues in the aryepiglottic folds, which causes acute laryngeal obstruction, was first precisely and accurately described?

Notwithstanding these criticisms, the book presents a fairly reliable outline of the subject, and no doubt will continue to meet the needs of students for some years.

ALCOHOLISM

What Price Alcohol? A Practical Discussion of the Causes and Treatment of Alcoholism. By Robert S. Carroll, M.D. With preface by Adolf Meyer, M.D., LL.D., Sc.D. (Pp. 362. 12s. 6d.) New York and London: The Macmillan Company. 1941.

However excellent in intention, this book is marred in the performance. No one would question Dr. Carroll's intense sincerity and his deep conviction of the evils of alcoholism. He realizes how frequently this addiction is based on a psychoneurotic temperament which, finding the stresses of life too hard, takes the easiest way to ignore those stresses. He is aware of some of the disasters that Prohibition brought on the United States, but he might have laid more emphasis on the way young people especially took to drink during Prohibition as a declaration of liberty, and on the power which fell into the hands of the bootlegger, who was the parent of the gangster. The bitter lesson had to be learned that it is impossible for the law to go too far ahead of popular approval. We are also heartily with him in his demand for "freedom not to drink," and his claim that it should be no more regarded as an unsocial act to decline alcohol than it is to refuse sugar in one's tea. That "rounds" of drink mean that many take more than they wish and that the weaklings are caught in the toils before they are aware is only too true. But all this is set out with an intolerable degree of repetition and illustrated by cases described in the language of melodrama. Some of his stories are almost incredibly naïve—such as that of the good little boy who signed the pledge at the age of 6 and made such a success of his life. Surely Dr. Carroll must see that this boy was the type who would never have taken to alcohol, and that if he were not of that type a pledge signed before he understood what it meant would not have restrained him. For the drink crave the author recommends half to one ounce of castor oil, repeated if necessary in six hours. Castor oil as a political argument we are familiar with, but we doubt its power to make life easier for a psychoneurotic failure.

Notes on Books

The eighth edition of Prof. R. A. FISHER's textbook of *Statistical Methods for Research Workers* continues the process of revision without alteration of numbering of sections, tables, or examples which is so convenient. Between the fourth and the present edition about forty pages have been added, introducing new methods or extensions of older methods. It is superfluous to say that this manual is a standard work. The publishers are Oliver and Boyd of Edinburgh and London, and the price is 16s.

Chapters 4 and 5 in Dame MARY SCHARLIEB's once popular little book on *Change of Life* still echo the practical wisdom of that great lady. Chapter 6 deals with treatment, but no mention of radium has been inserted even in the 1941 edition (Faber and Faber, 3s.). The foreword written for it states that the book is still perfect, the only fresh knowledge being that "science has lately put on the market an artificial chemical substance to take the place of the normal hormone (i.e., the internal secretion) of the dwindling sex glands. . . . If the symptoms are too unbearable consult your doctor and he can order you the new chemical substitute—stilboestrol."

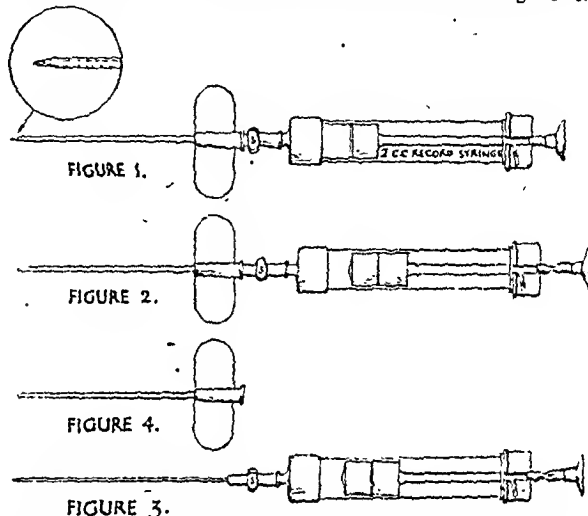
Preparations and Appliances

A NEW TYPE OF CANNULA

Dr. ARTHUR GUEST, M.R.C.P., sends the following illustrated description of a cannula for blood transfusion and blood withdrawal which he has designed.

For the Intravenous Administration of Blood or Other Fluids without Vein Exposure

The following features are incorporated: The cannula (gauge 17 S.W.G.) is fitted with a hollow needle instead of a solid stylet. This inner needle is of standard pattern, the length being such that, when fully inserted into the cannula, the bevel point just protrudes beyond the blunt end of the cannula. To this needle a small (2 c.cm.) Record syringe is attached during introduction (see Fig. 1). The length of the combination gives very



good control while seeking the vein, and confirmation of venepuncture can be obtained by sucking back a little blood into the syringe.

I have adopted the following procedure: (1) A small intracutaneous bleb of 2% procaine solution is introduced through a fine hydropenic needle at the chosen site. (Not essential.) (2) After a light tourniquet has been applied, the cannula, with the syringe attached, is introduced through the bleb of procaine and the vein is sought and just entered. (3) After confirming entry by sucking back a little blood into the syringe, the inner needle is withdrawn about an eighth of an inch, while the cannula itself is held steady. The cannula now has no projecting point (see Fig. 2), and may be pushed firmly up the vein to the hilt without danger of piercing the wall of the vein. (4) The syringe, still attached to the inner needle, is completely withdrawn (see Fig. 3), the cannula itself (see Fig. 4) remaining in the vein. (5) The standard adapter on the tubing from the blood reservoir is then firmly attached to the cannula. (6) Two strips of surgical tape are then applied parallel to the cannula and running over its wings, to prevent slipping.

It is not claimed that the instrument is entirely original in its conception. A similar, but narrower, type of cannula, and fitted with a solid stylet instead of with a hollow needle, has long been in use at the Children's Hospital, Birmingham. I have not seen a blunt transfusion cannula with a sharp hollow introducer to which a standard syringe can be attached.

For Withdrawing Blood from a Donor, or for Therapeutic Bleeding

A similar instrument to that described above, but of larger bore (gauge 12 B.W.G.), and having two lateral apertures, has been used. After insertion of the cannula in the manner described above it is attached to a vacuum collecting system.

The cannulae may be obtained from Messrs. Philip Harris and Co., Ltd., of Edmund Street, Birmingham. A spare needle for each instrument is convenient. I thank Mr. J. E. Turner, architect to Hollymoor Hospital, Birmingham, for drawing the illustrations.

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RESPONSES OF THE SKIN TO COLD

In this and our preceding issues are published three lectures by Sir Thomas Lewis on some effects of cold on the skin and underlying tissues. It is gratifying to present them to readers of the *British Medical Journal* at the time of the award to the lecturer of the Copley Medal, which is the highest honour within the gift of the Council of the Royal Society. Although many of the phenomena described are of familiar occurrence, and others, such as trench foot and frost-bite, are well known by repute, this is one of the first occasions for a comprehensive account to be presented of the various ways in which cold affects and injures the skin; and no one could be more fitted for this presentation than Lewis, for most of the observations and experiments on which it is based are his own. In his first lecture he tells us how the circulation through the skin is regulated for the varying needs of the body to conserve or lose heat, and how there exist local vasodilator mechanisms for the protection of the more exposed parts of the skin, such as the digits, ears, and nose. These local mechanisms appear to be called into play at temperatures below 15° C., and probably represent a reaction to injury, because at such temperatures other phenomena may be elicited from the skin, such as pain and the local and axon reflex vasodilatation which are common to other injurious agents. In normal skin the injury sustained by exposure to such temperatures has ordinarily no serious consequences, but in certain circumstances one effect of cold may be of much importance. In wound shock there are good reasons for supposing that the chief disturbance is a deficiency in the circulatory blood volume, and it was generally agreed as a result of experience in the war of 1914-18 that exposure to cold was in many instances an important factor in the genesis of shock. Lewis has recently observed that when a hand is exposed to temperatures of 0° to 6° C. for two hours, as much as 60 c.cm. of fluid may be lost into it from the circulation, and he suggests that it is this aspect of the reaction of the skin which may account for the circulatory collapse occurring in those subjected to prolonged exposure to cold.

In his second lecture Lewis deals with three conditions in which exposure to moderate cold produces a more obvious and serious injury of the skin—namely, chilblain, erythrocyanosis, and trench foot. All of these may show histologically those signs of injury which are recognized in other tissues—widening of the vessels, oedema, perivascular infiltration, and destruction of normal tissue. They all occur on prolonged exposure to moderate cold, all present coldness of the skin and high vascular coloration, and all proceed to swelling, blistering, and ulceration; necrosis is most extensive in trench foot, but this can be correlated with the extent

of the exposure. Lewis suggests that these lesions have a common mechanism and that they represent the effects of prolonged cold on the skin and subcutaneous tissues. Chilblains and erythrocyanosis are notoriously prone to develop in those with a "poor circulation"—that is, in those in whom the flow of blood through the skin is persistently slow, and in whom, therefore, the skin and underlying tissues cool most when exposed to low temperatures. The prevention of the two conditions, and of trench foot, lies in ensuring adequate clothing and in the avoidance of any constriction of the extremities.

In his article in the current issue Lewis considers exposure of the skin to temperatures below freezing-point, and we are reminded that the first protection of the skin from freezing is its ability to undergo super-cooling, a property seemingly increased by oiling and decreased by washing the skin. The filth of German prisoners mentioned in recent communiqués from the Russian front may explain why these men are not frozen corpses in the snow. The injury to the skin which occurs when it freezes is to be ascribed to the disruption of the tissues by ice crystals, and the damage inflicted depends largely on the hardness of the frost and its extent. It is pointed out that in many respects the consequences of freezing the skin resemble those of burning or scalding it, and it is suggested that measures which have recently been found to be effective in the treatment of burns and scalds may likewise find their place in frost-bite. With the approach of winter these lectures will provide much material on which those who are treating the ordinary ailments of this country may meditate with advantage; but for those who are concerned with events in the air or on the sea or in lands where frost is severe or prolonged they will be invaluable.

MEDICINE AND AVIATION

The rapid progress in the field of aviation has increased not only the risk of wounds and death by violence among the civil population but also the risk of importation of infectious diseases and diseases spread by insects, particularly mosquitoes. Air Marshal Sir H. E. Whittingham¹ summarized the literature dealing with the relation between the incubation period of infectious diseases and the time taken by air journeys to distant lands; he also drew attention to the administrative measures for sanitary control of air traffic. G. M. Findlay,² in dealing with the present position of yellow fever in Africa, states that the mosquito *Aedes aegypti* and unimmunized men are responsible for the continuation of outbreaks of the disease, for which the incubation period is two to six days, while the individual is infective to mosquitoes for a period varying from four to seven days. With these facts as a foundation Findlay points out how the disease may be spread by the various air lines now in operation. Methods of prevention have also been under investigation, and F. P. Mackie and H. S. Crabtree³ describe how the mosquitoes may be destroyed in an aeroplane by spraying with pyrethrum in a watery base.

¹ *Proc. roy. Soc. Med.*, 1938, 32, 455.

² *Trans. roy. Soc. trop. Med. Hyg.*, 1941, 35, 51.

³ *Lancet*, 1938, 2, 447.

To balance these increased dangers to the health of the civil population by the introduction of the aeroplane, medical aid to certain isolated populations has been made more readily available. Perhaps the most striking example of this is the Australian Aerial Medical Services, which were developed originally by the Australian Inland Mission at Cloncurry under the guidance of the Rev. John Flynn. By 1940 more than 1,000,000 square miles of territory and more than 3,000 scattered and isolated people were under the care of six medical men, who fly in a radius of 400 miles from six different settlements. These areas cover lonely spinifex desert and rocky ranges where, before the introduction of this medical air service, there was little hope for any patient with serious illness or severe injury from accident. All over the world now at short notice patients may be visited by the medical or surgical specialist or be transported to a fully equipped hospital by air ambulance. W. R. Lovelace¹ draws attention to the caution necessary in this respect; all patients with anoxia, circulatory collapse, head injuries, or under treatment with the sulphonamide drugs must be treated by administration of pure oxygen during the flight. In patients with pneumothorax the confined gas will expand as the aeroplane ascends, and pleural adhesions may give way unless the pressure is relieved. In patients with penetrating wounds of the abdomen the gas in the alimentary canal will expand, and there is a risk of the contents escaping into the peritoneal cavity. In these cases, therefore, it is advisable to use an aeroplane fitted with a sealed cabin with the atmosphere therein kept at normal pressure.

Recent researches have also greatly advanced our knowledge of the effects of aviation upon airmen themselves. The tests, collectively known as Flack's tests and originated during the war of 1914-18 by the late Martin Flack while working under Sir Leonard Hill for the Medical Research Committee, now the Medical Research Council, are still in use for the pre-selection of personnel for flying duties, and Air Marshal Whittingham² indicates how these tests have been much expanded and improved. A study of the causes of failure to learn to fly reveals that the factors responsible are poor power of muscle-joint co-ordination, slow reflex action, and emotional changes in a neuropathic group which contains the major proportion of flying failures. The welfare of the successful candidate is continuously cared for by specialists in the medical and research branches of the air forces and air transport companies, special attention being given to the study of fatigue experienced by airmen. Schools of aviation medicine are being rapidly extended for this purpose in many countries; for example, the main School of Aviation Medicine at Randolph Field, Texas, U.S.A., had established some time ago at least eighteen branches throughout the United States, Hawaii, and the Panama Canal Zone. In Great Britain advance has been made in the protection of the eyes and ears of pilots by the introduction of efficient goggles and ear protectors. In some pilots there is deficient hearing in the 4096 cycle area due to cochlear degeneration, but the most serious car trouble is rupture of the drum during rapid ascent or

descent, owing to the pressures on the two sides of the drum being unequal. H. G. Armstrong and J. W. Heim³ call the resulting condition "aero-otitis media," acute and chronic, for which the method of prevention is to keep the Eustachian tube open by swallowing; the danger is greatest, therefore, in those who may be asleep or unconscious in an aeroplane.

B. Monaco⁴ of Italy agrees with the late Martin Flack that repeated flights at, say, 15,000 feet are harmful and do not help many aviators to acclimatize, and he recommends oxygen at 6,000 feet. H. G. Armstrong⁵ found symptoms of intolerance in American pilots flying not more than three hours a day at an average height of 7,500 to 13,500 feet. H. Strughold⁶ noted a diminution of reflexes—for example, patellar reflex—at 7,500 feet, while M. S. White⁷ observed changes in the electrocardiogram at 5,000 feet, so that oxygen should be breathed before this. On the other hand there is a group of specially selected pilots who do not seem to be adversely affected by repeated flights, including periods of one to three hours at 10,000 to 13,000 feet. Colonel A. D. Tuttle of the United States with three colleagues⁸ studied the physiological and psychological characteristics of a group of 200 successful pilots. They conclude from this selected group that there is more evidence of acclimatization than of deterioration in relation to flying in the senior pilots aged 40 to 47 years still active and with long-service records. These men showed high red cell counts, slow resting pulse rates, low systolic blood pressure, large tidal air volume and vital capacity, slow respiratory rates, and regular breathing; these successful pilots are also very moderate in their consumption of alcohol, and many are total abstainers. It is of interest to recall that A. Keys and his co-workers⁹ found that the relative excellence of acclimatization on high mountains is correlated with a slow pulse, both basal and standing, and a small increase of pulse rate on rising from the prone position.

The physiological effect of acceleration has received much attention in Germany and other countries. There is general agreement that a healthy young adult can tolerate a positive acceleration acting along the vertical axis of the body of 4.5g., or four and a half times the force of gravity, for approximately five seconds; thereafter vision is dim (the so-called "black-out") and consciousness may be entirely lost. The condition is due to a drop in the carotid blood pressure with local cerebral anæmia, and measures to attempt to correct this include inhalation of 5 to 6% carbon dioxide, vasoconstrictor drugs, pneumatic belts, water suits, and flexion of the legs against the abdomen with the body in a crouching position. During ascent in an aeroplane there is evidence that minute bubbles of gas, mainly nitrogen, first appear in the tissues at a pressure corresponding to between 10,000 and 12,000 feet. M. N. Walsh and W. M. Boothby¹⁰ have confirmed Armstrong and Benson's original observation of such bubbles in the

¹ *J. Amer. med. Ass.*, 1937, 109, 417.

² *Ann. Igler. Roma*, 1939, 43, 247.

³ *J. Aviat. Med.*, 1933, 9, 34.

⁴ *Disch. med. Wochs.*, 1939, 67, 231.

⁵ *J. Aviat. Med.*, 1940, 11, 166.

⁶ *Aviat. Spaz.*, 1941, 83, 227.

⁷ *Proc. roy. Soc. B*, 1938, 120, 1.

⁸ *Proc. Mayo Clin.*, 1941, 16, 225.

⁹ *Proc. Mayo Clin.*, 1941, 16, 221.

¹⁰ *J. roy. nav. med. Serv.*, 1940, 26, 15.

cerebrospinal fluid at this pressure. The condition is similar to that known as "bends" produced in divers during and after decompression, and there is severe pain and possibly collapse. Efforts to prevent the condition in airmen are made by administration of pure oxygen before and throughout the flight, since the nitrogen in the lungs, blood, and tissues tends to diffuse out into the oxygen, but this process is exceedingly slow in some tissues, especially bone marrow. Argyll Campbell and Leonard Hill¹¹ demonstrated that the saturation of bone marrow with nitrogen, and therefore desaturation also, take more than eight hours; thus the breathing of pure oxygen for shorter periods can alleviate the condition of "bends" only to a certain extent.

As oxygen must be breathed continuously at great heights an efficient mask is necessary; in connexion with this J. R. Poppen¹² points out that the ideal mask must be comfortable, and be furnished with a microphone and with valves that do not freeze at -50°C .; further, the oxygen supply must be provided with a mechanism to vary the rate of flow of oxygen as required. The breathing of pure oxygen even from such a mask will help the aviator only up to altitudes of about 32,000 feet, so that to reach greater altitudes with any degree of safety specially sealed suits or cabins must be used in which the pressure may be raised artificially; Group Captain G. S. Marshall¹³ describes such an apparatus. Whatever apparatus there may be in use, if it fails in its purpose at very great heights the only escape for the airman is very rapid descent in his plane or, if outside his plane, without opening his parachute until he reaches an altitude where there is sufficient pressure of oxygen to maintain life. There is a special emergency breathing apparatus for attachment to the aviator which may be used while falling, outside his plane, through space at the lower altitudes. H. Strughold,¹⁴ in a discussion before the Berlin Medical Society, referred to these and other difficulties. Without his parachute open the airman will fall at the rate of 1,000 feet in five and a half seconds; but it is not known how long he can survive at very low oxygen pressure. Further, the rapid change in pressure while falling will increase the risk of rupture of the ear drums. These problems of life at very great heights are still under investigation, and the visitor to the stratosphere may be confronted with other and still graver difficulties than those already known.

DISRUPTIVE WOUNDS FROM HIGH-VELOCITY PROJECTILES

The disruptive or "explosive" effects of small high-velocity missiles are of importance to all who have to deal with them. While there is no sharply defined limit of velocity below which these effects do not occur, they are uncommon at velocities of less than 2,000 ft. per sec. and hence did not attract much attention in the wars of the nineteenth century. But during the war of 1914-18, when muzzle velocities of 2,500 to 3,000 f.p.s. became common, these "explosive" wounds were seen

in large numbers. This gave rise to the belief in several countries that other countries were using explosive or dum-dum bullets, and many such accusations were made, until it became widely known that tissue damage of this sort could arise from any high-velocity projectile. Knowledge of these phenomena is important, not merely that such suspicions should be avoided, but because extensive damage to tissues is common even when both entry and exit wounds are small. It is not uncommon for a considerable zone of tissue round the track of a high-velocity bullet to be pulped as well as infected, and it is said that even as late as 1918 this was not always recognized when the wound was cleaned. Hence insufficient débridement was apt to lead to avoidable gangrene and death. Even now these phenomena are not fully understood, and, because much of the experimental work on the subject is Prussian and difficult of access in this country, further English studies are welcome.

The account given at page 872 of this issue by Black, Burns, and Zuckerman describes the changes in outline produced when a steel ball is fired through small blocks of gelatin. It supplements previous work on gelatin blocks by Colonel L. B. Wilson of the U.S. Army,¹⁵ and the two papers are of especial interest when read in succession. Wilson demonstrated radial penetration of carbon particles round the track of bullets. Zuckerman and his colleagues demonstrate temporary deformations of the gelatin which fully account for such penetration, for radial splits must occur all along the track. A further interesting point in their paper is the fact that the greatest deformation appears after the bullet has left the block of gelatin. This accords well with the observations of the Prussian military workers¹⁶ on the "explosive" disruption of skulls by bullets. They concluded that the skull burst only after the bullet had left it. Although bullets travelling broadside-on can produce disruptive effects of a serious type, it is now recognized that a common cause of the phenomena seen in "explosive wounds" is the kinetic energy of the fluid or semi-fluid particles which are displaced by the bullet in its course. These particles travel both forwards and radially from the bullet track, and by their radial pressure stretch the surrounding tissues to an extent which may be trifling or disastrous according to circumstances. It has been emphasized by Liebert¹⁷ that the damage done to surrounding tissues depends greatly on their elasticity. As muscle is elastic it is usually little damaged; but if the muscles, or their fascial sheaths, are stretched beyond their elastic limit, most extensive tears may appear, as in the 6-inch exit slits sometimes found, without bony fracture, in the legs of men shot when walking or standing.¹⁸ Bone, on the other hand, has little elasticity, and is often fractured at appreciable distances to one side of the bullet track. Large blood vessels are quoted by Wilson¹⁹ as frequently damaged in this way by tearing of the intima, in contrast to the experience of Zuckerman and his colleagues.

We do not know enough yet to make many generalizations on this matter, except the well-known one that empty hollow viscera are little damaged by bullets, while full ones are likely to show very large exit wounds not

¹¹ *Quart. J. exp. Physiol.*, 1933, 23, 197.

¹² *J. Aviat. Med.*, 1941, 12, 53.

¹³ *Proc. roy. Soc. Med.*, 1937, 30, 995.

¹⁴ *J. Amer. med. Ass.*, 1939, 112, 1118.

¹⁵ *The Military Surgeon*, 1921, 43, 241.

¹⁶ *Coler und Fehlgangung: Ueber die kriegsärztliche Bedeutung der neuen Handwaffen*. Quoted by Liebert, 1915.

¹⁷ *Beitr. Klin. Chir.*, 1915, 55, 115.

only in the stomach, colon, or bladder; the same applies even to tanks containing petrol or water. Further work is desirable, and it is to be hoped that the authors may continue their researches, with, perhaps, the aid of special devices to show the outlines of transient cavities—for example, more illumination or a modern "flash" x-ray unit; or to show scattering and rotational effects—for example, Wilson's charcoal and threads; or, most useful of all, to show the effects of superficial jackets of various degrees of elasticity and tension. It seems probable from the Oxford workers' experiments that the skin is of much value in limiting the disruptive effects from bullets. Would an elastic stocking be of further value in this respect?

GOLD IN THE TREATMENT OF ARTHRITIS

Though the literature on the use of gold salts in the treatment of arthritis is becoming voluminous, it deals almost exclusively with the clinical aspect and the method rests on a purely empirical basis. Freyberg, Block, and Levey¹ have undertaken a research into the metabolism, toxicity, and manner of action of gold in arthritis, and the report on the first stage of their work is of the highest interest and value. Analysis of the amount of gold in the blood and urine after the administration of gold formed the basis of the work, and for this purpose a photo-electric colorimetric micromethod was specifically designed by Block and Buchanan. Gold sodium thiomalate (myocrisin), gold sodium thiosulphate (crisalbin, sanocrysin), and colloidal gold sulphide were the salts used by the intramuscular route, and the last-named was also tested by oral administration. The dosage was recorded in terms of actual gold and not of the particular salt used—a considerable advantage in view of the different proportions in the various forms. Twenty-four-hour collections of urine and samples of venous blood were examined before and after administration of the drug, and in some cases analyses were also made of fluid from the knee-joints. Treatment began with a small dose gradually increased from 10 to 50 mg. of gold and was continued until a total of 500 mg. had been given (equivalent to 1 gramme of myocrisin), the interval between doses being usually seven days. Gold was found in the plasma in increasing amounts as the amount injected rose. After the first dose of 50 mg. had been reached in the fourth week the average plasma content was found to be 0.8 mg. per 100 c.cm. The amount excreted in the urine—found to be the chief route of excretion—increased as larger doses were given, but not in direct proportion. That gold is cumulatively retained in the body was demonstrated by the observation that after an injection of 50 mg. an average of only 1 mg. was excreted daily during the following week up to the time when another injection was due; but the quantity excreted on the day of injection was greater than on the succeeding days. It was further observed that after a full course of up to 500 mg. of gold, equivalent to 1 gramme of myocrisin, significant amounts were found in the blood and urine for a long time after the injections had ceased. In one instance gold was detected in the plasma for thirteen weeks and in the urine for sixteen weeks after completion of the course; similar results were obtained in other cases, and some patients were excreting the metal for several months. Toxic reactions occurred in five out of six patients who took large weekly doses, but none of those whose doses were restricted to 25 mg. of gold had any toxic reactions of moment. The results were similar with

both gold sodium thiomalate and gold sodium thiosulphate, but were much less uniform with the colloidal gold sulphide, whether given intramuscularly or orally. Gold was found in the synovial fluid in equivalent or less amount than in the plasma, and it would appear that differences in this respect may be due to inflammatory changes in the synovial tissues. It was noticed that in some cases an immediate reaction followed injection—apprehension, headache, flushed face, and sometimes a purpuric dermatitis; this reaction appeared to indicate a true drug sensitivity.

Freyberg, Block, and Levey are continuing their investigations in both human beings and animals, and the results are awaited with interest. Their work thus far has thrown much light on the subject, and is of the utmost value as a guide to the safe therapeutic use of gold. There seems to be no doubt that dosage has hitherto been too heavy, and the safe course is to limit it to a maximum of 25 mg. of the metal, which is approximately equivalent to 0.05 gramme of myocrisin or 0.07 gramme of crisalbin, at weekly intervals or longer. It would be worth investigating whether a still smaller dose given for a long time might not yield the best results with less risk of toxic sequels.

REVERSAL OF HALISTERESIS IN THE MAMMALIAN EAR

In otosclerosis there is an area of decalcification or halisteresis surrounding the focus of otosclerotic bone. This area finally becomes, through complete bone resorption, a cavity filled with osteogenetic marrow. In this marrow fresh abnormal bone is formed and the focus of otosclerosis extends. Guggenheim, Gunther, Goodhill, and Irvine¹ state that a series of patients with otosclerosis have been treated with dieting and the administration of dicalcium phosphate, vitamins, insulin, and liver extract and have been kept under observation for four years. These patients have shown no further loss of hearing. The authors suggest that the arrest of further deterioration in the power of hearing is due to the reversal of halisteresis in the otic capsule, with a rebuilding of osseous tissue round the focus of otosclerosis. To test the possibility of effecting a reversal of halisteresis experimentally it was necessary first to produce halisteresis under controlled conditions, and an elaborate research with a variety of drugs, including parathormone and viosterol, was undertaken. As a result ammonium chloride was chosen as the decalcifying agent and white Wistar rats as the experimental animals. It was found that, after decalcification has been produced by the administration of ammonium chloride, the process could be reversed and osseous reconstruction induced by omitting the ammonium chloride from the food and giving a diet high in calcium content. The authors conclude from their observations that clinically it may be possible to inhibit the enlargement of a focus of otosclerosis by giving sufficient amounts of calcium, phosphorus, and vitamins. They explain this inhibition by the reconstruction of capsular bone in the previously decalcifying area around the focus of otosclerosis.

¹ *Arch. Otolaryng.*, Chicago, 1941, 34, 501

H. E. Bierman and R. W. Maxwell (*J. Amer. med. Ass.*, 1941, 117, 1255) record their observations on 117 persons sent to hospital with diphtheritic membranes on the pharynx in whom Manzullo's potassium tellurite test was employed. The test was found to be frequently positive in non-diphtheritic membrane, but was negative only twice. The writers conclude that a negative tellurite reaction, if it contradicts the clinical impression, is not sufficiently reliable to justify abstention from antitoxin.

AN INDUSTRIAL MEDICAL DEPARTMENT

MEMORIAL TO LORD AUSTIN

A new medical department at the Longbridge works of the Austin Motor Company was opened by Air Vice-Marshal Sir David Munro, Chief Medical Officer of the Ministry of Supply, on December 3. The department, which is dedicated to the memory of the late Lord Austin, is a two-story building situated near the main entrance to the works. On the ground floor there is a treatment room for men and another for women, a resuscitation room, and a room for x-ray work and physiotherapy; also a bathroom, primarily for the treatment of serious burns. The x-ray equipment consists of a mobile unit of the latest design and a table fitted with a Potter-Bucky diaphragm and screen attachment. A nurse with experience of radiography is on the staff of the department. The upper floor comprises a large examination room fitted with cubicles, a smaller consulting room, a laboratory for chemical and bacteriological examinations, and offices for members of the medical staff. The furnishing and lighting of the department are on the most modern lines; central heating is provided, and there is a plentiful supply of hot water by means of a calorifier.

The department is intended to provide first-class accommodation for the administrative and technical needs of the three medical officers who have been appointed. Its purpose is to investigate health problems arising in the factory; to provide immediate treatment of major and minor injuries and sickness, and any other treatment which will prevent interference with production and loss of time; to make any necessary medical examinations and give advice; and to facilitate the administrative work required by the many contacts with outside medical practitioners and hospitals. It was emphasized that the work is not intended to encroach on the general practitioner and hospital service of the district, but only to fill in certain gaps in the treatment of persons who have been injured at their work or who are returning after injury or sickness, when some reassessment may be necessary, and generally to help in the discovery and elimination of industrial causes of ill-health by research into occupational disease and by propaganda and other measures.

A Policy of Health Care

This is only the latest development of the policy of health care followed by this company since it began in a small way thirty-five years ago. For twenty years it has retained the services of nurses, of whom latterly twenty have been employed at ten ambulance stations, dealing on the average with 460 cases, slight or more serious, every day, this on an employment roll which now numbers between 25,000 and 30,000.

In opening the building Sir David Munro said that it was not entirely philanthropy which had led the management to start this kind of work. It had been shown to be a paying proposition to have constant supervision by doctors and nurses who understood the occupations in which the workers were engaged. In his view unless the works doctor was part and parcel of the management he was not, in Sir David Munro's own words, "getting his stuff across." Mr. Murphy, chairman of the Works Hospital and Benevolent Fund, mentioned that during the years 1933-40 the workpeople had paid to the Birmingham Hospital Saturday Fund nearly £69,000, to which the company had added £13,000, making £82,000 in all. Vouchers had been issued amounting to £66,000, and thousands of cases had been sent to convalescent homes. Dr. Donald Stewart, chief medical officer, and Drs. N. T. Glynn and G. N. J. Thomas, medical officers, also took part in the proceedings. The very large company, which included the chairman and several members of the Association of Industrial Medical Officers, representatives of the local profession and hospitals, and in which Dr. H. Guy Dain (Chairman of the Representative Body) and Dr. S. Wand (Chairman of the Birmingham Branch) represented the British Medical Association, then inspected the department.

HOME GUARD CASUALTIES

ARRANGEMENTS FOR ACTIVE MILITARY OPERATIONS

At an interview at the War Office representatives of the medical press were afforded some information about the arrangements for treating Home Guard casualties in the event of invasion. Where the Home Guard operates in conjunction with Regular troops the R.A.M.C. units accompanying the latter will deal so far as possible with Home Guard casualties. If there are no such units in the vicinity arrangements will be made in advance between Home Guard medical officers and medical officers of health for casualty collection, conveyance, and treatment.

The movements of Home Guard casualties will normally be from the scene of action to the appropriate Home Guard aid post, stretcher cases being carried by Home Guard stretcher bearers; and from the aid post to the appropriate E.M.S. hospital (stretcher cases) or civil defence aid post (other cases) in civil defence ambulances and sitting-case cars respectively. The general principle is that the responsibility of the Home Guard will continue up to and include their own aid posts, and will comprise the provision of field-dressing facilities; but when once the casualties have been received by the civil defence casualty organization the responsibility for their care will devolve on the latter.

Home Guard aid posts will be established only where there are no civil defence first-aid posts or points reasonably adequate for dealing with casualties and sufficiently near the probable scene of action to be reached by the stretcher bearers. The aid posts should be accessible to civil defence ambulances and so sited as to fit into a comprehensive network of civil defence as well as Home Guard services. In certain districts, where E.M.S. hospitals or civil defence aid posts are considered too remote from the probable scene of action, regimental aid posts may be necessary with a medical officer in attendance, and the transfer of casualties from these aid posts will be the responsibility of the civil defence or military authorities, whichever is nearer. Stress was laid upon the need for keeping to a minimum the number of such posts in the interests of economy in man-power and equipment. It is not intended that mobile first-aid posts shall operate at the scene of action or at Home Guard posts, but it may be necessary to send them to the assistance of a civil defence aid post which is subjected to pressure owing to the reception of Home Guard casualties.

Use of Civil Practitioners

The fact that Home Guard or regimental aid posts may require the continuous attendance of a doctor or rota of doctors must be taken into account in the schemes of medical officers of health for utilizing civilian practitioners in acute emergency. But in other cases it is not intended that in an emergency Home Guard medical officers shall be liable to be mustered for full-time duty. Their main responsibilities are to train stretcher bearers, organize company or platoon aid posts, advise commanding officers on medical matters, and ensure proper co-ordination with civil defence services. They will be available to be called on for duty at hospital or aid post (fixed or mobile) where reinforcements of normal medical staff may be needed, and where, in fact, casualties from their own Home Guard units may be received for treatment.

The arrangements were described as an interlocking of civil and military medical resources, with a pooling, as necessary, of personnel, hospitals, equipment, and transport. It was also stated that ambulance trains would be "stabbed" at strategic points throughout the country and be used as much as possible. The mobile first-aid posts are intended for civil "incidents," but they are, of course, bidden reserves. The first-aid machinery of the Home Guard is independent of the mobile units, but the latter will be sent wherever the need is greatest in the event of acute emergency.

— According to *Tubercle* the mortality from pulmonary tuberculosis in Wales fell during the forty years of this century by 49.3%. The fall occurred fairly evenly except during the war years 1914-18, when a rapid rise took place.

Reports of Societies

EFFECTS ON KIDNEY OF LIMB COMPRESSION

The meeting of the Section of Surgery of the Royal Society of Medicine on December 3 was devoted to a discussion on the effects on the kidney of trauma to parts other than the urinary tract, with particular reference to crush or compression syndrome.

Mr. E. ROCK CARLING, president of the Section, said that so far the war had furnished few new surgical problems, but one outstanding observation had been the association of grave and often fatal damage to the kidneys after prolonged compression of the limbs. It was impossible to believe that a similar syndrome had not been associated with injuries in civil practice—mine accidents, for example—but it had not been observed, or at any rate recorded. Very little on this subject had appeared in English literature. The researches of Bywaters and others had revealed in German periodicals references to similar cases occurring in the last war.

Discussion of Pathogenesis

Dr. E. G. L. BYWATERS proposed a classification of types of excretory failure seen after trauma wherein the functional change observed in shock and dehydration (oliguria, azotaemia, and casts) was separated from more specifically renal damage such as that seen in crush injury, after burns, after trauma to the liver, and possibly in some types of obstetric shock. He gave an account of the clinical, biochemical, and pathological features of crush injury, and laid emphasis on the renal tubular necrosis and muscle necrosis seen post mortem. In the light of these findings he discussed the pathogenesis, in particular the role of myohaemoglobinuria, muscle necrosis, and secondary oligæmic shock. A similar picture was seen after muscle ischaemia due, not to prolonged crushing, but to vasospasm or rupture of main vessels. It resembled in many respects the condition following mismatched transfusion and the much rarer condition of paralytic myohaemoglobinuria.

Prognosis depended on many factors. The duration of the crush did not seem to bear much relation to survival. Those crushed for a long time might recover. Another factor influencing prognosis was the extent of the injury. Particular care should be exercised in the case of muscle damage near the trunk which was not very obvious clinically. A further factor was the rise of blood urea. In the severe recovered cases there was a fall in the blood urea at about the same time as death occurred in the fatal cases. But the blood urea could rise to very high levels, and the patient might recover without any treatment whatever. Recovery occurred in about one-third of the cases admitted; in about two-thirds death took place from renal failure, generally at about the fifth to the eighth day.

Mr. R. BEFSEY spoke of the surgical aspect of the treatment of cases, and attempted to define the problem from the surgeon's point of view. In the crushed limb the changes observed included necrosis of muscle, of patchy distribution; haemorrhage into muscle, but not constant; oedema of limb; and increased tension of tissues within the fascial compartments of the limb. Intense arterial spasm appeared to be a common cause of ischaemia. Clinically, peripheral arterial pulsation was sometimes absent when the case was first seen. Loss of nerve function was recorded in the majority of cases.

Little in the way of operative treatment had been employed as yet, and probably quite rightly. Primary amputation of the limb had been tried in a few cases and decompression of the limb by incision in a few. The two aims of saving the patient's life and saving the patient's limb might be mutually antagonistic in that restoration of circulation in the crushed limb might lead to a sudden flooding of the body with myohaemoglobin or toxins. He described five cases admitted to St. Thomas's. In none of the published case reports was there evidence that palliative surgical treatment had played any part in saving life. The case for amputation remained unproved. Limb decompression as a means of saving the limb was indicated in cases where peripheral pulsation had completely disappeared. Splintage and refrigeration of the damaged limb with ice packs

as a method of reducing metabolism during the period of ischaemia and possible toxic production appeared to be rational if begun early. He pleaded for more objective study of the pathology of the syndrome.

Approach to a Rational Therapy

Dr. J. McMICHAEL said that, considering that a year ago they were quite mystified by this condition, he thought it could be claimed that some good progress had been made. There seemed little doubt that breakdown of autolytic products from dead or dying muscle was the main factor which damaged the kidneys. Two main effects were produced in the kidney after muscle ischaemia: some chemical substance was liberated which poisoned the tubule cells, and there was also a tubular blockage factor, quite possibly resulting from the precipitation of myohaemoglobin casts in the tubules. With these points in mind it was possible to make an approach to rational therapy. The kidney must be thought of from the beginning in people who had sustained crush injuries. The mistake had been made of waiting until about the third day, when renal damage was already manifest and severe, before treating the renal condition. It should be impressed on rescue parties that the real danger to people pinned down by the limbs under wreckage was kidney failure, and therefore it was of paramount importance to ensure a good diuresis, particularly at about the time when they were due to be released from the pressure, and every effort should be made by means of abundant warm drinks to ensure a good urinary flow. The advantages of good diuresis would be dilution of chemical substances within the kidney tubules and perhaps prevention of precipitation of myohaemoglobin casts.

Once the victim was released the circulation was likely to be flooded with toxic products, and therefore it was necessary to institute a more rational way of dealing with that situation. Dr. McMichael did not think any severe additional damage or difficulty would be created by the immediate application of the tourniquet. It should be applied to the limb proximal to the site of crushing, and when the patient reached hospital it was desirable that the circulation through the limb should be restored only when the people responsible for the patient's welfare were satisfied that a good diuresis was established. The gradual release of the circulation might be attempted by replacing the tourniquet with the sphygmomanometer cuff and slowly deflating. It was possible that in these cases the limb vessels were already in spasm, so that little might be achieved by such measures. Another expedient might be to pack the limb in ice so as simultaneously to reduce the blood flow through the limb and to diminish the rate of tissue breakdown, dependent on the action of the enzymes, which acted best at about body temperature.

The next point was alkalization of the patient's blood or urine, because these patients tended to have a low alkali reserve. Administration of alkalis in quantities adequate to make the urine alkaline was a rational procedure. Sodium bicarbonate and sodium citrate should be given by mouth from an early stage in quantities of 200 to 300 grains a day. The use of the sodium salt must be emphasized because the high blood potassium present in these patients might conceivably be one of the biochemical factors leading to death. Good case records were available showing improvement in urine output after extensive alkaline therapy. Good diuresis, of course, could not be maintained in the presence of circulatory collapse, and shock should be treated by transfusion, the transfusion fluid being serum or plasma. These suggestions were merely tentative in the present state of knowledge.

Defining the Clinical Problem

Mr. D. H. PATEY said that his attention was drawn to the problem by the case of a woman admitted to hospital after being in a bombed house, where a heavy beam had rested across her thighs for some hours. She recovered from shock; twenty-four hours later blood in the urine was noticed, and in spite of measures taken to deal with renal damage she passed less urine. and at the end of a week died with renal suppression. That case was something with which they were not at that time familiar. It was thought at first that there was direct injury to the kidney, but that was disproved post mortem. The solution of the problem lay much deeper.

The biochemical and histological factors must be left to experts in those subjects. The surgeon's duty was to define the clinical problem. In the first place, these cases were not clinically "crush syndrome," but "compression syndrome." The people had been pinned under wreckage for hours, and the limbs had been compressed, not necessarily crushed. When the beam, or whatever it might be, was removed, there was often no crushing of the limb, but there was a great amount of oedema. This was a new syndrome because the factors leading to its development—the collapse of buildings imprisoning people—were substantially new. Apart from the complete syndrome going on to renal failure from the fifth to the eighth day, there must be many lesser cases, with no fatal termination, but these were unrecognized because the appropriate biochemical investigation had not been carried out.

In some of the correspondence in the medical journals a policy of "healthy neglect" was urged. Experience had proved to him that such a policy was unsound. All cases admitted with compression syndrome were potentially extremely serious, and at the beginning the serious could not be distinguished from the comparatively minor case. The renal lesion was regarded as the effect of some toxin produced at the compression site as a result of direct muscle trauma or ischaemia. This toxin got into the circulation and in some way damaged the kidney. But that conception had been quite sterile therapeutically, and therefore he suggested another conception—namely, that the renal damage was not due to toxins from the compressed limb, but to the passage of something from the circulation into the compressed limb, so that if one could restore the fluid and what it contained from the compressed limb to the circulation at the earliest possible moment there would be a better chance of helping these patients. So far there had been opportunity to treat only one or two patients on this hypothesis. The idea was to apply an intermittent positive pressure in the lower part of the limb with the object of mechanically reducing the oedema. Instead of treating these patients by putting on a tourniquet at the time of the accident, he thought there was a case, purely as an experimental clinical procedure, for giving them intermittent positive pressure treatment. Immediately the patient was released from the compression a firm crêpe bandage should be put on, and when admitted to hospital the oedematous limb should be treated vigorously by the action of a pressure pump or massage or gravity with the object of restoring back into the circulation the fluids which had escaped into the limb. The only case he described which had been so treated would, he believed, have recovered in any event, but in his view the rate of recovery was hastened.

The Nature of the Lesion

Prof. SHAW DUNN spoke of the importance of establishing the nature of the lesion and the constancy of its occurrence. Symptoms pointing to the existence of renal lesion were oliguria and rise of blood urea, and in many cases some early haematuria. There was always the question of the effectiveness of casts as a means of reducing total kidney function, but lack of concentration of urea corresponded with damage of kidney epithelium as the cause, not with cast blockage. He showed microscopical sections illustrating damage to tubules. It seemed as if something passed through the general circulation, injuring only the kidney, simply because the kidney was the organ which could concentrate substances to a greater extent than any other. Dilution was one of the main expedients in protecting kidney tubules from damage.

Mr. V. H. RIDDELL said that on admission of a large number of casualties to hospital it was very easy to miss an early crush syndrome unless the examination was systematic. The patient might look well and be temporarily passed over. The only way to avoid mistakes was to examine each patient in turn. In crush syndrome the localized erythema of the skin would draw attention to the lesion. Not only crush syndrome but other injuries, including possibly operative shock, might also be associated with depression of kidney function, varying from a temporary anuria to fatal suppression of urine.

Experience of Cases

Several speakers described cases within their recent experience. Major MAGNER (Canadian A.M.C.) reported crush syn-

drome after a motor accident. Mr. WILLIAMSON mentioned two cases of renal failure several days after compound fracture of the femur. Dr. ROSCOE CLARK showed a recovered case in which no one would have suspected renal involvement had not certain investigations been carried out. Mr. GRAHAM, to "add confusion to a subject already confused," described a case, not of compression for some hours, but only for a few minutes, which was followed by oedema of the limb above and below the site of injury and oliguria and other renal symptoms.

Mr. GUY BLACKBURN said that the term "healthy neglect" had been used, in contradistinction, he assumed, to "continuous interference." He believed "healthy neglect" to be an unsound policy in dealing with this newly described syndrome. Had he not been fortunate enough to see a patient at the very week-end on which Mr. Bywaters's article appeared in the *British Medical Journal* the patient might not have been so lucky in the final outcome. He believed chemotherapy to be strongly contraindicated in these cases. In some cases it had been tried as a prophylactic, but it had achieved nothing, and in a case in which he used it the man recovered in spite of sulphanilamide. Many reports also stated that patients had been catheterized, perhaps more than once. In a number of air-raid casualties with extrarenal damage and oliguria there was difficulty in passing water; this was not a simple anuria, but anuria combined with inability to urinate. Many recovered within forty-eight hours, but he had seen patients catheterized over several days. The institution of a tidal drain on the first or second day of treatment, after enough urine had been obtained for pathological investigation, would have saved inconvenience as well as the risk of infection by repeated catheterization.

Dr. BYWATERS, in reply, mentioned the need for observation of a large number of these cases if treatment was to be assessed. The Medical Research Council was doing valuable work in collecting cases; he hoped that those who had cases interesting enough to publish would publish them quickly, and, if not sufficiently interesting, would at least see that they were recorded in some way.

PLANNED WARTIME NUTRITION

At the Royal Institution on November 25 Prof. J. C. DRUMMOND, scientific adviser to the Ministry of Food, gave the first of a series of lectures on planned wartime nutrition. This first lecture was a review of the progress of the last twenty years, particularly pointing the contrast between the position in the last war and the present.

Prof. Drummond reminded his audience that during the last war food problems did not assume great importance until well on in 1917, when the German submarine campaign began to make itself felt. Until then there were few restrictions. Had the deterioration in the quality of food which became evident during the latter part of 1917 and continued into 1919 begun at the outbreak of the last war, and been progressive from 1914 onwards, the state of health and the general condition of the population at the cessation of hostilities might have given cause for alarm. Looking back on that period in the light of present-day knowledge it was possible to say that there had been a tendency to deterioration. It was not unreasonable to claim that the nation passed through the last war on an application of nutritional knowledge to which there had not been many additions during the previous fifty years. In the latter part of the last war there were a few scattered references to vitamins, and guarded references to the importance of something which to-day was fully recognized. The late Prof. Starling, for example, stated that there was obviously something in fruit juice which was important from the point of view of health, and which was not to be found included in any of the three units—protein, fat, and carbohydrate—which at that time were considered to comprise the whole of the elements of diet. The nutrition of the population during the last war was not considered from the point of view of vitamin deficiency. By 1918 there was evidence of progressive deficiencies which, had they continued, would have had far-reaching effects on the health of the nation.

All this threw into more striking relief the remarkable advances in nutrition since 1918. He spoke in particular of the advance in respect of the vitamin B group. There were, obviously, many parts of the skein to be unravelled even yet. It was by no means certain that yeast extract or an extract of wheat germ, which was very rich in vitamin B, could be replaced, so far as the vitamin B complex was concerned, by the synthetic vitamin. Some factors had evidently not yet been identified—indeed, there might be as many undiscovered as had so far come to light. The position was still fluid, still on the verge of further elucidation. He mentioned this as explaining why there had been reluctance to depend on any other than natural foods. However well the mixture of synthetic vitamins or isolated elements was combined to replace natural foodstuffs, there was always at the back of the mind the fear that some essential factors as yet unidentified might be left out. It seemed, therefore, that the major problems of feeding the nation in wartime had to be solved, so far as that was possible, by the provision of natural foodstuffs.

Just before the outbreak of the present war the knowledge of nutrition had advanced from the laboratory and clinical study to the field of practical and social economy, aided by surveys carried out by Sir John Orr and others. The League of Nations set up inquiries regarding nutrition in practically all the countries in the world, and much the same picture was presented in every centre. There were among the peoples of Western Europe certain clear-cut food deficiencies—in nearly every case deficiencies of the principal vitamins. Thanks to all this work it had been possible during this war to make fairly good estimates of the nutrients required by the various groups of the population so that their health might be maintained during a period of expected restriction in food supplies.

Prof. Drummond said that in his following lecture he would show the basis of the calculations made with a view to drawing up a planned nutritional policy for the nation in wartime.

LOUSE-BORNE TYPHUS FEVER

At a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on November 28, with Dr. E. H. R. HARRIES in the chair, a paper was read by Dr. MELVILLE D. MACKENZIE on "Some Practical Considerations in the Control of Louse-borne Typhus Fever in Great Britain in the Light of Experience in Russia, Poland, Rumania, and China."

Dr. Mackenzie said that louse-borne typhus fever was an acute infectious disease, lasting from twelve to sixteen days, characterized by continuous temperature, generalized rash (absent from the face), severe toxæmia, and marked nervous manifestations.* It spread with extreme rapidity through a badly nourished population, and the epidemic form was closely associated with famine and overcrowding. Another factor of great importance was widespread movements of military or civil populations bringing non-immunes into a district where the disease was endemic. Overcrowding alone was not sufficient to cause epidemics in an endemic area. Only in so far as it increased the numbers of lice and the facilities for their transmission did overcrowding play a part. As for climatic conditions, louse-borne typhus disease was a disease of cold countries and was unknown in tropical regions, although it might occur in mountainous sections of the Tropics. The endemic form occurred in the early months of the year, and the complete cessation of cases after June and July was striking; the epidemic form occurred at any time of the year. In epidemics the death rate varied widely, from 20 to 70%, depending on such factors as the age of the population at risk. It was rare for an individual to have a second attack. Adults coming into an endemic area got the disease more severely than those of similar age already living in endemic regions. The population in endemic areas might be partially immunized by a mild form of typhus.

* A memorandum on louse-borne typhus, by the Ministry of Health, was summarized in the *Journal* of December 6 at page 817.

Some Clinical Aspects

In the strenuous conditions under which extensive typhus epidemics occurred the individual, already weakened by cold and exposure, failed to notice the initial symptoms of the disease, so absorbed was he in the struggle for food, clothing, and warmth. The first sign might be mental confusion or delirium. In the great majority of cases acute delirium was established only at the end of the first week. Two very constant symptoms at the onset were headache (frontal or occipital) and bronchitis. Clinical diagnosis was often difficult. Two reliable clinical signs were complete absence of rash from the face and the fact that the rash did not appear in crops. The deeper the colour of the rash, the greater its abundance, and the earlier its appearance, the more serious was the prognosis. The delusions tended to be of a terrifying character, with nightmare dreams. Dissociation delusions were often characteristic of cases in the second week of the disease. For example, a patient would ask for his chin to be taken off for shaving, or his legs to be hung up in the wardrobe. At the time of convalescence the patient's mental condition was often far from normal. A disconcerting symptom might be the recurrence of transient delusions in the convalescent stage. A persistent symptom during convalescence was slight tremor of the hands and localized paralysis.

Measures of Control

Personnel dealing with a widespread epidemic should be protected by the use of special clothing; portable baths and showers should be taken on transport, with as good rations as it was possible to obtain. Disinfesting stations should be set up where refugees entered a territory. Experience in Russia and other countries had demonstrated the great danger to which personnel working among typhus patients were exposed and the need for the most careful supervision of their activities by the medical officer in charge. The most dangerous work was in the admission block of the hospital and in the removal of bedding. In view of the lower mortality at earlier ages, only young personnel should be employed. No vaccination as yet had been shown to protect workers under field conditions. Hair should be cut short and, if possible, shaved, including hair on the body. Protective clothing should not be worn for two or three hours without change. Opinion was divided on the question of wearing masks, but they should certainly be worn in conditions in which there was liable to be disturbance of dust. When it was necessary to sleep in squalid peasants' houses or in infested railway trains a special type of sleeping bag of closely woven material was used. This was 10 ft. long, turned at the end, and drawn up from the inside with a circular tape.

The incubation period might be twelve to fourteen days, and after this there might be four or five days before the rash appeared. Infection was very liable to occur among frequenters of public markets. A point of practical importance was the rapid wane of an outbreak when nutritional conditions improved. In addition to destruction of lice, all nits should be dealt with, so that patients should undergo a second disinfestation a week after admission to hospital. Soft soap mixed with paraffin was sufficient if conscientiously applied with the nail brush after the patient had been shaved. When disinfestation of bedding and clothing of patient and immediate contacts was complete the cleansing of the ambulance, disinfesting station, and personnel must not be overlooked. Immediately typhus occurred all practitioners should be kept informed of the existence and extent of the disease in their locality, and a brief description of the important diagnostic signs should be circulated. In the period 1901-26, 87 groups of cases occurred in Glasgow, and in 36 of these the diagnosis of the primary case was missed.

Laboratory Aspects

Dr. G. W. M. FINDLAY discussed certain laboratory aspects of typhus. It was essential to isolate the rickettsia virus, and this could be done by taking blood from the patient and inoculating it into guinea-pigs and rats. It was at first thought that blood must be taken during the first week of the fever, but actually it was possible to obtain rickettsiae very much longer.

If whole blood were inoculated into guinea-pigs and rats after the seventh or eighth day no reaction or a delayed one might be obtained, but if the blood were allowed to clot and the serum taken off a reaction could be obtained. The rickettsia could sometimes be isolated throughout the febrile period and also during the whole of convalescence. In the Balkans it had been found that there were people apparently in perfect health from whom it was possible to isolate the rickettsia, although they had never shown any symptoms of the disease. There were numerous other tests. Biopsy was at one time favoured, but that had been given up now in ordinary typhus. Recently an intradermal test in the rabbit had been worked out. Serological diagnosis chiefly resolved itself into the Weil-Felix reaction, which usually became positive at the end of the first week. An important point in this method was to show that there was a progressive increase in the titre. There was some relation between the severity of the disease and the highest maximum titre reached, but, on the other hand, there might be very low reaction in cases of typhus.

No drug treatment was employed in typhus with success. The sulphonamides were entirely without action on human typhus. The use of immune serum had been suggested, but the majority of observers had found it useless; that was the experience in Spain last spring. More promising results had been obtained with hyperimmune serum, either from horses or rabbits. As to the response of rickettsia apart from the louse, in the tissues rickettsiae were not very resistant. They were destroyed almost instantaneously at a temperature of 100° C. A very large number of vaccines had been attempted, but at present it must be admitted that the attitude on vaccine prophylaxis against this disease must be pessimistic.

Prof. P. A. Buxton raised the question of the risk of typhus in this country. If some person came over in an aeroplane from Lisbon and went down with typhus it would result in only a primary case so long as the surrounding community were free from lice. In a clean community, with adequate facilities for washing of the person and, at frequent intervals, washing of underclothes, the body louse could not exist. The body louse was common at present in the tramp community, and he thought it was also more common than was generally suspected in labour camps, among men employed in building jobs and the like, where washing facilities might be small. On the subject of head lice, K. Mellanby had collected statistics obtained in fever hospitals in all the big cities of the country which showed that in schoolgirls in cities infestation was as high as 50%, among boys it was never quite so high, while among adolescents the rate remained high in girls but fell away among boys. Opportunities had recently arisen of collecting large bodies of fact with regard to young women going into certain types of employment, and the results were consistent with Mellanby's figures. It was known that there were many cities and industrial areas in this country where the rate among girls and young women was not far short of 50%. The relation of the head louse to typhus fever was not known; but the head louse could not be satisfactorily distinguished from the body louse. Entomologists would say that the head louse and the body louse were very closely related, that they interbred and produced fertile offspring. In considering the transmission of typhus the safe line to take would be to suppose that the head louse might be dangerous, though perhaps not as dangerous as the body louse.

Dr. A. Felix could not agree with Dr. Findlay's pessimistic view of typhus vaccination. He believed that more recent methods of growing rickettsia in the tissues of animals would shortly yield successful methods of prophylaxis.

Corrigendum

Our attention has been drawn to an error in condensation of the reported remarks of Group Captain Dalziel Dickson in the Section of Laryngology in the *Journal* of November 22 (p. 744). He was reported to have said that the "regional specialist" supervised all researches in so far as they concerned his specialty and that he or his deputy visited every hospital centre. The officer to whom Group Captain Dickson was referring was not the "regional specialist" but the "R.A.F. consultant in the specialty at the Central Medical Establishment in London."

Correspondence

"Crush Syndrome" in Obstetrics

SIR,—Since E. G. L. Bywaters and D. Beall published their account of the crush syndrome in this *Journal* (March 22, 1941, p. 427) we have studied two cases in the obstetric department of the British Postgraduate Medical School in which an apparently similar condition followed the trauma of labour. The first was a woman who, after a difficult labour lasting twenty-three hours, rallied from severe shock only to die eight days later with renal failure, the blood urea reaching 388 mg. per 100 c.cm. before death. The chief histological lesions were found in the kidney and resembled those described by Bywaters and Beall—namely, marked tubular degeneration with "haematogenous casts" in the tubules. In the second case, after a difficult labour lasting fifty-eight hours, marked oliguria developed with a blood-urea reading of 79 mg. per 100 c.cm. There was no shock, the lowest blood pressure being 136/88. Recovery was rapid.

These cases suggest the existence of an apparently hitherto unrecognized clinical entity in obstetric practice. The conditions leading to its development being such as can in general only rarely occur in any one maternity hospital, this letter is written in the hope that the collection of an adequate group of fully investigated cases in different centres may throw light on such questions as incidence, genesis, clinical pathology, and morbid anatomy. A further question which calls for concerted study is the new light which the crush syndrome may throw on the hitherto baffling problem of "obstetric shock," in which trauma of the soft pelvic tissues has long been known to play an important part. The view of some obstetricians that obstetric shock is due to the flooding of the circulation with toxic elements elaborated in the crushed tissues adds further relevance to this question.

The Medical Research Council subcommittee which has been set up to co-ordinate research on the "crush syndrome" would be glad to receive any data which are available. They would also keep investigators informed of the progress of work in this field. Brief records may be sent to Dr. A. N. Drury, Medical Research Council, London School of Hygiene, Keppel Street, W.C.1.—We are, etc.,

JAMES YOUNG.

JOHN MCMICHAEL.

British Postgraduate Medical School,
London, W.12, Dec. 5.

Sulphonamides for Ophthalmia Neonatorum

SIR.—Dr. W. J. Clancy says (November 22, p. 749) that the treatment of ophthalmia neonatorum has been "greatly simplified" by the sulphonamide group of drugs. I do not think that it can be too strongly emphasized that since the introduction of these drugs the treatment of ophthalmia neonatorum has been revolutionized. It is now of little importance to investigate the bacteriology of the condition, and I am in complete agreement with Dr. Clancy regarding the relative unimportance of local treatment.

The routine treatment I use now is to give 0.125 gramme of sulphapyridine with each feed hour-hourly for 48 hours and then discontinue. I do not consider that continuing treatment after this time is of any value. By now the oedema will have gone, the discharge almost ceased, and the eyes be on a fair way to full recovery. Local treatment merely consists in frequent swabbing away of mucus and the instillation of an oily drop.

As I have never seen sulphapyridine when used in this way cause any complications, and have never known the condition resistant to this treatment, it is my teaching in the Rotunda Hospital that failure to administer the sulphonamide group of drugs immediately ophthalmia neonatorum is recognized amounts to criminal negligence.—I am, etc.,

Dublin, Nov. 28.

L. B. SOMERVILLE-LARGE.

Combined Active and Passive Immunization against Diphtheria

SIR.—In the second of the very interesting articles on combined active and passive immunization against diphtheria (November 29, p. 759) figures were given showing conversion

rates of 97%, 97.7%, and 96.5% in three groups of persons immunized with monthly spaced doses of 0.1 c.cm. and 0.3 c.cm. A.P.T., in addition to antitoxin. These results may be misleading unless it is realized that the groups from whom they were obtained were closed or semi-closed communities with recent exposure to diphtheria infection and were of persons who, it is reasonable to assume, had already had priming doses such that almost any subsequent dose of antigen would render them Schick-negative, and that these results are not what may legitimately be expected from similar doses used on the general child population.

This question of dosage is not that with which these articles are primarily concerned—the authors do in fact suggest two doses of 0.3 c.cm. even in closed communities—and the point is only raised because those results may be quoted as evidence in support of the procedure recommended by the Ministry of Health to give two doses of A.P.T., 0.1 c.cm. and 0.3 c.cm., which has already been shown by Dr. Bousfield and others to be unsatisfactory at least and may prove to be disastrous.—I am, etc.,

Wimbledon Common, D.: 4.

G. HIGHFIELD-JONES.

The Stimulant Action of Iron

SIR,—There are many problems in connexion with the use of iron by the body still awaiting solution, and the writer of the annotation under the above heading (November 29, p. 176) has perhaps over-simplified the problem of fitting together existing knowledge. If one practical effect of his article is to discourage the wide use of iron as a prophylactic for infants the price to the country will be much illness which could have been prevented and a consequent loss of woman-power in the war effort. The haemoglobin level of babies in this country, whether breast-fed or bottle-fed, varies within very wide limits, and their average level is such that their resistance to infection is less than that of babies with a higher haemoglobin level—a higher level that can be maintained by giving prophylactic iron treatment from, say, 2 months to 12 months of age. That is, I think, fully established, and the Ministry of Health, on the advice of its Advisory Committee on Nutrition, circularized all maternity and child welfare authorities in 1932 (Circular 1290) urging that prophylaxis on these lines was needed. Because infants are very prone to anaemia we need not conclude either that a low haemoglobin level is normal or that infancy is a "morbid state." But let us not quibble over definitions of normal, but get on with the job of using the means available for safeguarding the health of small children in these days when exposure to infection is increased by war nurseries and shelters. I hope someone else will take up the cudgels on behalf of anaemic women.—I am, etc.,

London, N.W.3, Dec. 6.

*HELEN M. M. MACKAY.

Nutritive Value of Bread

SIR,—Following Dr. Harriette Chick's letter (November 29, p. 790), I regret that in my paper on the nutritive value of bread (November 15, p. 689) I referred to the wholemeal flour used by her as of 82% extraction, but Dr. Chick's paper does not specifically state that the flour used was of 100% extraction. In view of the Accessory Food Factors Committee's recommendation quoted in the first paragraph of the paper and the evident application of the work to human diets, in which wholemeal bread very rarely indeed consists of the entire grain—some 5% of the coarsest bran being practically always removed—I assumed that the flour used was of the 82% extraction in general use at that time.

In reply to several inquiries I have received about the yeast which I used, this was moist baker's yeast. A further experiment on similar lines to the one recorded has lately been completed without the use of yeast. The dietary constituents in this case were mixed with water, steamed, and fed in a firm doughy consistency. This further experiment gave results confirming those recorded in my paper.—I am, etc.,

London, W.6 Dec. 5

M. D. WRIGHT

Rest for Civil Defence Workers

SIR,—May I draw the attention of your readers to facilities that are open to civil defence workers through the Civil Defence Workers Rest Department of the Joint War Organization.

Accommodation is available in three Joint War Organization convalescent homes near London (which have been temporarily allocated for this purpose) to civil defence workers of both sexes in the Metropolitan area and Outer Ring who are in need of change after illness or injury, or of rest and recuperation as a result of a prolonged spell of duty, etc. There is no charge to applicants, who may apply on their own account or through their A.R.P. authority, in which case applicants are asked to attend the weekly Red Cross medical inspection, bringing a certificate from their own doctor and a leave permit from their A.R.P. authority.

In the case of civil defence workers who have been hospital patients (either in- or out-patients), these may proceed direct on application by the lady almoner to the Civil Defence Workers Rest Department. In addition to full-time civil defence workers, the facilities are at present also open to part-time A.R.P. personnel, registered fire-watchers injured on duty, and those who have been discharged from the service but who contracted their illness or injury while in the service. Free transport from Central London is provided.

Accommodation is also available in the Bristol area for local personnel, and it is hoped shortly to extend to other parts of the country. All applications and requests for further information should be made to the secretary, Convalescent Section, 6, Cadogan Square; London, S.W.1 (Slo. 9951).—I am, etc.,

HORDER,
Chairman, Civil Defence Workers
Rest Dept., J.W.O.
London, S.W.1, Dec. 7.

Industrial Medical Boards

SIR,—A very strong case has been made out for the establishment of Boards for the assessment of industrial fitness of both men and women. I venture to propose the following plan:

1. At every Labour Exchange the services of an advisory medical officer (with special industrial experience) should be available. He would undertake a preliminary "weeding out" of workers in order that grossly unsuitable allocations of man- and woman-power may be avoided in the future.

2. Every Regional National Service Officer should be provided with the services of an Advisory Fitness or Medical Board consisting of three medical members with special industrial experience, one of these to be appointed by the Ministry of Labour, another by trade union representatives, and a third by employers' organizations.

3. In cases of special difficulty or an appeal all three members of the Board should examine and report on the worker to the N.S.O. for the region.

4. Part-time and not whole-time appointments should be made both to the Boards and in the local areas. The work would be much too difficult and exacting for whole-time employment. The standard of the work done would inevitably decline after a certain period of whole-time employment.

5. Right of appeal should be granted from the local assessor to the Board either by the worker or his employer.

6. The function of the local and regional services would be to advise upon fitness for actual or proposed employment at the time of a first allocation (a) to an industrial employment, or (b) for special industrial training, or (c) after an appeal by a worker for a change of work on medical grounds.

7. Appellants should be required or encouraged to bring with them letters or certificates from their own personal practitioners, and from the works doctor (if any).

In any event a radical and immediate change in the present procedures is clearly needed.—I am, etc.,

Worcester, Dec. 6

HOWARD E. COLLIER.

Industrial Medical Services

SIR,—Dr. Donald Stewart, in his comprehensive article on industrial medical services in Great Britain (November 29, p. 762), seems to imply that factory doctors and surgeries are the outcome of the last war. True, the movement for the appointment of factory medical officers and nurses received a great impetus as a result of experience gained during 1914-18, as did the industrial welfare movement generally, but a number of British firms had well-developed schemes long before that.

I am speaking now of doctors engaged entirely in looking after employees while at work, examining new entrants, attending accident cases, supervising general factory conditions, and

so forth, and not those employed by firms, friendly societies, and sick clubs to attend employees and their families in their homes. For instance, Cadbury Brothers Ltd. appointed their first whole-time medical officer in 1902, and had a whole-time nurse or nurses before that. There may be firms who had doctors and/or nurses at an even earlier date, but I am fairly certain that between then and 1914 other industrial concerns adopted similar measures.—I am, etc.,

Birmingham, Dec. 9.

J. A. BROWN.

Medical Supervision of Industrial Workers

SIR.—In the *Journal* of November 29 (p. 783) there is a summary of the B.M.A. *Report of Committee on Industrial Health in Factories*. According to the report of the duties of an industrial medical officer, the first duty is "medical supervision of employees during working hours." Does this mean that the medical officer is to supervise the manner in which the employees are using their bodies while doing their work, or simply to supervise the conditions under which they are doing their work? If it is the first, it is pertinent to ask how many medical officers have been trained to look at the human machine in use as an engineer is trained to look at his machine in action. Because unless he has been so trained, and is able to detect and correct wrong body use in standing, sitting, walking, lifting, bending—in fact, in every action in which he uses his body in his work—he is failing entirely in his supervision, as the special human machine he should supervise is subject to the same laws as the mechanical machine, and disabilities, defects, exhaustion, and premature wearing-out arise as surely in the one as in the other from wrong use.

It cannot be questioned that one of the most important functions of a supervisor is to see that the worker, as he works, is conserving the efficiency of all his vital organs while enabling him to perform every necessary action, no matter how arduous or complicated, with ease and economy of effort. But the science of the correct use of the body as a unit—using all its parts (voluntary and involuntary) at one and the same time for a common end—has not been explored by physiologists or clinicians. It is an unknown subject to the profession and therefore to industrial medical officers. This indictment is substantiated by the numbers of cases we are called upon to treat for which no cause can be found, but in every one of which there are certain to be found evidences of maladjustment of posture and a consequent wrong use of the body. Until this gap in our medical knowledge and practice is filled, so long will our workers (brain as well as manual) suffer unnecessarily in health and efficiency, whatever else we do for them.—I am, etc.,

Bexhill-on-Sea, Dec. 4.

A. MURDOCH, M.B., C.M.

Health of T.N.T. Workers

SIR.—Perhaps a few notes from one who had a good deal to do with T.N.T. in shell-filling factories during the last war may be useful to those now undertaking the special work of industrial physicians in charge of modern factories.

1. I found, first, that it was highly necessary to "vet" medical certificates given to workers at my factories, since apparently the mere fact that some T.N.T. work was done there sufficed for a diagnosis of T.N.T. poisoning and for a certificate to be signed accordingly by doctors who had never been inside such a factory; nor would the latter trouble to inquire of the medical officer-in-charge whether the patient was, or had recently been, working with T.N.T. before making such a diagnosis. Fewer than half the number of persons attached to the factories actually worked with T.N.T.—for instance, those concerned with the cleaning and painting of empty shells, or with stoking or driving engines bringing the raw material to the works, had no contact with it. There were, alas! certain blatantly wrong diagnoses, which could not possibly have been made had the patient been examined and his statement alone not been accepted as true. Fear of poisoning certainly was an element in disorders of T.N.T. workers.

2. In order to keep down risk of T.N.T. poisoning it is necessary to examine every worker on admission to the works and exclude certain types. If the M.O. will consider the lesions liable to be produced by T.N.T. or similar poisoning, he can easily make a list of those he should exclude *a priori*—for

instance, since renal trouble may be caused it is advisable to exclude all multiparae who have had albuminuria of pregnancy; persons with gastro-intestinal trouble suggesting ulceration or colitis, or a history of jaundice; cases of heart trouble with suspicion of the presence of a bacterial or toxic poisoning of the heart muscle; anæmias of any sort (by pigmentary test, confirmed, if needful, by blood count).

3. The mere bluishness of the lips is not of primary importance if it clears up after, say, an interval for a meal. Hundreds of those who entered the canteen with blue lips due to excessive "fumes" left the canteen with normal-coloured lips. The remedy is, of course, plenty of ventilation and thorough cleanliness from T.N.T. of the whole factory.

4. The idea held by Prof. Benjamin Moore (who worked at one of my factories for several weeks and whom I knew then) that the main source of penetration of T.N.T. was through the skin is, in my experience of large numbers of T.N.T. workers and their lesions, not established. The mouth and nose are the main ways in. Here are a few facts for digestion.

At one of the earliest filling factories there were some forty men on experimental plant, working long hours, covered with powder containing T.N.T., and, probably, often sleeping in their clothes. Again, there were over thirty women whose job it was to clean shell-caps from amatol, which had been used to cap the shell while in transit in the factory. These women cleaned the caps in troughs filled with paraffin, at the bottom of which was a sludge of ammonium nitrate, while the liquid was apparently a saturated solution of T.N.T. They had all worked for three months or more at this job. No single one out of these two groups had any form of T.N.T. poisoning, though if T.N.T. actually penetrated the skin surely both groups should have at least given a positive Webster test in the urine (carefully taken). None of the whole group of women tested by my colleague and by me, save one case in which there appeared to have been slight contamination, showed the "T.N.T. reaction" in the urine; possibly absence of a + test would seem to indicate re-uptake of T.N.T., but, of course, could also indicate that T.N.T. had not penetrated the skin. This work was done in a shed where there was no other T.N.T. work done, so the latter is the more probable explanation. Again, I examined about sixty stomach contents: all contained T.N.T.; girls commonly licked their lips. Mouth-breathers showed T.N.T. in the saliva; nose-breathers showed definitely less at the posterior part of the airway than in the front of the nostril—indicating that the nose acts as a partial filter.

So it follows that T.N.T. must not reach the mouth and nose; the air of the factory should be clean and dust containing the poison must be avoided.

5. Alternation of labour—fourteen days on T.N.T. processes and fourteen elsewhere—is a great help, and when a worker otherwise symptomless has the slightly glassy eye suggestive of poisoning, although the urine is negative, it is wise to order transference to some part of the works where there is no T.N.T. for a period varying with the case. Pay should be the same, or else the "patient" will think he is being victimized. The cases in which one may reasonably suspect commencing jaundice are those with definitely "too yellow" serum (the first place to look for signs of commencing jaundice); a few drops of blood from the finger or ear allowed to clot in a small tube with narrowed ends and examined later as to colour of serum against white paper are all that is needed. Constipation may also cause "too yellow" serum; but as this may be a symptom of early poisoning "non-T.N.T." work should be ordered in any such event.

6. As to rashes, there appeared to be two types: one, probably allergic, like a very severe urticaria on exposed parts (I got mine within twenty-four hours of starting work); and another, eczematous type, much rarer and apparently occurring mainly in men who were accustomed to daily beer in quantity (there was only one woman with this rash), though other alcoholic drinks made the condition, when established, promptly worse. Incidentally, I do not remember a single case of toxic jaundice in a person who had a strong "acute" skin reaction, though this needs checking.

7. From experience and correspondence with the head of a firm manufacturing T.N.T. I formed the opinion that what we called T.N.T. poisoning was due not to pure T.N.T. (crystals,

originally white, but soon becoming yellowish), but to various by-products, mainly unsaturated nitrations of the toluene. The material supplied to us at first in more or less crystalline form contained a treacly stuff which stained the skin yellow or brown, or even black, and which, as evidenced by the effects on a certain research chemist, was the main offender in the poisoning. Later on we had a somewhat branny form in bags, but by that time poisoning had largely disappeared.

It is to be hoped that the lesson of cleanliness of the works, air, and personnel and the value of alternation of labour in and out of T.N.T. processes have been remembered.—I am, etc.,

Birmingham, Nov. 30.

H. G. P. CASTELLAIN.

Encopresis in Children

SIR,—Dr. Charles Burns is to be congratulated upon drawing attention to the unusual but distressing symptom of faecal incontinence in childhood (November 29, p. 767), which, as he says, receives but scant mention in textbooks of paediatrics. In my experience such cases fall into three distinct groups: (1) those in which there is a delay in the establishment of complete bowel control even up to 13 or 14 years of age; (2) those in which normal control is established in infancy but the symptom presents itself in childhood or adolescence; (3) those in which the major symptom is not faecal incontinence but the tendency to play with the faeces or deposit the motion, either parcelled or otherwise, in unusual places such as pocket, drawer, cupboard, etc.

In cases in the first group the condition is closely allied to, and often associated with, enuresis, and occurs in children who are constitutionally of nervous, excitable disposition, and weak in sphincter control. The condition tends to improve as the child grows, the symptom often disappearing with some chance change of circumstance, such as admission to hospital for observation, change of residence, removal to a new area, etc. The second group, of which Dr. Burns's first, second, and fifth cases are examples, comprises cases of neurosis in which the symptom expresses, as he says, "a protest against an inimical and threatening environment; an unconscious reaction, both of aggression and of fear." These, I agree, require observation at play (play therapy) in the case of young children, so that the basis of the neurosis may be determined, while in the case of older children and adolescents psychiatric interviews are indicated. The third group, of which Dr. Burns's third and fourth cases are examples, presents a much more serious problem, usually of deep psychological significance. These cases are commonly associated with other symptoms such as purposeless stealing and collecting of oddments, pilfering and hoarding of food, wilful destruction, lying, and secrecy. In my own experience, the children in this category invariably realize that they are unwanted. Two outstanding examples are those of an illegitimate boy of average intelligence and considerable pluck who was fostered in a home for babies until he was 13 years of age, and an illegitimate boy, adopted at 3 years of age, who had presented the above-described behaviour difficulties for some years, but developed the interest in faeces when at 13 years of age he learnt for the first time of his adoption. Following psychiatric investigation, these cases usually require some drastic alteration in their environmental circumstances before adjustment can be brought about.—I am, etc.,

Liverpool, Dec. 8.

MURIEL BARTON HALL.

"Wound Phagedaena"

SIR,—The report of two interesting cases of "wound phagedaena" by Mr. Alexander Callan and Mr. Alexander Duff (December 6, p. 801) illustrates some of the difficulties in the treatment of the condition. Although, as they suggest, wide excision is the correct treatment, this may prove a formidable undertaking when the affected area is extensive. In two such cases I have incised the normal skin beyond the inflamed margin with the diathermy knife—the incision extending down to muscle—forming a narrow trench around the lesion. In both cases this procedure was successful in arresting the spread, and subsequent healing of the areas resulted.—I am, etc.,

Central Middlesex Hospital, N.W.10, Dec. 8.

T. G. I. JAMES.

Endocrine Therapy of Hypertrichosis and Acne

SIR,—In the report of Dr. A. P. Cawadias's Thomas Vicary Lecture on hermaphroditism, in your issue of December 6 (p. 818), the lecturer is quoted as having said: "I know of no fact more capable of increasing our faith in internal medicine than the complete transformation of repulsively feminized boys into normal virile adolescents, thanks to a few hormonal injections, or the change into beautiful and complete womanhood of girls with hairy faces and bodies and thick and acne-ridden skin, thanks to oestrogenic hormone therapy."

Dr. Cawadias was referring presumably to intersexual cases only. To avoid disappointment to many sufferers from hypertrichosis and acne vulgaris, I think it should be made clear that it has been pretty thoroughly established that no form of hormone therapy is the slightest use in ordinary cases of either hypertrichosis or acne vulgaris. For many years I have at intervals consulted authorities on endocrinology as to whether any hormone had yet been isolated which would cure hypertrichosis in a woman, and have always received a negative reply. All my experience and reading lead me to a similar conclusion with regard to acne vulgaris.

If Dr. Cawadias can give references to any work which will justify an alteration in these views I at least shall be grateful.—I am, etc.,

London, W.1, Dec. 9.

A. C. ROXBURGH.

"Ether Convulsions"

SIR,—Ether convulsions have often been mentioned in your columns, but as they are predominantly due to heat the experience of an anaesthetist in the Tropics may be of interest to your readers.

In the summer here in Punjab the outside temperature goes up to about 120° F. As most of the Indian hospital theatres are not equipped with air-conditioning systems, fans and "khaskhas tatties" sprayed with water serve to cool the temperature. I have observed ether convulsions when the thermometer in the theatre registered 90° to 105° F. as dry and 80° to 90° F. as wet temperature. They were seen in some septic cases, those with fever, generalized peritonitis, and in prolonged cases when the peritoneum was about to be sutured. This last fact shows the convulsion to be due to saturation of the system with ether or to an overdose. But I have also seen convulsions within a few minutes of induction in cases of high fever with generalized peritonitis. Most of the patients were children and young adults; none was in old age. During the last four years only three patients have had severe convulsions. Over sixty others have had only twitchings or spasms, and these were prevented from developing into convulsions by the following treatment.

As soon as twitchings and spasms in the face muscles or the orbicularis palpebrarum or finger muscles are noticed the head is kept raised about 8 inches and ice put over it and on both sides of the neck and over the region of the medulla. Firm pressure is maintained over both carotid arteries for three seconds, and repeated once or twice. I had often noticed the convulsions in cases where the head of the table was kept low, and as the raising of the head relieved them I am convinced that brain congestion of the Rolandic area is an important cause of these attacks. The prolonged inhalation of vapour after bubbling of much oxygen through an inferior mask of ether or old-standing ether has caused convulsions. In these cases there was no cyanosis, but often there is a trace of cyanosis in ether convulsions. Typical ether convulsions begin from above downwards, face, fingers, etc., and are different from the tremors or twitchings sometimes seen in the extremities if they are not well supported. Ether convulsions never begin in the lower limbs.

As diminution of serum calcium and alkalosis, due to quick elimination of CO₂ and consequent interference with normal respiratory quotient, are contributory causes of the convulsions, calcium gluconate 10% given intravenously at the first appearance of the twitchings is beneficial. If the patient's colour is pink, showing hyperoxygenation, due to oxygen being allowed continuously, only CO₂ is administered, but if there is cyanosis or even slight duskeness both CO₂ and oxygen are given. A

clear air-way is maintained and any tenacious mucus in the throat is removed. Sodium evipan or pentothal was not injected, because, in addition to the above treatment, withdrawal of the mask and careful early change to chloroform and ether mixture and then to chloroform controlled the convulsions, and the operation was continued; later increasing doses of fresh open ether without oxygen were allowed until the operation was completed. Evipan, in my opinion, is contraindicated in weak patients with low blood pressure and when the head is raised, because it brings about a further fall in blood pressure.—I am, etc.,

K. E. MADAN, M.D., D.A., D.O.M.S.
Senior Anaesthetist, Mayo Hospital

Lahore, Oct. 16.

Post-war Medicine

SIR.—Dr. A. Piney (November 22, p. 753) calls for an answer to the question, What is wrong with medicine to-day? In the same issue (p. 753) a science master of Manchester Grammar School makes the disquieting disclosure that in his experience candidates for the medical profession are very frequently inferior, both intellectually and culturally, to those who propose to adopt other professions. Are we correct in deducing from this that medicine at present fails to attract the best brains? The question naturally arises. Why should this be so? In seeking an answer to the first question it is possible that we may obtain an answer, in part at least, to the second.

It would be a difficult matter to answer Dr. Piney's question within the necessary limits of a letter in your columns. It is easier to set out briefly what one hopes might be achieved if the profession were to become organized in a definite service, thus indicating by implication some of the things which some of us think are wrong with medicine to-day.

The problem in its essentials boils down to being largely a matter of finance. On the one hand, the patient cannot at present afford to be doctored as we think he ought to be, while on the other hand the doctors have not the means to provide by themselves the ideal service. The maintenance of good health and the cure and alleviation of ill-health should therefore become a charge on the community generally and not a burden to be borne by those individuals who are so unfortunate as to become ill and those others who happen to be charitably disposed. I have attempted to make out my case in the form of parallel columns, thus:

THE ADVANTAGES OF AN ORGANIZED MEDICAL SERVICE

To the Public

1. Relief from the financial burdens imposed by illness, often crippling in their effects.
2. Ready access to everything required in the diagnosis and treatment of disease.
3. It would be possible to encourage the maintenance of good health in the community generally by education and the provision of the means for living a healthy life.

To the Medical Profession

1. Relief from the financial strain of setting up in practice. At present the would-be consultant has to face long years of struggle before anything like an adequate return comes his way. The general practitioner's opportunities are more often than not determined by the amount of money he can find than by his academic and postgraduate successes and experience.
2. More regular hours of work, more time to study his cases, more leisure to keep physically and mentally fit, greater opportunity for postgraduate study.
3. A regular income with freedom from the worry of trying to collect money owing for work done.
4. A pension to retire on at a reasonable age, thus opening the way for younger men.
5. The chance of promotion for those keen enough and capable of working to get out of the groove which most of us get into the day we start in practice.
6. Relief from the necessity, for purely business reasons, of living in large houses.

In conclusion, it may be said that the State has already taken over the responsibility for so much which was previously within

the province of the family doctor that it will soon be impossible for most of us to make a living from that form of practice. It looks, therefore, as though—whether we like it or not—we shall be driven into some form of organized service.—I am, etc.,

Bridlington, Dec. 3.

C. J. GORDON TAYLOR, D.M.Oxon.

X Rays in Treatment of Inflammations

SIR.—The Council of the Medical Defence Union desires to endorse in general the views expressed by Dr. H. Courtney Gage in his letter in the *Journal* of December 6 (p. 825).

The records of the transactions of the Union clearly show that there are many hidden and some obvious dangers associated with the use of radiotherapy by medical practitioners who have not had special training and experience in the vagaries and technicalities of x-ray administration. The Council of the Union desires immediately to protest most strongly against the employment of x rays in the treatment of inflammatory and allied conditions by casualty medical officers and other practitioners who have only a limited experience in the use of the apparatus necessarily involved, since it is felt that if this practice is encouraged and extended consequential and grievous injuries will be sustained by patients, leading in time to claims for damages upon the medical practitioners responsible for the treatment.—I am, etc.,

R. FORBES,

Dec. 8.

Secretary, Medical Defence Union.

Administration of Voluntary Hospitals

SIR.—The academic and professional status of the voluntary hospitals is unquestioned, and their popularity with patients is deservedly great. They owe this to the whole-hearted and free co-operation (mark this word) of their medical staffs. These staffs are in a healthy sociological state because free debate, free criticism, and free initiative as regards improvement of each and every department exist.

There is no room or necessity for reversion to the primitive schoolmaster-schoolboy tradition inherent in the medical superintendent type of regime. Such a superintendent is bound to be inferior intellectually to some of his professionally more able staff, and unless he is a man of very exceptional character the result will be friction and the hospital will suffer.

If the committee system has proved itself to be an efficient mode of internal medical government in the teaching hospitals, responsible, of course, to the lay board, what is the point of regressing to a less democratic, more Hitlerian, form of organization? I had thought that the maintenance and the development of democratic principles was the chief cause for which the war is being fought. The staffs of the voluntary hospitals, and their representatives upon post-war planning committees, must insist that a reactionary step be not forced upon them. If maintenance of hospitals financially by the State is to follow the war, why should not the hospital staffs be as answerable to, and as responsible to, the State as they now are to their lay boards? But since hospital organization upon the lay side, and in those matters lying between the practice of medicine and details of maintenance, is becoming more and more of a specialty, I suggest that an "organizer" be appointed to medical staffs, that he be on an equal footing with, and not on a superior footing to, his practising colleagues, that his time be devoted to the details of administration, and that he shall sit both on the medical and on the lay committees, as others of his colleagues do. He and they will thus both learn much from each other.

There is a final point. Civil Servants dare not act on their own initiative, and this produces the type of mind which seeks to do as little as possible so as to avoid doing wrong or irritating superiors. The tempo of the Civil Service is thus that of the snail. Delegation of responsibility to trustworthy committees or bodies is the only cure for this bureaucratic katatonica.

The stage is thus obviously set for a real experiment for the improvement of administrative efficiency. Is there any reason why the opportunity should not be seized? If it is to be seized, pressure must be put by the members of the voluntary hospital staffs upon their accredited representatives.—I am, etc.,

London, W.1, Dec. 10.

GEOFFREY BOURNE.

Voluntary Hospitals

SIR,—I have been presented by a doctor on our hospital committee with the opportunity of perusing correspondence in your *Journal* resulting from Sir Frederick Menzies's timely, pertinent, and provocative query relating to voluntary and municipal hospital systems.

To me as a layman the letters published have been illuminating and instructive, but as treasurer of our local hospital I was disappointed that with only one exception was finance referred to, though I realize mercenary considerations might perforce only have been generalized in the "pros and cons" of the varying professional arguments put forward. Your correspondent Dr. Wilfred Shaw (November 8, p. 665), in dealing with post-war medicine, however, raises its importance as a factor, and generally I agree with his conclusions, in particular that voluntary hospitals must in time become aided either directly by the State or by the municipalities, though I trust with the minimum of control, which, if unavoidable, should be on a variable scale according to the degree of pecuniary assistance granted to meet the individual needs. It is only right that those hospitals, some perhaps being well endowed and/or having conserved their resources, should continue to control their policies, management, and direction, assisted by State or municipal representation on the Management Board according to the monetary services rendered, from which it naturally follows that the less fortunate would be the more assisted by such representation.

The difficulties will not be insurmountable provided a policy of give-and-take and the right atmosphere are in evidence when the whole matter is dealt with.—I am, etc.,

Walmer, Nov. 26.

C. W. LANGDON.

Increase of Tuberculosis

SIR,—If Prof. Lyle Cummins (November 29, p. 787) considers that I have misrepresented the theory offered in his first letter (November 1, p. 632) I offer him my apologies, though I do not think that reference to his letter would convince any impartial person that the misrepresentation was serious. The discharge of tuberculous persons from sanatoria certainly figured prominently in his theory, and I seized upon this as the only element capable of any sort of statistical examination, however approximate.

But we need not waste time discussing the finer points of interpretation of the theory, for the question at issue is really quite clear. To put it in its proper terms, I think it is fair to say that Prof. Lyle Cummins maintained that the increase of tuberculosis morbidity and mortality observed in this country during the present war is due to changes in the conditions of spread of infection brought about by the war. I said that there was little evidence for this belief. Prof. Lyle Cummins has offered none. Further, I quoted some facts which, I think, do constitute evidence that in the similar increase observed during the last war nutritional factors played an important part. It is, of course, possible that the causes operating in this war are entirely different from those operating in the last, but there is certainly no evidence which would justify this assumption.

Prof. Lyle Cummins is correct in assuming that I do not deny that "clinically evident tuberculosis" is due, in the first place, to infection. I would go even further and agree that all forms of tuberculosis, whether clinically evident or not, are due, in the first place, to infection. This, however, is irrelevant. We are discussing what factors determine whether tuberculosis is of the clinically evident variety or not, and, in particular, what is responsible for the increase in the incidence of the clinically evident variety observed in wartime. Prof. Lyle Cummins emphasizes the importance of presumed changes in the conditions of spread of infection, and asks: "Is it necessary to postulate anything else?" I think many would agree that his question has to be answered in the affirmative.—I am, etc.,

London, E.1, Nov. 29

A. L. JACOBS. M.R.C.P.

A Human Ostrich

SIR,—In connexion with Dr. J. W. McK. Nicholl's letter in your issue of December 6 (p. 827), headed "A Human Ostrich," the following case reported by Dr. Philip H. Wheeler (in the *New England Journal of Medicine*, January 9, 1941, p. 571) of a

mental patient in Battleboro, Vermont, seems worth a note in your columns.

The patient was a man of 43 years who complained of abdominal pain, and x rays revealed the presence of foreign bodies which he had swallowed. At operation there were removed: 69 narrow staples, 24 wide staples, 21 pieces of glass, 73 miscellaneous articles including open safety-pins, hairpins, corroded needles, ordinary pins, tin-tacks, pieces of safety razor blades, one piece of hacksaw blade, and a screw—187 articles in all.

Five years later the patient was again operated upon for abdominal pain and removal of foreign bodies. This time there were removed: 440 pieces of glass and 277 metallic bodies—wire, needles, nails, pins, a bottle cap, and fragments of a barbed-wire fence—717 articles in all.

The following year he had to undergo a third operation for the same reason, and there were removed 425 articles—wire, pins, toothpaste tubes, glass fragments, tacks, etc. Altogether at the three operations there were 1,329 articles removed.—I am, etc.,

Bureau of Hygiene and Tropical Diseases,
London, W.C.1, Dec. 9.

H. HAROLD SCOTT.

Obituary

ROBERT A. WELSH, M.B., B.S.

Dr. Robert A. Welsh, a greatly respected member of the medical profession in Northumberland and a familiar figure at many Annual Meetings of the B.M.A., died on November 21, a few days before his seventy-seventh birthday. On his retirement in March, 1939, after nearly fifty years' service as a general practitioner in the Felton area, he received an illuminated address, a book containing the names of several hundred subscribers, and a cheque, in the presence of a large number of old patients, neighbours, and medical colleagues, some of whom travelled long distances to show their esteem and affection for Dr. Welsh.

Robert Anthony Welsh was born on December 3, 1864, and had his medical training at Newcastle-upon-Tyne, graduating M.B., B.S. of Durham University in 1891. After a post at the Northumberland County Asylum, and some experience of practice in a mining district and two large towns, he went to Felton and succeeded to the practice of Dr. Hedley, whose daughter he married. His unselfish and devoted work among rich and poor, to which his old friend Prof. Grey Turner pays tribute below, was rewarded by the love of all his patients. He joined the British Medical Association as far back as 1893, and represented the Newcastle Division at nearly all the Annual Representative Meetings from 1920 to 1937. He was also a well-known attendant at the Panel Conferences, and served for several years on the Rural Practitioners Subcommittee of the Insurance Acts Committee. He seldom spoke from the platform, but followed closely the proceedings of the Representative Body, and much enjoyed meeting old friends during this annual break in an arduous professional life. Robert Welsh was a diligent reader of the *British Medical Journal*, and had a great affection and admiration for its late Editor, Sir Dawson Williams, with whom he kept in touch for many years. In 1933 he wrote for the *Lancet's* series "The Doctor's Day" an interesting article, "In the Depths of the Country," vividly describing the work of a single-handed practitioner in a Northumbrian village. The article ended: "No other type of practitioner is so tied up and unable to get help from a colleague. However, as we make our bed, so we must lie on it, and the life has its charms; and had I my time to begin again I would still be a country doctor. But there is only a certain type of man cut out for the job."

Prof. G. GREY TURNER writes:

I should like to send a note of appreciation about my old friend Robert Anthony Welsh of Felton, Northumberland. He was always known as "Welsh of Felton," and one can

scarcely realize that for the last three years he had lived in retirement near Newcastle-upon-Tyne. Practically the whole of his professional life was spent in country practice, and he was a model of what a country doctor should be. The appreciation of his numerous friends was shown by the presentation made to him when he left Felton after serving the community faithfully and well for no less than forty-seven years. It was characteristic of this country doctor, who was really modest and shy, that in thanking his friends he said he accepted the gifts not only as a recognition of his own services but as "a compliment and tribute to the medical profession." It will be a grief to many that he has not been spared to enjoy the leisure so well earned. But he missed the happy associations which his practice provided, and he was deeply affected by yet another war in which several members of his family are serving.

Welsh took the deepest interest in his patients from every point of view, and their sorrows especially were of deep concern to him. As a result he came to know the life-history of most of the families within a wide range of his home, and as he had a most retentive memory it was very interesting to hear him detail the circumstances of their life-history that might have a bearing on their ailments. Welsh was a good clinician, and not only on the medical side, for he belonged to a day when the country doctor had to deal with his own accidents at all events, and his results in fractures and other injuries were wonderfully good. His interest in the profession generally was very deep, and by steady reading he kept himself well informed of everything that concerned the welfare of his patients. Though he often disagreed with modern tendencies he was always prepared to discuss the relative merits of the various methods of treatment and was most anxious that his patients should have all the advantages available. Among his patients his word was law, for he "managed" rather than merely "treated" them, and in a wonderfully tactful way. He was very fond of literature, especially biography and poetry, and he could quote accurately from many of his favourite authors. In the same way he retained a vivid recollection of the sayings of many of his old teachers, and these he would often recall. He was proud of the old Medical College in Newcastle-upon-Tyne and of the University of Durham, of which he was a graduate. Though he hated ostentation he liked to wear his academic dress on suitable occasions. Welsh was an outstanding letter-writer, and would certainly have shone in the heyday of that art. His well-known clear, legible hand will be sadly missed by his correspondents. When he sent a patient into hospital or for consultation the case was always accompanied by an explanatory letter, and there can have been few points of importance that he ever missed. I cherish a large number of his communications not only for the sake of the vivid word-picture of clinical conditions but for their detail of the circumstances generally associated with the doctor's work and their shrewd comments on men and affairs. He had an intimate knowledge of all that appertained to the country, and was a keen gardener. In his later days it was most interesting to hear him recall the routine of country life long years ago. I frequently urged him to write about these things, for I felt sure that some day there would be readers intensely interested in the vivid account which Welsh was able to give of the life in and about the large country houses with which he was familiar. He was a devoted member of the B.M.A., and regularly attended meetings, not only locally but the Annual Meetings, and it was always a delight to see him among his friends on these occasions. His attitude to many of the happenings in the profession was critical and often sceptical, but he was absolutely straightforward and honest and could not tolerate sham in any form.

Of course, for many years he belonged to the "horsey days," and one of my earliest memories is of seeing him set out from Newcastle on the box seat of a closed carriage with a spanking pair of horses, so that he could be in attendance on one of his patients recently operated upon, who was carefully packed up inside on her long journey of nearly thirty miles to her home in the country. In later years I have known him much put to keep his engagements when the weather was bad, and I vividly recall an occasion in the depths of winter when he made the journey to Newcastle riding uncomfortably on a milk float in order to be present at an early morning operation on one of his patients. He never got over the wrench

of leaving his old home and his old friends among his patients, but it was a keen satisfaction to him that one of his sons was able to succeed him in the practice, which had been in his wife's family for five generations. The house in which he lived has been a doctor's residence for over 200 years. He was devoted to his family, and of recent years his few holidays were spent in visiting among them.

ELWIN NASH, M.R.C.P., D.P.H.

We regret to announce the death of Dr. Elwin H. T. Nash, lately medical officer of health for Heston and Isleworth, which took place on November 28.

Dr. Nash, who was born in 1872, received his training in Manchester, where he was Public Health Research Fellow, and at St. Thomas's Hospital, London. He qualified in 1896, and took the D.P.H. in 1908. After serving as resident house-physician at St. Thomas's he entered the public health service. Among the appointments he had held were those of senior assistant medical officer for Derby and medical officer of health and school medical officer for the borough of Wimbledon. Later, and until his retirement, he occupied the same positions in the newly formed borough of Heston and Isleworth in Middlesex, one of the towns on the growing edge of London, with a population in 1931 of 75,000. Here, in a new area and with a sympathetic authority, he was able to put into practice many ideas with regard to maternity and child welfare, children's nutrition, school dentistry, and diphtheria immunization.

Early in the thirties he instituted what was probably the first school orthodontic clinic in the country, having been impressed, as he said, not only with the physical disadvantage of the large numbers of children who suffered from dental disfigurements, but by the real inferiority complex which such disfigurements created. His method of persuading those in his charge to undergo diphtheria immunization showed him to be a first-rate organizer and propagandist, and his reward was in the relatively high percentage of his school population so immunized. He had also his own strong views on school feeding and on nutrition in general, and Dr. Nash's *Cookery Book* found a wide acceptance. On such subjects as school lighting and the ideal classroom he was an expert, and he served on central committees dealing with those and other subjects. He was in fact the ideal school medical officer, and no circumstance which could possibly affect the health of the school child was too small to interest him.

For many years Dr. Nash occupied various positions of responsibility in the Society of Medical Officers of Health. He had been president of its Home Counties Division, and of its Maternity and Child Welfare Group, and eventually became a very successful president of the society itself. He also "passed the chair" of the Medical Officers of Schools Association, and served that body in many capacities.

In the British Medical Association, which he joined immediately on his qualification, he did some excellent divisional and central work. He served as representative at twelve Annual Representative Meetings, and was never content to be a silent one. He was chairman of his own Division, South Middlesex, in 1929-31, and at the Annual Meeting in Belfast in 1937 he was vice-president of the Section of Hygiene and Public Health. He served on many committees at headquarters, including the Insurance Acts, Public Health, and General Practice Committees, and here again he was no lay figure, but took an active part in much detailed subcommittee work.

Behind his burly form and forceful manner was a man with the kindest of hearts, a high sense of public duty, and abilities out of the common. He had been happily married for over forty years, and his wife survives him.

Dr. ALFRED COX writes:

The above obituary notice shows what an active and versatile man Nash was, but it does not allude to one episode in his career which deserves honourable mention, for it was something of which he was justly proud. He was one of the pioneers (there must be few now living) who took part, as a representative of Accrington, in the memorable Manchester Conference of May, 1900, at which was begun the movement which resulted

in a complete revolution in the constitution and future outlook of our Association. It was there I first met him and began a greatly valued friendship. He followed this up by active work in his own locality in the difficult period when the new Divisions were being formed. Indeed, he was one of the most enthusiastic B.M.A. men I have ever met, combining with his enthusiasm knowledge and idealism in a rare degree. Whenever the Association asked for service that was within his range (and his range was a very wide one) he gave it fully and gladly. He was particularly knowledgeable and useful on committees dealing with school medicine. He was one of the all too few men in the public health service who had a real understanding of and sympathy with the general practitioner's point of view. The practitioners in his own area showed that they realized this by sending him with unfailing regularity to the Representative Body. Among his many interests was the Public Medical Service movement, which he heartily supported. I can sincerely endorse all that has been said above of his personal qualities. He leaves behind him in the hearts of his friends a memory of a loyal and lovable man who was a devoted worker in the best interests of his profession.

Dr. ALFRED F. HEALD of Dulwich, assistant medical secretary of the London Panel Committee, died at Goring-on-Thames on November 21 at the age of 77. He was born at Burnham Beeches and educated at Hurstpierpoint and Fitzwilliam Hall, Cambridge. He became a pharmaceutical chemist, but after a few years took up medicine and qualified from St. Mary's Hospital in 1903 as L.S.A. He settled in Peckham, where he carried on a large practice. Joining the London Panel Committee in 1916, his knowledge of pharmacy was of particular value when the London Insurance Pharmacopoeia was being compiled. Later he became a member of the National Formulary Subcommittee of the B.M.A., and also served on the Minister of Health's Advisory Committee on the Definition of Drugs. During his membership of the Panel Committee Dr. Heald occupied the chair of the Pharmacy Subcommittee from 1918 to 1919, and acted as treasurer from 1925 to 1930, when he was appointed organizing and assistant medical secretary to the Panel Committee, in which capacity he rendered valuable service to the insurance profession in London. His fine presence, combined with a genial disposition and sound common sense, contributed to the esteem in which he was held, and his passing will be a great loss to his colleagues both on the Panel Committee and in the county. His health showed signs of failing in 1939, when he suffered from coronary thrombosis. The intensive bombing of London made it impracticable for him to continue his work, so he retired to the neighbourhood of the Upper Thames, where he lived quietly until the end came.

Medical Notes in Parliament

Physical Standard of Returning Miners

On December 2 Mr. BEVIN, replying to Mr. Rhys Davies, said that the physical standard laid down for ex-miners returning to the pits for underground work was that examiners should be satisfied that a man's general physique was such as to enable him to undertake work at or near the coal face. Examiners were asked to give special attention to cases where valvular disease of the heart might be suspected. Men were to be rejected if found to be suffering from any disease of the following classes: (1) all forms of tuberculous disease; and (2) all cases of uncontrollable hernia. These instructions were issued after consultation with the medical inspection staff of the Mines Department, and after consideration of the parallel conditions laid down for other cases of special recruitment. Doctors were paid a fee of 5s. for each man examined. Members of medical boards examining men under the National Service Acts were paid at the rate of 2 guineas a session for the first five sessions in a week, and 1½ guineas for any subsequent sessions in the week. The chairman received an additional half-guinea. About twenty-five men were examined at a session, which normally lasted for two and a half hours.

Maternity Accommodation in Scotland.—On December 2 Mr. JOHNSTON informed Mrs. Hardie that in the past two years nearly 500 new maternity hospital beds in Scotland had been made available. Nearly 100 further beds would shortly be provided in buildings at present in course of erection. He was advised, however, that shortage of beds was not a significant factor in the increase in maternal mortality.

Neonatal Deaths in Scotland.—Mr. TOM JOHNSTON told Dr. Kennedy on December 4 that in Scotland stillbirths were not increasing. A slight rise in neonatal deaths has occurred in 1941. It was, he said, too early to say whether the rise was temporary or not. Everything possible was being done by the Ministry of Food and the health authorities, central and local, to ensure the nutritional needs of expectant mothers were met. Free and cheap milk schemes were in full operation. Communal feeding arrangements were vigorously pursued.

Medical Examination of Workers from Ireland.—There is no regular medical examination for workers coming to Great Britain from Eire or Northern Ireland. Such workers are in some cases medically examined in their home areas at the instance of the employers engaging them. The authorities have power to take certain action, Mr. ERNEST BROWN added on December 4, in regard to workmen coming from Ireland who may have tuberculosis or venereal disease.

Universities and Colleges

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The following candidates have been approved at the examinations indicated:

M.D.—W. M. E. Anderson, R. S. W. Baker, M. C. Wood.

FINAL MEDICAL EXAMINATION.—M.B.: L. H. Shrago, J. R. Hassard, Dorothy H. Webster, Ethna M. MacCarthy, L. H. Citron, C. E. Williams, Florella Starritt, J. A. Pearce, J. B. Dunlop, Kathleen M. J. Morphy, J. N. Greene, Muriel Eakins, B. Marcus, A. R. B. Jackson, E. S. Odbert, M. B. Flanagan, R. O. D. Reid, T. L. Kelly, A. C. McReynolds, Margaret F. Y. Dixon, Catherine E. Craig, B.Ch.: Emmeline P. Crowe, N. J. Anderson, L. H. Shrago, Dorothy W. M. Last, J. P. Walsh, A. J. B. MacFarland, A. C. McReynolds, L. H. Citron, J. Morris, J. A. Pearce. B.A.O.: J. F. Dignan, Brenda R. Boydell, J. M. Ali, J. K. J. Swanepoel, A. M. Jacobson, Cecelia J. Dippenaar, S. B. Stein, Rena Becker, Franziska G. Brill, J. W. Dignan, D. M. Brooks, V. O. Stewart, Lavinia F. Nightingale, B. Novis, R. C. Rylanee, P. J. Mentz, J. W. van der M. Roos, I. E. P. Cope.

DIPLOMA IN PUBLIC HEALTH.—Part II: Leila Finegan.

* With first-class honours. † With second-class honours.

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examinations indicated:

FINAL M.B., Ch.B.—J. G. Atherton, J. K. Brown, J. H. Hilditch, S. H. Jackson, Heskel Khazam, N. A. Lewtas, N. S. Marsden, Ann L. Pinson, G. J. Shanklin, H. G. B. Slack. Part I: J. A. L. Cooper, Hyme Lempert, S. W. Stanbury.

THIRD M.B., Ch.B.—Pathology and Bacteriology: O. E. Adeniji-Jones, J. S. Battersby, D. C. A. Bevis, D. H. Blakey, H. M. Blaquiere, D. L. Boardman, D. L. Clarkson, O. O. Cowpe, Frances G. Danson, H. Davies, C. J. Dewhurst, P. B. Dunean, B. I. Einhorn, Margaret Garnett, J. Grayson, E. J. Guest, G. Hargreaves, J. Hinchcliffe, C. L. Holden, J. C. Howarth, F. Jackson, G. W. H. James, F. W. Johnson, F. Kratter, Marjorie T. Lee, Mary P. McGlade, R. I. Mackay, D. H. Makinson, A. Marsland, E. B. N. Merchant, Doreen Mitchell, J. G. Oddy, Shelem Portnoy, P. T. Quinlan, S. B. Rampling, F. C. Reidy, A. F. Robinson, R. H. Sewell, J. H. Shelswell, Sylvia M. Sice, K. H. Smith, H. Sosnowick, J. L. Taylor, R. Pepper, Lois E. N. Turner, E. G. Wade, Ruth J. Whitley, T. A. Yates. Pharmacology: H. W. Ashworth, W. C. Astley, F. Batley, D. G. Berry, R. W. Burslem, J. H. Diggle, *Constance M. Duddle, Doreen M. M. Dutton, B. I. Einhorn, S. S. Epstein, Eve G. Field, K. Heilbronn, J. Heppelstone, J. Hewel, R. Hierons, Marion E. Jepson, P. Jewsbury, F. Latham, Margaret M. Lawton, J. Leary, *L. A. Liversedge, Marion B. T. McIntosh, H. McIntyre, H. B. Marsden, T. M. Martin, Joan A. Meitani, B. Nicholson, T. A. Nowell, *S. Oleesky, A. D. Robinson, L. Rose, P. W. E. Sheldon, L. Shuck, H. Tabbush, A. E. Thomas, Elizabeth Travers, G. S. Tupman, P. Vulfsons, W. V. Wadsworth, G. H. Watson, B. Wilkins, P. O. Yates.

* Distinction in pharmacology.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH
At the annual meeting of the Royal College of Physicians of Edinburgh, held on December 4, Dr. Charles McNeil was re-elected President and Dr. R. B. Campbell, Dr. L. H. F. Thatcher, Dr. D. M. Lyon, Dr. A. G. Ritchie, Dr. I. S. P. Davidson, and Dr. A. Rae Gilchrist were elected to form the Council of the College for the ensuing year. Dr. Lyon was nominated vice-president.

No. 48 INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 29.

Figures of Principal Notifiable Diseases for the week and those for the corresponding London.

are for: (a) The 126 great towns in England and Wales (including London); (b) London (administrative county); (c) The 16 principal towns in Scotland; (d) The 13 principal towns in Eire; (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Figure.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	140	9	35	1	5	151	10	42	—	6
Deaths	—	—	—	—	—	—	—	—	—	—
Diphtheria	1,047	48	355	45	32	1,435	53	490	31	29
Deaths	31	3	5	1	1	39	3	13	1	2
Dysentery	197	6	54	—	—	109	—	34	4	—
Deaths	—	—	—	—	—	—	—	1	—	—
Encephalitis lethargica, acute	3	—	—	—	—	4	—	2	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Enteric (typhoid and paratyphoid) fever	—	—	—	—	—	33	1	5	6	1
Deaths	—	—	—	—	—	—	—	—	—	—
Erysipelas	—	—	78	8	5	19	64	13	5	5
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	41	1	8	10	2	32	5	12	4	5
Deaths	—	—	—	—	—	—	—	—	—	—
Measles	850	73	26	27	1	14,486	302	488*	—	8
Deaths	—	—	—	2	—	14	—	3	4	—
Orbital neonatorum	53	5	22	1	—	74	3	23	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	16	1	2	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† (from influenza)	1,101	40	16	1	3	675	44	16	—	4
Deaths	37	4	4	—	2	26	5	1	—	2
Pneumonia, primary	—	34	243	18	5	—	55	202	13	7
Deaths	—	—	—	11	—	—	—	—	11	—
Poli-encephalitis, acute	1	1	—	—	—	1	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Polymyelitis, acute	15	—	1	3	—	22	—	1	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	—	18	—	—	3	3	8	4	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	124	4	19	2	—	109	3	6	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,415	48	266	73	32	1,634	86	233	48	53
Deaths	1	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever*	7	—	1	8	2	—	—	—	—	—
Deaths	—	—	—	1	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	1,959	207	58	38	5	2,369	17	265*	—	24
Deaths	12	2	—	—	1	11	—	6	2	1
Deaths (0-1 year)	341	25	80	32	28	590	22	62	24	22
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths)	4,407	599	651	189	113	5,740	789	608	201	117
Annual death rate (per 1,000 persons living)	—	—	14.2	12.5	8	—	12.3	13.4	10.2	—
Live births	5010*	450	822	286	202	4,389	340	736	280	163
Annual rate per 1,000 persons living	—	—	16.7	19.0	8	—	14.9	18.7	14.3	—
Stillbirths	167	16	39	—	—	178	8	38	—	—
Rate per 1,000 total births (including stillborn)	—	—	45	—	—	—	49	—	—	—

* Notification in certain administrative areas only.

† Includes primary form for England and Wales, London (administrative)

Northern Ireland.
her movements of population, birth and
longer ascertainable.
Wales.

EPIDEMIOLOGICAL NOTES

Discussion of Table

Measles was the only infectious disease in England and Wales which showed a big rise in the number of notifications. 211 cases, when compared with the preceding week. This rise in incidence was due to relatively large increases in a few administrative areas. Outbreaks in the boroughs of Battersea and Wandsworth were responsible for the increase of 26 cases reported in London. Outbreaks occurred in Kent, Malling R.D.; Hereford, Leominster M.B.; and Shropshire, Bridgnorth M.B., where the notifications were 23, 39, and 23 respectively in excess of those of the previous week. The figure for cerebrospinal fever, which exceeded the total of the preceding week by 26, was the largest for the past four months. The other infectious diseases tended to be slightly below the level of the preceding week. The largest decreases were shown by whooping-cough and diphtheria, with 36 and 35 fewer cases. The only local variation of any size was shown by whooping-cough in Surrey, where in Carshalton U.D. notifications rose from 7 to 20, and in Sutton and Cheam M.B. from 9 to 20.

In Scotland small increases were recorded for the third consecutive week in the number of notifications of cerebrospinal fever and scarlet fever. There were 6 fewer cases of measles and 25 fewer of whooping-cough than in the previous week.

Dysentery

The notifications of dysentery were 12 below the total for the preceding week in both England and Wales and Scotland. A further 23 cases were reported from the outbreak in Shropshire, Ellesmere U.D. The largest of the local outbreaks reported during the week in England were: Oxfordshire, Oxford C.B., 11; Northumberland, Gosforth U.D., 12; Cumberland, Border R.D., 21. In Scotland the largest returns were those of Edinburgh (14) and Renfrew County (10).

Pneumonia

Until the past four weeks the trend of the notifications of pneumonia has not displayed any very striking differences from that of preceding years. The rapid increase in notifications during the last month (the numbers have been more than doubled) has resulted in the incidence reaching a higher level than has been recorded for the similar period in recent years. The total notifications recorded in the 46th, 47th, and 48th weeks for the last three years are:

Division	1941	1940	1939
London	129	116	103
South-East	21	164	56
South-West	98	56	61
South Midland	231	160	115
Eastern	147	79	63
West Midland	492	364	198
North Midland	265	147	117
North-Western	694	449	317
York	476	318	228
Northern	227	160	144
Wales	212	116	137
	3,187	2,634	1,579

As the population has been disturbed by war conditions a comparison of areas for the pre-war periods was not attempted. The figures show that the increase in pneumonia has been common to the whole country but that the rate of increase has varied considerably. The largest relative increases are those of the South-Eastern and Eastern Counties and the smallest those of London and the South-Western Counties.

The Reich Finance Minister, together with the Minister of the Interior, has published an order regulating State payments for the third and subsequent children: These payments shall not be made in the case of "asocial" families. This applies to children with serious hereditary diseases or when the parents suffer from a hereditary disease. Payments can also be refused if the children have "foreign blood" and also for children whose parents will not belong to the various party organizations. "It is not congruous with the aim of this relief that it should be paid to heads of households who are not willing or are not fitted to serve faithfully the Reich and the people or who offer no guarantee for the suitable use of such assistance."

Medical News

In pursuance of Section 1 of the Rules Publication Act, 1893, the Minister of Labour and National Service proposes, at the expiration of forty days from December 5, 1941, to make regulations under the Factories Act, 1937, extending the provisions of Section 66 of the Act to toxic anaemia. Copies of the draft regulations may be purchased directly from H.M. Stationery Office at the following addresses: York House, Kingsway, London, W.C.2; 1206, George Street, Edinburgh; 31-41, King Street, Manchester, 1; 1, St. Andrew's Crescent, Cardiff; or through any bookseller.

The Central Association for Mental Welfare (24, Buckingham Palace Road, S.W.1), the Child Guidance Council (temporary address, 23, Queen Square, Bath), and the National Council for Mental Hygiene (Chandos House, Palmer Street, S.W.1) continue to publish as a joint undertaking the quarterly *Mental Health*. The October issue (1s. post free) includes two papers on observed effects of wartime conditions on children, and the address given at the last annual meeting of the National Council for Mental Hygiene by Mr. Kenneth Walker entitled "The Need for a Positive Philosophy of Life." The Child Guidance Council provides a note on play therapy, and there are the usual news paragraphs and reviews of books.

According to the *Yorkshire Post* of December 6, approaches are to be made by the Harrogate Wells and Baths Committee to the British Spas Federation to call a national meeting to discuss plans for making British spas available for national health insurance patients, for obtaining the co-operation of friendly societies, and for using the spas for the benefit of industrial workers.

The British Standards Institution announces that, in view of the continuing expansion of its work and the development of its relations with Government Departments and with standardizing authorities over-seas, the General Council has appointed an executive committee under a permanent chairman, Mr. C. le Maistre, C.B.E.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS of their articles should communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

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QUERIES AND ANSWERS

Income Tax

Second Year of New Practice

E. S. was assessed for the first year of his present practice on the current year's basis. The receipts included a special non-recurring amount of £118. He is being charged for the second year on the previous year's basis, thus having in effect to suffer assessment twice on this special receipt.

Section 15 of the Finance Act, 1930, provides that in such circumstances E. S. can, by giving notice to the inspector of taxes, require both (but not one only) of the second and third years of assessment to be dealt with on the basis of the profits of each of those years. The notice must be given in writing within two years of the end of the second year of assessment, and may be revoked within twelve months after the end of the third year of assessment.

LETTERS, NOTES, ETC.

Treatment of Scabies

Dr. W. A. DICKSON (Garryowen, Enniskillen) writes: Now when our present greatly increased fluid population of troops and evacuees has added considerably to the importance of the treatment of scabies, Dr. Berncastle's letter (October 18, p. 560) regarding the use of sulphur taken internally has revived some interesting memories. Fifteen or more years ago my late father—medical officer in charge of two adjoining dispensaries in this county—gave, as is usual, his newly qualified son some useful advice, among which was a short discourse on scabies. I might explain that part of his district was composed of bleak and mountainous areas where many of his patients were in very poor circumstances, and had not the facilities for an elaborate course of treatment, including baths, changes of apparel and bedclothes. His advice boiled down to this: in all but the mildest cases treat both internally and externally, and his treatment consisted of:

Sulph. praecip.	1 oz.
New milk	1 pint
Malt vinegar	1/2 pint
Treacle	2 drachms

Bring to the boil *slowly*. After boiling allow to settle and cool and decant supernatant fluid, adding threoto ess. menth. pip. 1/2 drachm, of which mixture give 2 drachms t.i.d., and if necessary increase to 1/2 oz. t.i.d. Remove about half the sulphur sediment and mix same with lard 2 oz. and liq. carb. deterg. 1 drachm. This ointment to be applied and rubbed into affected areas.

In following out his advice I had evident proof of the efficacy of this treatment in the case of a family of eight, where father, mother, and six children, the latter ranging from 16 years to an infant in arms, were heavily infected—especially the parents and eldest daughter, with many raw areas and ulcers of the nipples. No baths were available except for the two youngest, and the supply of spare underclothes and bedclothes was almost non-existent, yet in ten days all were clear except the infant. They had all taken the mixture (in varying amounts) except the infant.

Again, about ten years ago at one of the outlying county schools in my area I found about one-third of the children (fifty-eight present) suffering from scabies. I knew full well that in spite of any advice I might give many would either not consult their medical attendant or, if so, would only carry out his instructions in a most haphazard manner, and that, therefore, the condition was not likely to improve within any reasonable time. I remembered having stopped at a delightful roadside spring and almost nauseated myself with a gulp of its sparkling waters, which I found to my disgust to be heavily charged with sulphur. As this spring was less than half a mile from the school I instructed the master to get a small wooden pail of the water brought to the school each day and to see that every child drank about an ounce of it each day. I visited the school about eighteen days later and found the condition cleared. As the spring is now non-existent, due to some natural cause which I have been too lazy to try to elucidate, I had completely forgotten about this incident until Dr. Berncastle's letter recalled it to my memory.

Anti-tobacco Campaign

Dr. A. ROSE (London, W.C.1) writes: Referring to the anti-tobacco campaign in Germany and Prof. Hans Reiter's article in particular (noted in your issue of November 22, p. 758), I think it is about time that we, the medical men of this country, also tried to combat, in a body, the evils of tobacco-smoking. We constantly see in our consulting rooms the injurious effects of this common habit, when it is carried to excess, in the jumpy and nervy individual who is amblyopic in the dark. At this time, when more cigarettes are smoked than ever before, and we see at every turn their baneful influence, it would be wise to warn the people to lessen or to annul their output of smoke if we really are to possess an A1 nation at last. An intensive campaign of organized propaganda against the consumption of tobacco is at the moment being financed by the German State, to be undertaken in the newspapers, theatres, cinemas, and all places of public assembly.

British Schering, Ltd., inform us that although sulphacetamide appeared in Class B of the supplement to the Medical Research Council's memorandum on economy in drugs, indicating that it is in short supply, they have so far been able to meet all demands for "albucid" of British manufacture.

Messrs. T. J. Smith and Nephew, Ltd., Neptune Street, Hull, have now issued a second edition of their pamphlet on the Preparation of Plaster Casts, with special reference to the use of wide "Cellona" material. Surgeons interested in this technique may have copies, free of charge, on application to the makers.

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 27 1941

"GROWTH" AND THE DIABETOGENIC ACTION OF ANTERIOR PITUITARY PREPARATIONS

BY

F. G. YOUNG, D.Sc., Ph.D.Lond.

(From the National Institute for Medical Research, London)

Joslin (1940) states that about 80% of his adult diabetic patients are, or have been, over weight at the time they come for treatment, and excessive weight is widely recognized as a frequent characteristic of the elderly diabetic patient. White—quoted by Joslin (1940) and by Coggeshall and Root (1940)—finds that at the onset of diabetes a substantial proportion of her diabetic children are above the average height for their age, and many of these show precocious physical development. In discussing these facts Joslin (1940) asks the pertinent question, "In the child growth is vertical, in the adult it is lateral. Is not each type of endocrinal origin?" The results of the experimental investigation described in the present paper indicate, in relation to the evidence already in the literature, that a positive answer might be given to Joslin's question in terms of pancreatic-hypophyseal balance.

The first demonstration of the diabetogenic action of anterior pituitary extract in normal animals was made by Evans, Meyer, Simpson, and Reichert (1931-2) under interesting conditions. Two puppies which had been treated daily with a growth-promoting preparation of ox pituitary gland, and had thereby increased to about twice the weight of control animals, were found to be suffering from polyuria and glycosuria. Two treated litter-mates did not develop this diabetic condition. Using the intact adult dog as a test animal, Young (1939) subsequently found that ammonium sulphate fractionation of a crude extract of ox anterior hypophysis resulted in the precipitation of the diabetogenic principle in the pseudoglobulin fraction, in which it was accompanied by the growth-promoting substance (assayed on the adult intact female rat). Other investigators, using partially depancreatized rats as test objects for diabetogenic activity, have also found a similarity in properties between the growth-promoting and diabetogenic substances (Shipley and Long, 1938). When it is recalled that both Evans, for the growth hormone, and Houssey, for the diabetogenic substance, have strongly emphasized the importance of using absolutely fresh glands for the preparation of active extracts, and of carrying out all procedures at low temperatures, it becomes surprising that more cases have not been recorded of the development of a diabetic condition in the puppies in which gigantism has been produced by treatment with growth-promoting pituitary extracts.

A possible explanation lay in the observation that an adult dog effectively treated with diabetogenic extract for some days eventually developed a refractory state, such that the symptoms of diabetes disappeared during a period of continued similar dosage, though they would reappear if the daily dose of extract were suitably increased (Young, 1937, 1938). It was therefore possible that the puppies treated with growth hormone did exhibit a transient

response to the putative diabetogenic action of the extract, but subsequently became refractory to this aspect of its action, while retaining sensitivity to its growth-promoting effect. It seemed desirable to investigate this point, using extracts with a diabetogenic action demonstrable in normal adult dogs.

Growth hormone preparations induce retention of nitrogen (Evans, 1941); and Mirsky (1939) has obtained evidence that this nitrogen-retaining action may be mediated, in part at least, by the islets of Langerhans of the pancreas. An investigation was therefore undertaken of the relation between the nitrogen-retaining and pancreotropic actions of anterior pituitary extracts, in permanently diabetic animals in which some islet tissue remained. By pancreotropic activity is meant that action of pituitary extracts which induces a rise in islet tissue and insulin contents of the rat pancreas (Marks and Young, 1940) and thus makes more insulin available for secretion.

Methods

Animals.—Normal adult dogs, normal puppies, and adult dogs which had been rendered permanently diabetic by a short period of treatment with anterior pituitary extract (Young, 1937) were used in the present investigation. They were housed in metabolism cages, and daily collections of urine were made under toluene. The amount of food eaten each day was determined by weighing, and was so adjusted that the adult dogs retained about 75 calories/kg./day. The puppies were given a mixed diet *ad lib.*, consisting of raw horse meat, cooked liver, dog biscuits, and milk, with vitamin concentrates twice weekly. The adult dogs received a diet of raw horse meat and liver. All the animals were weighed daily.

Anterior Pituitary Extracts.—A crude extract of fresh ox pituitary tissue was prepared, from glands brought to the laboratory in a frozen condition, by the method before described (Young, 1938), to which further procedures have now been added. In brief, the method consisted in extraction with saline at pH 8.5 in the cold room, followed by spinning on an international centrifuge, clarification in a Sharples supercentrifuge, and Seitz-filtration in the cold room. Bacteriological tests were carried out to ensure that sterility had been obtained. This preparation, which will be referred to as "crude pituitary extract," is highly diabetogenic in normal dogs and cats, and contains most, if not all, of the active principles in the anterior lobe of the ox hypophysis. An unfractionated pituitary extract, which had no detectable diabetogenic action when tested on the intact normal dog but otherwise resembled crude pituitary extract in general activity, was obtained by allowing the sterile crude extract of fresh ox pituitary gland to remain at room temperature for four months. This preparation will be described as extract ND.1. An extract of acetone-desiccated ox anterior lobe powder, which had been stored in the laboratory in a dry condition for some months, was prepared in a manner essentially similar to that for the extract of fresh tissue. This preparation, which was also non-diabetogenic in normal dogs, but resembled crude pituitary

extract in exhibiting manifold activities, will be referred to as extract ND.2. These three unfractionated extracts were of such concentration that 1 c.cm. contained in each case the material extracted from 250 mg. of fresh anterior lobe tissue or its equivalent—i.e., approximately 50 mg. of dried tissue.

A preparation of prolactin, which was obtained by the Bates-Riddle method and which was highly pancreotropic, was used in one experiment. This was the same preparation as that used previously in investigations on pancreotropic activity in rats (Marks and Young, 1940).

All injections were made subcutaneously with aseptic precautions.

Estimations.—Urinary sugar was determined by Benedict's method and urinary ketones by the method of van Slyke. Nitrogen estimations on food, urine, and faeces were arrived at by the Kjeldahl method. Although frequent analyses for the nitrogen content of food were made, these, and faecal nitrogen determinations, were not carried out daily, so that the figures for nitrogen balance are not quantitatively precise, although on the whole the results were agreeably constant. Blood-sugar determinations were made on capillary blood by the Hagedorn-Jensen method.

Action of Crude Pituitary Extract

(a) **Normal Adult Dogs.**—In eight experiments on four dogs (2 male, 2 female) averaging 10 kg. in weight, 5 c.cm. of extract injected subcutaneously each day never failed to produce a substantial glycosuria within seven days. The mean time of the appearance of glycosuria was 5 days (maximum 7, minimum 4) and the average sugar excretion was 23 gm. (maximum 44, minimum 11) on the first day and 58 gm. (maximum 74, minimum 39) on the second day of the diabetic state. The amount of extract required by the subcutaneous route is thus very much less than that necessary when the injections are given intraperitoneally (Young, 1938; Houssay, Foglia, and Smyth,

extract which progressively increased from 5 to 20 c.cm./day, and then fell to 5 c.cm. again, while the other two (Nos. 125 and 127) received 5 c.cm./day throughout. Three of the puppies showed no trace of urinary sugar at all, while No. 124 gave a trace on the fifth, sixth, and ninth days of treatment, the maximum twenty-four-hour yield being 1.6 gm. (0.5 gm./kg.) on the sixth day of treatment. No trace of ketone was found in the urine at any time. On the basis of these results we can assume that an average dose of 3.3 c.cm./kg. is not an effective diabetogenic agent in the puppy, this being more than six times the dose fully effective in the adult animal. After a total of 19 weeks' treatment No. 124 had reached a weight of 20 kg., compared with the weight of about 8 kg. which he would have attained if his average pre-treatment rate of growth had been continually maintained over this period. At this time he presented the characteristic features of experimental gigantism in dogs, as described in the classical experiments of H. M. Evans—large paws and head, thick and heavy bones, excessive growth of skin, etc. Up to this time he had been sugar-free despite the continuation of daily injections, but later a gradually increasing glycosuria became apparent. At present, after 23 weeks of treatment, his glycosuria has risen to nearly 200 gm. daily and he has stopped growing, his weight having remained around 20.5 kg. for the last three weeks. Nos. 125 and 126, which have received daily injections for 23 and 19 weeks respectively, have not responded to the prolonged growth-promoting action of the extract so strikingly as dog 124, nor have they yet developed a diabetic condition.

Action of Non-diabetogenic Extracts on Pituitary-diabetic Dogs

If the nitrogen-retaining action of pituitary extracts is mediated by the pancreas, as Mirsky (1939) has suggested, then non-diabetogenic pituitary extracts which are pancreotropic (Marks and Young, 1940) might be expected to cause nitrogen retention, increase in weight, and an alleviation of the diabetic condition of at least a temporary duration in animals which are diabetic but have some secretory islet tissue remaining.

In the experiments carried out in this connexion, a single injection of extract was administered to diabetic dogs after a suitable control period. As might be expected, it was found that the response to any given extract was apparently determined by the intensity of the diabetic condition of the treated animal. Thus treatment with a preparation of prolactin which in the rat test is highly pancreotropic (Marks and Young, 1940) permanently increased the D/N quotient of moderately diabetic dog 115 (Fig. 2, A), inducing a sharp rise in ketonuria, which,

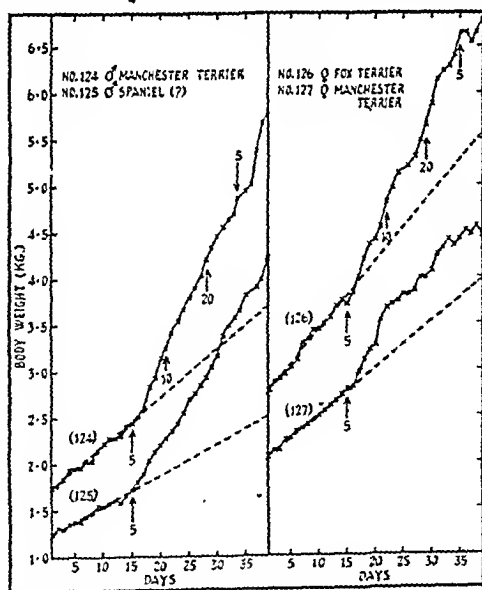


FIG. 1.—The influence of daily subcutaneous injections of crude anterior pituitary extract on the body weights of puppies. The figures below the arrows indicate the daily dose of extract, in c.cm., given from that day onwards. The dotted lines represent the best straight line fitted to the data for the pre-treatment control period.

1941). We have found our adult dogs remarkably constant in their response to this extract, and it seems reasonable to assume that 0.5 c.cm./kg. (equivalent to 25 mg. dry weight of anterior lobe tissue per kilogramme of body weight), administered subcutaneously each day for at least a week, is more than enough to induce a temporary diabetic condition in adult dogs.

(b) **Normal Puppies.**—Each day four puppies (2 male, 2 female) were given subcutaneous injections of crude extract that were very much larger per kg. of body weight than those required to produce diabetes in adult dogs (Fig. 1). Two of the puppies (Nos. 124 and 126, Fig. 1) received daily doses of

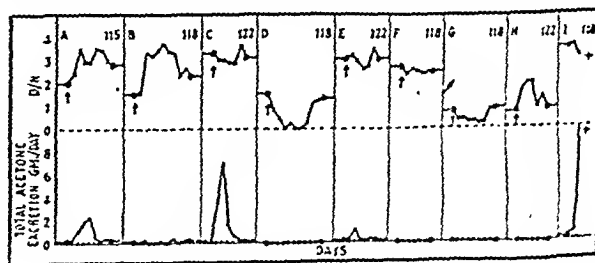


FIG. 2.—Influence of a single subcutaneous injection of various anterior pituitary extracts on the course of diabetes in pituitary-diabetic dogs. The injection was given on the days indicated by the arrows. The initial and final points on each curve represent average values for approximately one week. The intermediate points represent daily values.

Experiment A, Dog 115: Injection of 160 mg. of prolactin
 B, " 118: " " 5 c.cm. of extract ND.1
 C, " 122: " " 5 c.cm. of extract ND.2
 D, " 118: " " 5 c.cm. of extract ND.2
 E, " 122: " " " " "
 F, " 118: " " " " "
 G, " 118: " " " " "
 at a time when the dog was receiving 5 units of protamine-zinc-insulin daily
 H, " 122: Injection of 5 c.cm. of extract ND.2 when the dog was receiving 15 units of P.Z.I. daily
 I, " 118: Injection of 5 c.cm. of extract ND.2

however, was only temporary. It must be emphasized that this preparation was non-diabetogenic when tested in large doses in the intact adult dog (Young, 1938), and the same is true of all the extracts considered in the present section. The sustained rise in D/N quotient occasioned by a single injection of this extract suggests that permanent damage had occurred to that pancreatic islet tissue which was still capable of secreting insulin.

Extract ND.1, also pancreotropic in the rat, raised the D/N quotient of mildly diabetic dog 118 (Fig. 2, B) from an initial control value of 1.5 to a final approximately constant figure of 2.3 with a substantial loss of nitrogen and of body weight (B in Table). Again permanent islet damage seems to be indicated.

Table showing the Influence of a Single Injection of Anterior Pituitary Extract on the Condition of Diabetic Dog 118

Exp. (Fig. 2)	Length of Period (Days)	Treatment (Single Injection of Extract)	Food Intake (Calcs. Daily)	Sugar Excreted (Gm./Day)	Corrected D. N	Nitrogen Balance (Gm./Day)	Change in Body Weight (Gm./Day)
B	4	Control	1,520	63	1.53	-0.5	0
	7	5 c.c.m. ND.1	1,420	121	3.10	-4.2	-100
D	7	Control	1,140	52	1.54	-3.5	-35
	5	5 c.c.m. ND.2	1,380	15	0.33	-5.0	-50
F	7	Control	1,850	107	2.32	-1.9	-30
	7	5 c.c.m. ND.2	1,910	127	2.45	-3.1	-60
G	7	Control (5 U. of P.-Z.-L. daily)	1,200	33	0.78	—	0
	7	5 c.c.m. ND.2 (5 U. of P.-Z.-L. daily)	1,200	14	0.39	-4.2	-100
t	10	Control	900	81	3.60	-2.7	-55
	1	5 c.c.m. ND.2	900	99	3.64	-2.9	0
	1	—	620	87	3.19	-13.6	-650

(The data given are the average daily values for the various periods.)

When dog 122, whose D/N quotient was at a level of 3.4, was given a single dose of the same extract the only obvious effect was a sharp but unsustained rise in ketonuria. It is interesting to recall that when pituitary-diabetic dogs which are exhibiting a maximal D/N quotient associated with a substantial ketonuria are given a small daily dose of insulin, the D/N quotient may be largely unaffected while the ketonuria may be strikingly reduced (Marks and Young, 1939). The response of dog 122 to a single injection of the pituitary extract (Fig. 2, C)—a response which is similar to that obtained with many other dogs under comparable conditions—seems to be the converse of that with insulin described earlier, and to indicate that the main effect of the extract has been temporarily to neutralize the action of what little insulin the damaged islets are still capable of secreting.

When dog 118 was in a mildly diabetic state he responded to a single injection of extract ND.2 by a temporary but striking fall in the D/N quotient (Fig. 2, D), with a retention of nitrogen and an increase in body weight (D in Table); but later, when his diabetic condition had become more severe, with a control D/N quotient of 2.3, he resembled dog 122 (Fig. 2, E) and failed to show any very obvious response to an injection of the same extract (Fig. 2, F; F in Table). When, however, the diabetic condition of dog 118 was partially controlled by insulin therapy he again showed a temporary fall in D/N quotient in response to a single injection of the same extract (Fig. 2, G), with nitrogen retention and rise in body weight (G in Table), although the opposite result occurred when dog 122 received an injection of the same extract at a time when his diabetic condition had been reduced to about the same degree of intensity by insulin therapy (Fig. 2, H). Finally, when dog 118 had become severely diabetic, with a control D/N quotient of 3.6 and a daily ketonuria of about 0.3 gm. of total acetone, a single injection of extract ND.2, which previously had temporarily alleviated his diabetic condition, now killed him in diabetic coma (Fig. 2, I), with a rapid loss of nitrogen and of body weight (I in Table) and a terminal blood-sugar level of 0.56%.

From the data for the various experiments on dog 118, given in the Table, it is clear that when treatment with extract alleviated the diabetic condition it also induced nitrogen

retention and an increase in body weight (D and G in Table), but that if the conditions were such that a single injection of extract exacerbated the diabetes it also induced loss of nitrogen and of body weight (B and I in Table).

Discussion

The present observations indicate that if the extracts used by H. M. Evans in his classical experiments concerning the influence of growth-promoting pituitary preparation on puppies had been fully diabetogenic when tested on adult dogs a condition of diabetes would not be expected to develop in treated puppies until after many months' daily injections, if at all. Thus it is possible to produce experimental gigantism without diabetes, even though the pituitary extracts used are diabetogenic in adult dogs or cats.

The results of this and previous investigations show that the same pituitary extract may be essentially growth (weight)-promoting, or essentially diabetogenic, according to the age of the animal and the adequacy of its pancreatic function. In the intact adult animal (dog or cat) both responses may be manifest simultaneously, although the diabetogenic effect ultimately becomes predominant; while in the young puppy the only obvious response to treatment with the same extract is that of accelerated growth. The fact that with normal cats and normal dogs an increase in body weight is associated with the induction of a diabetic condition by the administration of crude pituitary extract has already been emphasized (Young, 1937, 1938). Now, Ogilvie (1937) has presented quantitative evidence that human infants have a greater amount of pancreatic islet tissue in proportion to body weight than adults. If such a difference holds for the puppy and the adult dog, then the resistance of the puppy to the diabetogenic action of pituitary extracts which are highly effective in the adult dog receives a simple explanation. Furthermore, Langfeldt (1920) found that partially depancreatized puppies, which had been deprived of a sufficient proportion of pancreas to provide a reasonable expectation of the appearance of diabetes in an adult dog, not only were free from all symptoms of diabetes for many months after the operation but in some instances showed an increase of sugar tolerance. Eventually, however, the sugar tolerance declined and a progressive and ultimately fatal diabetes became manifest. The present results concerning the diabetogenic action of anterior pituitary extracts in puppies are in many ways analogous to those of Langfeldt.

The results of our experiments on the influence of pituitary extracts on diabetic adult dogs (Fig. 1 and Table) are consistent with Mirsky's idea that the nitrogen-retaining action of the extract is mediated by the islets of Langerhans, but it should be pointed out that Gaebler and Galbraith (1941), as the result of investigations with completely depancreatized dogs, do not believe that pancreatic insulin is the only factor concerned. Indeed, Gaebler and Robinson (1941) have recently found that on depancreatized bitches receiving a constant dosage of insulin prolactin exerted only a mild diabetogenic action but induced some storage of nitrogen. Clearly some action other than a pancreotropic one was exerted by the pituitary preparation in this instance. The present results are not incompatible with such an action, but under the conditions of our experiments it seems reasonable to assume that the main nitrogen-retaining action of the extracts used was mediated by the pancreatic islets. If this is so, the differences in response to the same extract with differences in intensity of the diabetic condition can be reasonably explained in terms of two antagonistic effects—pancreotropic and diabetes-intensifying (diabetogenic ?)—of the extract, the first tending to induce secretion of insulin with nitrogen retention and an increase in body weight, while the second

intensifies, or tends to intensify; the diabetic condition, presumably by suppression of carbohydrate oxidation, etc. (Russell, 1938), or perhaps by increased sugar formation from fatty acids (Soskin, 1941). If the pancreatic islets are capable of responding to the pancreotropic action of the extract to a sufficient extent when the diabetes is uncontrolled (exp. D, Fig. 2 and Table), or after it has been partially controlled by insulin with consequent rehabilitation of islet tissue and insulin storage (exp. G), then the diabetes-intensifying action of the extract may be completely overcome (however, cf. exp. H), so that treatment with the extract causes temporary alleviation of the diabetic condition, with an increase in body weight and storage of nitrogen. But if the islets cannot respond to the pancreotropic action of the extract to such an extent the extract may have no obvious effect (exp. F, Fig. 2 and Table), or may cause an intensification of the diabetic condition which may be only temporary (exp. C and H) or may lead to death in coma (exp. I). With an extract possessing enough diabetes-intensifying activity, a suitable animal may show a persistent exacerbation of the diabetic condition (exp. A and B, Fig. 2) which is presumably associated with permanent damage to the tissue of the pancreatic islets. Gaebler (Gaebler and Zimmerman, 1939-40) found that pituitary extracts which caused growth and nitrogen retention in normal animals showed a marked diabetogenic action in depancreatized thyroidectomized bitches receiving adequate insulin therapy. Phloridzinized animals reacted, on the other hand, by a rise of body weight and nitrogen retention, with diminished glucose excretion and a constant D/N quotient (Gaebler and Zimmerman, 1939-40). In connexion with the action of our extracts in causing temporary alleviation of the symptoms of pituitary-diabetic animals, with a fall in D/N quotient, it is interesting to note that Haist, Campbell, and Best (1940) find that when such dogs are given a series of injections of crude pituitary extract during a period of fasting, together with very large injections of insulin at frequent intervals, the sugar tolerance of the animals may subsequently show substantial improvement.

It is undesirable to enter here into a discussion of the identities of the active principles concerned, but it should be pointed out that the results indicate that the pancreotropic factor in anterior pituitary extracts is not identical with the diabetes-intensifying factor.* Thus in experiments B and D (Fig. 2 and Table), in both of which dog 118 was initially at the same level of intensity of diabetes, a single injection of one extract induced temporary though marked alleviation of the diabetic condition (exp. D), whereas a different extract raised the D/N quotient and apparently caused permanent damage to islet tissue (exp. B). It therefore seems that the two factors—pancreotropic and diabetes-intensifying—are present in different proportions in these two extracts, and thus cannot be identical. Nevertheless, differential inactivation of different active groupings carried by the same (protein?) vector cannot be left out of consideration, and the same possibility applies to the previously demonstrated non-identity of the pancreotropic and diabetogenic (intact dog) factors (Marks and Young, 1940). But as we have no evidence on this point it will not be further considered.

Although extracts which are devoid of diabetogenic activity when administered in large doses to the intact dog are capable of intensifying the diabetes of diabetic animals (cf. also Long, 1937), we do not know whether extracts

with diabetogenic activity differ quantitatively or qualitatively from those with only diabetes-intensifying action in the diabetic animal, but it should be emphasized that diabetes-intensifying activity can be completely masked if an extract possesses enough pancreotropic activity and the treated animal has enough responsive islet tissue (exp. D, Fig. 2 and Table).

The presence in the human infant of a large proportion of islet tissue (Ogilvie, 1937) is probably associated with the importance of insulin for nitrogen retention, etc., during the period of growth. If an infant were submitted to a long period of low-grade pituitary overaction the pancreatic islets might at first respond with hypertrophy, so that the child would possess capacity for a greater degree of nitrogen retention and growth. The islets might be incapable of sustaining indefinitely such an intensified activity, and once the general blood-sugar level rose irreparable derangement of islet function might result in persistent diabetes. In the adult person the hypertrophic phase of islet response would, analogously, result in an increase in body weight, and it is of particular interest that Ogilvie (1933, 1935) found that a large proportion of the obese subjects he examined revealed hypertrophy of the pancreatic islets. If such a condition is a pre-diabetic one an extra-pancreatic cause of the diabetes seems extremely probable. Is it therefore unreasonable to suppose that the increase in weight of the pre-diabetic human adult may have an origin similar to that seen in the normal adult dog (and cat) treated with anterior pituitary extract—namely, a slight, and possibly ill-sustained, increase in anterior pituitary action? Such a slight increase in pituitary activity as would be necessary to induce a rise of body weight would not necessarily be associated with obvious symptoms of gigantism or acromegaly; nor would it be expected, at least in the majority of cases, to endow the plasma of the patients with anti-insulin activity, demonstrable in tests on rabbits. Even in diabetes associated with frank acromegaly, insulin sensitivity is comparable to that found in normal diabetes (Coggeshall and Root, 1940). Although this question lies outside the scope of the present investigation, it may be suggested that where obvious adiposity of the human pre-diabetic adult exists it may well arise, to some extent at least, from changes in dietary habits (cf. Himsworth and Marshall, 1935; Richter and Schmidt, 1941), possibly resulting from the inhibition of glucose oxidation by pituitary principles (Russell, 1938).

Conclusion

If the above arguments be accepted the pre-diabetic increase of height in children and of weight in the adult can be regarded as a reactive or protective mechanism for the storage of the carbohydrate of which the oxidation is suppressed, and of the nitrogen which is retained, under the influence of anterior pituitary action. The expansive capacity of the adult is definitely limited, and unless the child is capable of sustained excessive growth (the limit to which may be the capacity of the islets to hypertrophy) there will come a point, as was probably the case with dog 124, at which the carbohydrate the oxidation of which is inhibited can no longer be completely stored in the form of extra body tissue. Sugar then leaks into the blood stream, and despite a subsequent and complete subsidence of pituitary overactivity, permanent stigmata may remain in the form of islet lesions and a persistently diabetic condition. It is interesting to note that the rat, which is capable of substantial and sustained response to the growth-promoting action of pituitary extract even in ripe old age, is almost completely resistant to the diabetogenic action of crude pituitary extract (Young, 1938), although sensitivity can be induced by partial pancreatectomy (Long,

* The word "diabetauxetic" (Greek *αἰένω*, to increase), analogous with "diabetogenic," might be useful to describe factors which are capable of intensifying the diabetic condition where diabetes already exists but which are not obviously diabetogenic in suitable intact animals. Similarly, "diabetostatic" might be used to describe factors capable of alleviating the intensity of a diabetic condition by inducing the pancreas to secrete more insulin.

1937, 1939). The above interpretation of experimental findings cannot in any sense be considered as attempting to exclude the possibility that clinical diabetes may result, in some instances, from primary changes in the pancreatic islets—e.g., those which follow interference with the pancreatic blood supply, and in haemochromatosis (cf. Warren, 1938). Nevertheless, the large number of cases of diabetes in which a definite increase in the mass of the body is apparently a proleptic feature may reasonably be supposed to result from a pancreatic-pituitary imbalance occurring at a level of pancreatic islet activity higher than that operative in the normal animal.

Summary

When puppies are treated daily with doses of crude pituitary extract greatly in excess of those required to produce diabetes in adult dogs they respond with an increased growth rate but do not exhibit symptoms of diabetes. When one puppy was treated daily for nearly five months it eventually became intensely diabetic, and then stopped growing despite continuation of treatment.

When adult dogs that have been rendered permanently diabetic by a short period of pituitary treatment are given a single injection of pancreatropic pituitary extracts, which produces no detectable diabetogenic activity in normal adult dogs, the response may be a transitory attenuation of the diabetic condition with nitrogen retention and increase of body weight, or an exacerbation of the diabetes with loss of nitrogen and of body weight; intermediate responses were also obtained. These differences in response are believed to result largely from differences in functional capacity of pancreatic islet tissue.

It is suggested that an increase in body weight, associated with an increase in function of the pancreatic islets, can be regarded as neutralizing, for a time at least, the diabetogenic influence of the anterior pituitary gland. It is therefore possible that the excessive weight of the adult diabetic patient and the abnormal height of the diabetic child (White) indicate an increased pituitary function which may be of temporary duration only, and of which the diabetogenic action may be completely masked for a time by a protective increase in pancreatic islet activity, induced by the pancreatropic action of the gland. Such a condition might lead first to an increase in the mass of the body and eventually to diabetes.

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TREATMENT OF PULMONARY TUBERCULOSIS BY THORACOPLASTY

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Pulmonary tuberculosis is a disease whose incidence rapidly increases during wartime, and it is important in the present situation that the treatment of this condition should remain in the forefront of discussion. From the public health point of view no patient who is suffering from pulmonary tuberculosis should return to work until his sputum is negative. In our crowded factories and offices any such person with a sputum positive for tubercle bacilli is an anachronism, and subversive both to the health of the community and to the war effort. Under the present conditions of long hours of work, continued stress, and minimal nutrition the dissemination of the disease from one such focus may be considerable.

Thoracoplasty is applicable as a line of treatment to only a small percentage of cases of pulmonary tuberculosis. The results are, however, satisfactory in that in most cases the patient, previously a public menace, becomes non-infective and is able to return to some form of useful occupation.

The following is an account of the indications for thoracoplasty in the treatment of pulmonary tuberculosis as used by the team working at the surgical clinic of the Lancashire County Council Tuberculosis Service at High Carley Sanatorium, Ulverston.

Indications for advising Thoracoplasty

This is probably one of the most difficult problems in the whole of surgery. Only by the closest team-work between the surgeons, the staff of the sanatorium, and the anaesthetist can these cases be accurately assessed. The cases are divided into two groups—those regarded as “good risks” and those as “justifiable risks.” The latter group will contain a number of patients suffering from advanced disease in which the risks of thoracoplasty are greatly above the average. These risks are, however, permissible because there is a definite possibility that by running them the disease may be arrested, and because by no other method of treatment can the patient's life be saved. Apart from the consideration of the individual patient, there is another cogent reason why the immediate and ultimate chances of the patient must be most fully weighed. Sanatorium life is such an intimate one that every patient is fully aware of the results of operative treatment on others, and in order that those in the “good” class shall have no misgivings as to the outcome of their operation the fullest confidence in the results of thoracoplasty must be maintained.

There are certain general principles which influence the selection of cases:

1. The tuberculous lesion must be undergoing fibrinosis and must not be in a state of acute exudation. Rapid compression of the lung, such as occurs by thoracoplasty, is likely, in cases with an acute exudative lesion, to cause a rapid dissemination of the disease with infiltration of the same or opposite side. If, however, the disease is in a reparative stage—i.e., under-

going fibrosis—the lung will stand this rapid compression without such risk of further spread of the tuberculous lesion. A lung lesion which is healing by fibrosis without coexisting cavity formation can become bacillus-free, can heal, and can probably remain healed without the need for operative intervention, though the end-result may be benefited by hemidiaphragmatic paralysis. It is the persistence of chronic cavitation that constitutes the danger to the patient and to the community. A chronic fibrotic case without clinical or radiological evidence of cavitation which does not become bacillus-free should be tomographed, when the presence of cavities will almost certainly be demonstrable. The large majority of cases coming up for consideration for thoracoplasty are those in which a cavity or cavities have failed to close as a result of sanatorium treatment and in which an artificial pneumothorax has proved impossible or ineffectual. Most of these cases have very definite symptoms: the sputum is abundant and loaded with tubercle bacilli, and they may be persistently pyrexial. The general health of others, as a result of prolonged sanatorium treatment, may be good; in some, even, the cavity may be dry, the sputum (if any) tubercle-free, and the symptoms minimal. It may seem drastic to recommend a major operation such as thoracoplasty to patients who are apparently well enough to return to their homes and even to work. The long view must be taken, however, from both the individual and the public health aspects. Sooner or later the disease will light up again, as a result either of overwork or of a coryza or influenza. Not only may the disease spread to those parts of the lung or lungs previously involved, but, more serious still, the patient will become an infecting agent for a shorter or longer time before again being taken under control.

Repeated haemoptyses, whether or not associated with obvious cavitation, provide an additional indication for thoracoplasty, as does also a chronic non-productive irritable cough following upon distortion of the trachea and bronchi due to massive pulmonary fibrosis consequent on partially healed tuberculosis.

2. The main tuberculous lesion must be unilateral. After a total thoracoplasty the patient has only the lung on the opposite side left with which to breathe. If there is an active tuberculous lesion, however small, in this remaining lung, there is considerable likelihood that this lesion will increase and will eventually prove fatal. An old lesion on the contralateral side which is radiologically and clinically healed should still be viewed with suspicion, as any extra work of that lung may cause it to reactivate. It must be remembered that the tubercle bacilli, although surrounded by dense fibrous tissue, are in most cases merely dormant and not dead. Calcification may be taken as a fair indication of death of the tubercle bacilli. The final assessment of the condition of the opposite lung must be based on the clinical examination, and never solely on the radiographic appearances. The slightest evidence of activity should cause the decision for operation to be postponed, pending a further period of rest in bed. Crepitations which are persistently present and unaltered at the opposite apex are not a contraindication. These cases with contralateral evidence of disease or instability are included in the "justifiable risk" group. It is in the assessment of such doubtful cases that the opinion of the medical superintendent of the sanatorium is of great value to the team. A pronounced opinion by him, as a result of his continuous observation of any individual patient, will often tip the scale when decision is in the balance.

3. The size and position of the cavities will influence the decision as to whether thoracoplasty will be of permanent benefit. It may be asserted as a general rule that the smaller the cavity and the less extensive the lesion the easier it is to obtain complete control by a thoracoplasty. Complete control of cavities near the hilum or in the base is more difficult than control of those in the upper lobe. Large cavities, especially if surrounded by a thick wall of fibrous tissue, are not readily compressed. Extensiveness of the disease, provided it is unilateral, is no contraindication.

4. As pneumothorax is the simplest form of collapse therapy it should have been tried in all cases. If the pneumothorax is impossible, or is producing inefficient collapse of the affected area which cannot be improved satisfactorily by internal pneumolysis, then thoracoplasty must be considered. Any residual

pneumothorax should be allowed to reabsorb or be removed before thoracoplasty is attempted, as collapse of the ribs is prevented when there is a cushion of air between these and the lung.

5. Although no absolute age limits can be given it is generally inadvisable to perform a thoracoplasty for pulmonary tuberculosis under 15 years or over 45 years of age. In children it is inadvisable owing to the exudative form of disease that occurs and also the subsequent effect on growth. In the more elderly the cardiovascular changes and the diminished ability of the remaining lung to compensate for the loss of aerating surface may be contraindications. Exceptions to this rule are, however, not uncommon.

6. The better the general condition of the patient the greater is the probability of success. Once it is accepted in a given case that healing of the lesion cannot be obtained except by a thoracoplasty, then, however well stabilized the patient may be for the time being, it is wrong to wait for the period of decline to set in. When, on the other hand, the general condition is poor the operation must be deferred in the hope that improvement can be effected by bed rest, even at the risk of a relapse or extension of the disease during this period of delay. Amyloid disease if advanced will contraindicate operation, but if mild this should clear up when the pulmonary lesion heals following thoracoplasty. A transient gastro-enteritis will delay operation, but an established tuberculous enteritis is a direct contraindication. Involvement of the larynx does not necessarily prohibit operation unless there is ulceration causing pain or oedema producing stridor: healing will be promoted once the infection in the lungs has been obliterated. The presence of other lesions, such as bone and joint tuberculosis and genito-urinary tuberculosis, only contraindicates operation if these are advanced. Anaemia should be treated by haematinics. The main thing to be remembered is that tuberculosis is a general disease of which the lung lesion is but a local manifestation. The lung is, however, in most cases the important lesion, and as such should be given prior consideration. Elimination of the pulmonary focus will cause improvement elsewhere. If the patient is the subject of recurrent bronchitic attacks or has an asthmatic tendency, thoracoplasty should not be undertaken.

The Operation

The standard operation employed at this clinic is the ten-rib paravertebral thoracoplasty with removal of the transverse processes, done occasionally in two, but more often in three, stages. Partial thoracoplasties are rarely undertaken. This procedure is considered only in the type of case with extremely limited disease in one apex, and then as an alternative to an extrapleural pneumothorax. Most lungs with apical lesions show involvement to some degree, generally of the mid-zone, and often of the lower zone. Furthermore, the lymphatic interconnexions between the various parts of the lung are so numerous that the tuberculous infection extends over a much wider area than the clinical or radiological evidence would suggest. The partial collapse of a lung produces between the collapsed and uncollapsed portions of the lung a line of tissue strain in which it is no infrequent occurrence to see later a reactivation of the disease. It is admitted that in some cases a total thoracoplasty does produce an apparently unnecessary collapse of seemingly healthy lung with some resultant loss of vital capacity, but it is felt that the disease is much more securely arrested.

Anaesthesia is produced by a preliminary induction with 6 to 10 c.cm. of intravenous barbiturate, followed by inhalation of oxygen with 3 to 5% of chloroform vapour to maintain narcosis. Infiltration of the whole operative area is undertaken with 1% kerocain (procaine), and at the stage of rib exposure the intercostal nerves are infiltrated as they pass out on to the neck of the ribs. It is our opinion that, while the operation is performed essentially under local anaesthesia, light narcosis should be maintained throughout.

The first stage of the operation consists in the removal of the whole of the first and second ribs up to the costal cartilages and 13 cm. of the posterior ends of the third and fourth ribs. The third and fourth transverse processes are also removed. At the second stage, undertaken fourteen days later, 13 cm. of the fifth to eighth ribs inclusive are removed together with the transverse processes. At the final stage, a fortnight after, 13 cm. of the ninth and tenth ribs are removed. Occasionally the operation is performed in two stages by removing five ribs at each stage. The wound is drained for twenty-four hours through a separate stab incision.

Considerable pressure is maintained laterally and anteriorly on the collapsed portion of the chest after the first twenty-four hours by means of elastic strapping and pads of wool and sorbo rubber. Weights are applied later on to the front of the chest to assist the collapse, and finally an elastic brace is fitted which maintains constant pressure on the chest for some months. Exercises are given to counteract the tendency to scoliosis and to regain full arm movements. Rest in bed is continued for two to three months after the operation.

Results

During the period 1933-40 59 cases of pulmonary tuberculosis were treated by thoracoplasty; 52 were for parenchymatous disease and 7 for tuberculous empyema. 158 operations in all have been performed on these patients. The follow-up results, undertaken in May, 1941, are as follows:

TABLE I.—Cases of Parenchymatous Disease

	Fit and Well, with Negative Sputum	Unfit or with Positive Sputum	Now Dead	Total
1933 ..	1 (100%)	—	—	1
1935 ..	3 (100%)	—	—	3
1936 ..	5 (62.5%)	1	1	7
1937 ..	4 (67%)	—	—	4
1938 ..	8 (67%)	—	—	8
1939 ..	4 (57%)	—	—	4
1940 ..	10 (67%)	4	1	15
Total ..	35 (68%)	9 (17%)	3 (15%)	52

35 patients (68%) are now fit and well, and 30 (88%) of these are able to do their daily work. Nine are still unfit or have a positive sputum (see Table V). Eight patients have died since the operation was undertaken. No death due to post-operative shock occurred, but four of these patients died within three months of the operation. Details of the cases can be seen by reference to Table V (Cases 8, 11, 14, 15, 20, 21, 34, 48).

Of the 52 patients 40 were considered "good risk" cases for thoracoplasty and 12 "justifiable risks" (see Fig.). The results in these two groups were as follows:

TABLE II

	Good Risk	Justifiable Risk
Fit and well, with negative sputum ..	30 (75%)	5 (41.7%)
Unfit or with positive sputum ..	5 (12.5%)	4 (33.3%)
Now dead ..	5 (12.5%)	3 (25%)
Total ..	40	12

There is a tendency to increase the number of "justifiable risks" operated upon, and in some of the later cases the disease would have been deemed extensive enough to contraindicate operation in the early days. A further analysis of the "justifiable risk" group of cases reveals the following figures:

TABLE III.

	Fit	Unfit	Dead	Total
1935 ..	1	—	—	1
1936 ..	—	1	—	1
1938 ..	—	2	1	3
1939 ..	—	—	1	1
1940 ..	4	1	—	5

It is as yet too early to forecast the outcome in the 1940 group of "justifiable risk" cases, but one feels a certain degree of apprehension regarding their future. It is possible that by performing total thoracoplasty in this group too much strain is put on the remaining lung, and that a more localized thoracoplasty with maintenance of function of the lower part of the lung may produce better results. It is still important, however, in assessing the line of treatment in this group, to bear in mind the objections to localized thoracoplasty which have been mentioned before.

It is interesting to study the group of cases with large cavities—i.e., 5 cm. or more as measured on the A.-P. radiograph.

TABLE IV

Size of Cavity	Fit	Unfit	Dead
5 cm. ..	4	3	—
6 cm. ..	—	—	—
7 cm. ..	2	1	—
8 cm. ..	—	—	—
9 cm. ..	—	—	1

The value of thoracoplasty in producing collapse of giant cavities has been disputed, and it would appear from this small group of cases that patients with cavities of certainly 6 cm., or over, would be better treated by preliminary suction drainage to reduce the size.

The only satisfactory criterion by which to assess the results of thoracoplasty is a comparison with a similar group of cases in which thoracoplasty has not been done—i.e., those refusing operation. Unfortunately it has not been possible to obtain any figure for such cases from this centre, but they would at any rate be very few in number. Comparable figures have, however, been published by Hurford (1941) and Freedlander and Wolpaw (1937) which show that in the operated group the disease was arrested in 65% (Hurford) and 57% (Freedlander and Wolpaw), and in the unoperated group in 16% (Hurford) and 10% (Freedlander and Wolpaw).

Approximately 50% of all cases considered for possible thoracoplasty on presentation of the history and films are turned down on clinical examination owing to the presence of too active disease on the opposite side or to the general condition of the patient not being up to standard. The cardiovascular system of many of these patients is in an unstable condition due to continued toxæmia, and would be an added hazard to the operation. As more and more experience is gained in this branch of surgery there is a tendency to perform thoracoplasty on increasingly "desperate" cases, with the idea of giving the patient a chance to recover. While such a procedure is justifiable, as death is certain in so many cases in one to two years, the danger of bringing the operation into disrepute must always, as mentioned before, encourage a certain degree of conservatism.

How soon should thoracoplasty be undertaken in these cases of fibro-cavernous disease? There is probably a growing tendency to operate earlier, but any degree of exudation must delay thoracoplasty until fibrosis has occurred. Moreover, the exposure of a patient to the risks and consequences of a major operation before every

other method of treatment has been given the fullest trial is deprecated. It is possible that the advent of surgery has encouraged a tendency to haste in the treatment of a disease in which time, bed rest, and sanatorium treatment are essential principles.

One feature of this operation is the scoliosis that occurs towards the side on which the thoracoplasty has been undertaken. The degree of scoliosis is probably somewhat greater if the transverse processes have been removed than

if they have been left, owing to the temporary loss of attachment of the erector spinae group of muscles. This, however, can very effectively be overcome by encouraging the patient to lie on the operated side from the beginning. The degree of scoliosis appears more severe in the radiograph than on clinical examination. When the patient is clothed the deformity is negligible. The advantage claimed for the more efficient collapse of the lung when the transverse processes are removed in our opinion outweighs the

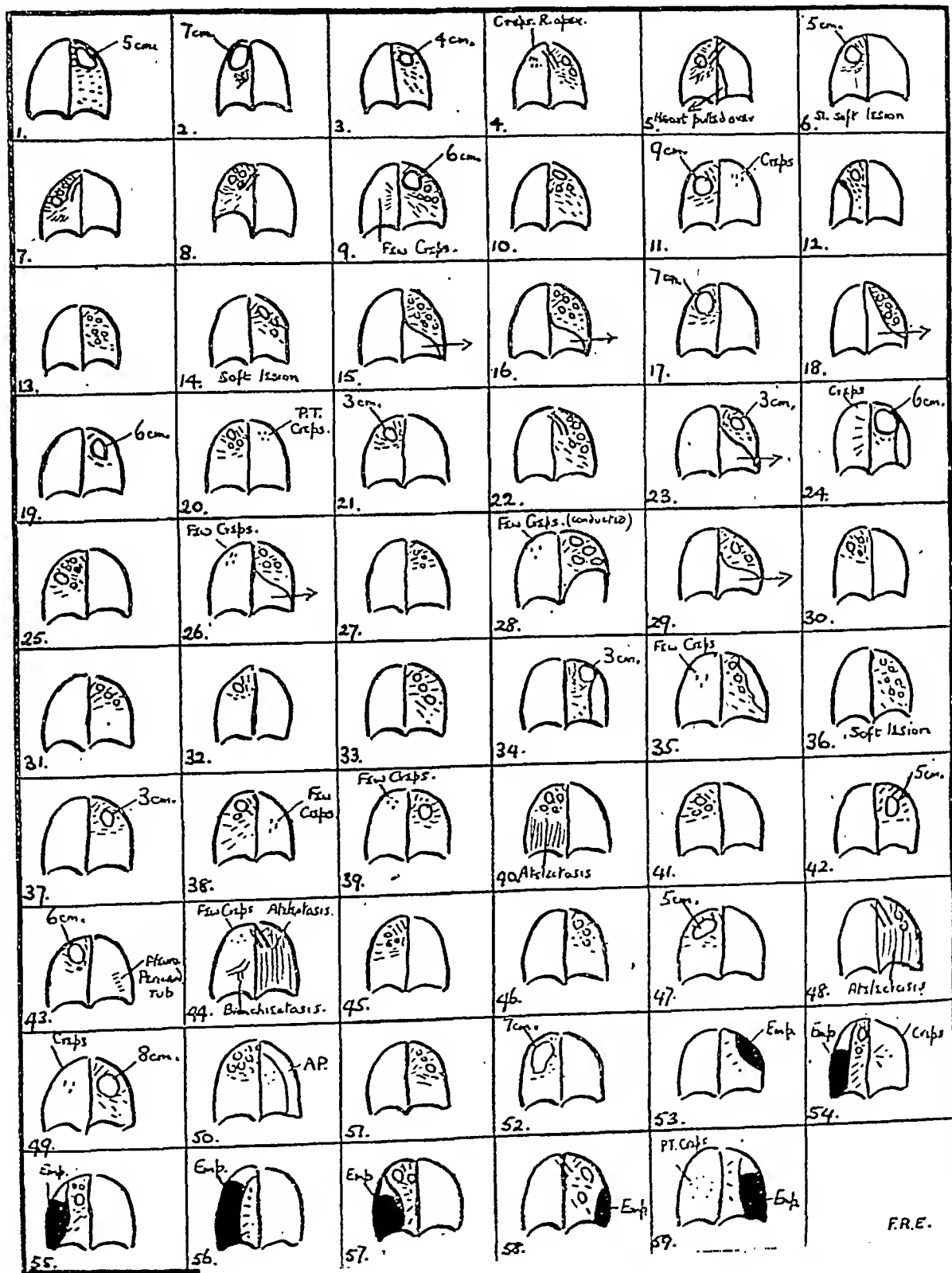


TABLE V

PRE-THORACOPLASTY										POST-THORACOPLASTY						
Case	Sex	Age	Length of Disease in Years	Previous Collapse Therapy	Risk Classification	Sputum		When Sputum became Negative for T.B.	When Patient discharged from Sanatorium	Condition in May, 1941					Remarks	
						T.B.	Amount in oz.			Sputum	Scoliosis	General Condition	Working			
Parenchymatous Disease																
1933 1	F	28	3	p.	G	—	1	2 years	2½ years	—	tr.	o	Fit	Yes		
1935 2	F	22	3	ap. ip.	G	—	2	Immed.	7 months	—	nil	+	—	—	—	
3	F	26	7	—	G	—	0	—	7 months	—	—	—	—	—	—	
4	F	26	5	—	JR	—	tr.	6 months	11 months	—	—	o	—	—	—	8 ribs only
1936 5	M	20	3	ap.	G	—	tr.	Immed.	6 months	—	—	—	—	—	—	
6	F	26	1	—	G	—	2	—	7 months	—	—	—	—	—	—	
7	M	19	2	—	G	—	1½	—	8 months	—	—	—	—	Unemp.	—	
8	F	20	2	ap.	JR	—	1	3 months	6 months	—	—	—	—	—	—	Spread opposite side
9	F	25	4	—	G	—	3	6 months	8 months	—	—	—	—	Unfit	No	
10	F	24	1	ap.	JR	—	2½	Immed.	1 year	—	—	—	—	Fit	Yes	
11	F	31	4	—	JR	—	3	—	ND	—	—	—	—	—	—	Spread opposite side
12	F	36	5	—	G	—	1½	Immed.	7 months	—	—	—	—	Fit	Yes	
1937 13	F	36	3	—	G	—	2	1 month	7 months	—	—	—	—	—	—	
14	F	25	2	ap.	G	—	3	—	ND	—	—	—	—	—	—	Spread opposite side
15	F	14	1	ap.	G	—	3	Immed.	ND	—	—	—	—	—	Toxaemia	
16	M	20	1	ap.	G	—	1	Immed.	6 months	—	—	—	—	Fit	Yes	
17	F	38	5	ap. ip.	G	—	2	1 month	6 months	—	—	—	—	—	—	Cavity not completely closed
18	F	29	6	—	G	—	1	Immed.	6 months	—	tr.	+	—	—	—	
1938 19	F	28	1	pc.	G	—	1	2 months	5 months	—	—	+	—	—	—	
20	F	22	5	—	JR	—	1	—	ND	—	—	+	—	—	—	Died 10 days after 1st stage. Acute Tb. bronchopneumonia
21	F	39	1	—	G	—	1	—	ND	—	—	—	—	—	—	Lobar pneumonia. Probably non-tuberculous
22	M	36	15	—	G	—	1	Immed.	5 months	—	—	—	—	Fit	Yes	
23	M	26	6	ap. pc.	JR	—	1	1 month	1 year	—	—	—	—	Unfit	No	
24	M	31	3	—	G	—	3½	—	1 year	—	—	—	—	—	—	Cavitating opp. side
25	F	25	3	—	G	—	1	Immed.	1 year	—	tr.	+	—	Fit	Yes	
26	F	36	8	ap.	JR	—	1	—	2 years	—	—	—	—	Unfit	No	Cavitating opp. side 4 months after op.
27	M	35	4	—	G	—	tr.	3 months	10 months	—	—	—	—	Fit	Yes	
28	F	32	7	—	G	—	1	6 weeks	10 months	—	—	—	—	—	No	Rather dyspnoeic
29	F	26	4	—	G	—	1	6 months	5 months	—	—	—	—	—	Yes	
30	F	41	1	—	G	—	1	—	8 months	—	tr.	—	—	—	—	
1939 31	F	32	2	—	G	—	1	Immed.	4 months	—	—	—	—	—	—	
32	M	27	6	—	G	—	3	1 month	8 months	—	—	—	—	—	—	
33	M	38	9	—	G	—	3	14 months	4 months	—	—	—	—	Unfit	No	Multiple Tb. lesions
34	F	28	6	ap.	G	—	1	—	ND	—	—	—	—	—	—	Tb. bronchopneumonia
35	F	26	3	ap. ip. pc.	JR	—	1	2 months	6 months	—	—	—	—	Unfit	No	Died 17 days after 1st stage. monia. Diarrhoea. ? origin
36	M	38	4	pc.	G	—	1	Immed.	6 months	—	tr.	+	—	—	—	Readmit. 2 mths. later with sprd. opp. side
37	F	23	3	ap. pc.	G	—	1	—	10 months	—	—	—	—	—	—	Tiredness; cavity still just visible
1940 38	F	21	3	ap.	JR	—	tr.	3 months	4 months	—	tr.	+	—	Unfit	No	
39	M	40	4	ap. ip.	JR	—	tr.	9 months	ND	—	—	—	—	—	—	Cavity still present
40	F	26	7	—	G	—	2	Immed.	4 months	—	—	—	—	Fit	Yes	
41	F	22	1	—	G	—	2	2 months	11 months	—	—	—	—	—	—	
42	F	23	3	—	G	—	2	1 month	11 months	—	—	—	—	—	—	
43	M	33	2	ap.	JR	—	2	2 months	ND	—	—	—	—	Unfit	No	Cavitation opp. side
44	F	27	7	—	JR	—	2	Immed.	6 months	—	—	—	—	Fit	Yes	Associated bronchiectasis
45	M	30	8	—	G	—	tr.	—	4 months	—	—	—	—	—	—	
46	M	34	3	—	G	—	2	—	ND	—	—	—	—	Unfit	No	Cavity still present
47	M	37	3	—	G	—	2	Immed.	6 months	—	tr.	+	—	Fit	—	
48	F	39	17	—	G	—	2	—	ND	—	—	—	—	—	—	Died 3 months later with acute spread to opposite side
49	M	34	12	ap.	JR	—	1½	6 weeks	ND	—	tr.	o	—	Unfit	No	
50	M	28	7	ap. pc.	G	—	1	9 months	11 months	—	tr.	+	—	Fit	Yes	
51	F	33	7	ap.	G	—	1	Immed.	6 months	—	tr.	+	—	—	—	
52	M	24	2	—	G	—	1	1 month	ND	—	—	—	—	—	—	Positive sputum required 3 months later. Cavity not obliterated. For further collapse
Tuberculous Empyemata																
1937 53	F	31	3	—	JR	—	20 BF	—	ND	—	—	—	—	—	—	Died 3 weeks after 1st stage. Toxaemia
54	F	26	8	ap.	JR	—	11 BF	—	ND	—	—	—	—	—	—	Died 2 years later from spread to opposite side
1938 55	M	26	4	ap.	JR	—	1	2 months	ND	—	—	—	—	—	—	Died 2 months later from spread to opposite side
56	M	26	4	ap.	JR	—	1	—	ND	—	—	—	—	Unfit	No	Still needs small plastic op.
57	M	24	3	ap.	JR	—	1½	—	15 months	—	tr.	—	—	—	—	Losing weight
1939 58	M	29	9	ap.	JR	—	2	—	ND	—	—	—	—	—	—	Died 9 months later from toxaemia and G.U. tuberculosis
1940 59	F	26	2	—	JR	—	12 BF	—	ND	—	—	—	—	—	—	Died 14 days after 1st stage. Toxaemia and amyloid disease

Previous Collapse Therapy: ap., Artificial pneumothorax. ip., Internal pneumolysis. pc., Phrenic crush.

Risk Classification: G, Good risk. JR, Justifiable risk.

Scoliosis: o, No scoliosis. +, Slight scoliosis. ++, Moderate or severe scoliosis.

p., Phrenicectomy.

Sputum: tr., Trace. BF, Bronchial fistula.

Discharge: ND, Not discharged.

resulting scoliosis. All too often, when the transverse processes are left, the persistence of an elongated, flattened, but not wholly obliterated cavity can be seen in the costo-vertebral sulcus.

Tuberculous Empyema.—Of the seven subjects of tuberculous empyema treated by thoracoplasty, five are dead, one is alive but deteriorating, and one is well and cured of his tuberculous empyema but still requires a small plastic operation to complete the epithelization of the remains of the cavity. All cases had been treated conservatively for a long period before being presented for thoracoplasty. Operation undertaken at an earlier date before the general effects of the continued toxæmia become too marked and the pleural membranes too thickened would undoubtedly produce more satisfactory results.

Summary

From the public health point of view no person with a sputum positive for tubercle bacilli should be at large in the community.

Thoracoplasty will arrest the disease in a certain proportion of cases and allow return to work.

Indications for thoracoplasty are: The disease should be in the fibrotic stage, and must be mainly unilateral; pneumothorax should have been tried; the cavities should not be too large. The age limit is given as 15 to 45, with exceptions. The general condition of the patient should be good.

Ten-rib paravertebral thoracoplasty with removal of the transverse processes is the operation of choice.

Results at the surgical clinic of the Lancashire County Council Tuberculosis Service in the period 1933-40, with follow-up in May, 1941, are given. Fifty-two cases were operated on for parenchymatous disease: 35 (67%) are fit and well, with negative sputum, and 30 (86%) of these are working.

Seven cases were operated on for tuberculous empyema, with total arrest of the disease in one case only. These cases should be operated on earlier.

Our thanks are due to Dr. G. Lissant Cox, Central Tuberculosis Officer, Lancashire County Council, for permission to publish this report. We acknowledge the great help given to us by the tuberculosis officers of the county in the follow-up of these cases. Our greatest appreciation is due to the members of the medical and nursing staff of High Carley Sanatorium for the after-care of these most difficult patients. The anaesthesia was conducted by Dr. John Halton.

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To meet urgent needs, some of them arising out of the war, four new teaching departments have been set up at Leeds General Infirmary. One is a department of thoracic surgery, another is a school of physiotherapy, the third is a school of radiography and radiotherapy, and the fourth is a school of dietetics. An account of these developments is given in the *Yorkshire Post* of November 21. The thoracic surgery department is especially noteworthy, and by its inauguration Leeds becomes the first of the teaching hospitals in the Provinces to take this step. The founding of the school of physiotherapy has been expedited by the war, for the establishment of such a school, with its own building, was until lately no more than a suggestion for post-war development. Damage to London hospitals has led to the immediate demand for a physiotherapeutic instructional centre elsewhere. The course at Leeds will occupy two and a half years, and is intended to prepare students for the examination of the Chartered Society of Massage and Medical Gymnastics. At the school of radiography and radiotherapy students are in training for the examination of the Society of Radiographers during a two-year course which, as a war measure, will be reduced to six months. The school of dietetics gives six months' practical training for those who have done the theoretical work at a college of domestic science. It will function in close contact with the special kitchen set apart by the Leeds General Infirmary for the preparation of food for patients on a special diet.

AN IMPROVED METHOD OF REGIONAL ANAESTHESIA IN ACUTE ABDOMINAL SURGERY

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The advantages of regional anaesthesia in grave abdominal cases have long been recognized. While in America and on the Continent the work of such pioneers as Crile, Labat, Finsterer, and others has been received with enthusiasm, regional anaesthesia has never achieved popularity in this country. This, we think, is because (1) most patients dislike being conscious during an operation; (2) the administration of a regional anaesthetic is often in itself an ordeal for even the most stoical patient; (3) too often anaesthesia proves to be incomplete, and deep general narcosis is found necessary.

Types of Regional Anaesthesia

The forms of regional anaesthesia in use to-day are as follows:

Spinal Anaesthesia.—(a) Subarachnoid Block:—By this method an extreme degree of relaxation of the abdominal muscles is obtained together with what Farr describes as "negative intra-abdominal pressure." If the anaesthetic ascends as high as D 5 splanchnic block is also obtained. The liability to grave falls in blood pressure and the risks of sudden collapse make spinal anaesthesia (subarachnoid block) unsafe except in comparatively fit patients. (b) Epidural Block:—The work of Dogliotti (1933) and Odom (1936) aroused interest in this method. It is now generally considered that epidural block is neither reliable nor safe.

Field Block.—This method is the most popular in use owing to its comparative safety and ease of administration, and may well be associated with the work of Finsterer (1923). Although anaesthesia at the site of incision is usually adequate, relaxation is often poor; this is a serious defect in an exploratory operation. "Negative intra-abdominal pressure" is absent, and protrusion of the abdominal viscera often occurs, especially if the patient strains; this may be aggravated by inadequate preliminary sedation and rough handling of the viscera by the surgeon. Sometimes, after the abdomen has been opened, it becomes clear that the first incision must be extended or a fresh incision made; local infiltration or additional field block may then be necessary if deep general narcosis is to be avoided. To protect the patient from the effects of traction on the viscera, field block is often supplemented by splanchnic block, the most popular technique being that of Braun (1924).

Infiltration Anaesthesia.—This method, so strongly advocated by Farr (1930), has recently been used by Vishnevsky (1938), Synovich (1940), and Novikov (1940). Injection of large quantities of dilute anaesthetic solution—e.g., equal parts of 0.25% novocain and 1 in 4,000 pericaine—into the fascial pockets surrounding muscles and viscera generally requires the use of a power-driven pump; the aspiration test cannot be performed, and there is always risk of mechanical breakdown. Infiltration anaesthesia carries with it all the disadvantages of field block.

Bilateral Paravertebral Block.—If a true paravertebral block is performed in the manner originally suggested by Sellheim (1905) and perfected by Labat (1922) then the rami

communicantes and the sympathetic nerves are blocked as well as the intercostal nerves. If this procedure is repeated bilaterally from D 7 to D 12 then excellent abdominal anaesthesia and relaxation occur; a substitute for splanchnic block is, in addition, obtained. Unfortunately this otherwise excellent method has grave disadvantages. Skill above the average is required to place the point of the needle at the exit of the vertebral foramen. The difficulty of accurate injection makes this method unreliable. Ever present is the well-known danger of injecting anesthetic solution into the prolongations of the subarachnoid space along the spinal-nerve roots. The all-important aspiration test may then be wrongly interpreted owing to cerebrospinal fluid being colourless. Paravertebral block is not a practical proposition in the hands of the average anaesthetist and surgeon.

Bilateral Mid-axillary Intercostal Block.—Here the intercostal nerves are injected in the mid-axillary line, generally from D 7 to D 11. This method has always enjoyed a certain amount of popularity, and quite recently has been recommended by Bartlett (1940). It has the disadvantage that having injected the intercostal nerves on one side the anaesthetist must change position, prepare the skin, and repeat the injections on the other. If the anaesthetist wishes to perform splanchnic block by the posterior approach of Kappis, which for reasons stated later we prefer to the anterior approach of Braun, the patient must undergo a change of posture, with fresh skin preparation and rearrangement of towels.

An Improved Method of Regional Anaesthesia

We believe that the method here recorded is free from the major disadvantages of the techniques described above. It has six main features: (1) adequate pre-operative omnopon (pantopon) sedation; (2) the preliminary use of a short-acting barbiturate—e.g., hexobarbitone B.P. (evipan); (3) posterior bilateral thoracic-nerve block; (4) bilateral splanchnic block by the posterior approach; (5) oxygen therapy with the B.L.B. mask; and (6) attention to gentleness in operative technique. A detailed description of the method follows.

Preliminary Sedation

If no sedative has been given before admission, or if sedation has been inadequate, then as soon as consent for operation has been obtained the patient receives an intravenous injection of omnopon. We use the drug intravenously because of its rapid action by this route and because, by giving it slowly, the dose can be regulated to the patient's requirements. The respiratory rate should not be depressed below 14 to the minute. A small dose of atropine (1/100 grain) is given subcutaneously half an hour before operation.

Surgical Preparation

In the ward a radiant-heat cradle is used, the foot of the bed is raised, and when required, as in cases of intestinal obstruction, the stomach is emptied by a small-calibre tube (Ryle or Miller Abbott), which is left in position both during and after operation. Intravenous infusion is employed when necessary: in cases of profuse vomiting, intravenous glucose saline is given; plasma or blood is used as indicated. A B.L.B. mask is applied when anoxia is suspected and in cases of intestinal obstruction with distension (Fine, Hermanson, and Frehling, 1938). When the condition of the patient has improved the abdomen and back are prepared in the usual way.

Preliminary Intravenous Narcosis

If the patient's condition permits, intravenous hexobarbitone B.P. (evipan) is given in the anaesthetic room.

Should further omnopon sedation appear necessary we find that drawing up 1/3 grain of omnopon into the evipan solution is a safe and useful procedure provided the resulting straw-coloured solution is introduced with extra slowness and caution. One of us (N. R. J.) has used this method since 1937. We prefer evipan to pentothal because after a "single" dose it gives a long light narcosis without undue depression of the respiratory and cardiovascular centres. Evipan does not diminish the oxygen capacity of the blood (Pask, 1941). Intravenous evipan with omnopon sedation not only renders the patient unconscious during the insertion of the regional anaesthetic but, if a suitable dose has been given, keeps him asleep throughout even a long abdominal operation if no unanaesthetized area is stimulated. The benefits of light general narcosis supplementing regional anaesthesia and thus preventing psychic trauma were first emphasized by Crile and Lower (1920), and were recently referred to by Hewer (1940). The short-acting intravenous barbiturates—e.g., evipan—are particularly useful in that they protect against the toxic effects of regional anaesthetic solutions (Rovenstine and Cullen, 1939). Moreover, they are portable, easy to administer, and non-inflammable—virtues which are especially important in war surgery. Should the patient's condition be so grave as to make him apathetic to his surroundings, then supplementary intravenous narcosis is used only if he becomes restless during operation. It is omitted in cases of severe vomiting, for then the risk of inhaling vomitus is present even though continuous gastric aspiration is employed. The importance of maintaining a clear airway cannot be emphasized too strongly. We use a nasopharyngeal tube, made by cutting an old Magill's endotracheal tube of suitable diameter to a length equal to the distance between the lobe of the patient's ear and the alae nasae. A safety-pin is inserted through the non-bevelled end to prevent the tube being inhaled. If this short tube is placed correctly it is tolerated even in very light narcosis.

Regional Anaesthesia

Preparation of Solution.—Wearing sterile gloves, the anaesthetist prepares a 1% solution of novocain with adrenaline. We take two 1-gramme sterile ampoules of planocaine and dissolve the contents in 200 c.cm. of sterile normal saline to which is added, from a sterile ampoule, 0.5 c.cm. of 1 in 1,000 adrenaline. The sterile 10-c.cm. syringe (we use the Lundy type) and needles, which have been previously sterilized by boiling and allowed to cool gradually, are washed through with cold sterile water.

Technique of Posterior Bilateral Thoracic-nerve Block.—The patient is turned on to his left side and the vertebral column is flexed by an assistant as in spinal anaesthesia, care being taken that the airway is maintained. A small pillow is, when necessary, placed under the loin to prevent sagging of the lumbar spine. The skin is painted with 1 in 1,000 flavine in spirit and the highest points in the iliac crests are palpated to determine the intercostal line. Immediately below this line lies the fourth lumbar space, and from here the first lumbar space and then the tip of the first lumbar spine are identified. A point is taken 6 to 8 cm. (3 or 4 fingerbreadths) lateral to this spine, and here a 10-cm. needle is inserted to rest on the twelfth rib at its lower border. The syringe is now attached, and the point of the needle is made to slip off the lower border of the rib and is advanced for a distance of not more than 1 cm. The needle point now lies in the region of the neurovascular bundle, but it is difficult to know when it is just in the right fascial plane. It is therefore important that, as the injection is given, a to-and-fro movement of the needle is made; only in this way can one be sure of "hitting off" the nerve. A total of 8 c.cm. of the anaesthetic solution

is injected, and this subcostal injection is repeated up to and including D 6. The whole process is then repeated on the other side. In thin patients the ribs can be palpated, but in obese or muscular subjects they must be found by exploration with the needle. This is not difficult, but it should be noted that the tenth and eleventh intercostal spaces are appreciably wider than the preceding ones. Anaesthesia by this method is easy to perform and is associated with good relaxation of the abdominal muscles and with "negative intra-abdominal pressure." This last factor is very important in acute abdominal surgery.

Technique of Splanchnic Block.—We use a 0.5% solution of novocain with adrenaline; this we obtain by adding an equal quantity of saline to the 1% solution remaining from the thoracic-nerve block. At the site of injection of the twelfth dorsal nerve a 12-cm. needle is introduced at an angle of 45 degrees to the median plane and is advanced until its point strikes the body of the first lumbar vertebra. The needle is then partly withdrawn and advanced again more tangentially, and the procedure is repeated until the needle is felt to slide past the body of the vertebra for a distance of not more than 1 cm. If no flow of blood occurs 1 c.cm. of 0.5% anaesthetic solution is injected to clear the needle. The aspiration test is performed carefully and, if negative, the remaining 9 c.cm. is injected; the aspiration test is repeated at least once during this injection. A total of 30 to 40 c.cm. is given in this way, and the technique is repeated on the other side. It is important that the needle point should lie in the loose retroperitoneal areolar tissue and not within the substance of the crus of the diaphragm. Some indication of its true position is given by the feel of the piston as the injection is made; if the needle is placed correctly the piston is pressed home without resistance. We prefer to use this posterior approach of Kappis (1914) because: (1) the block is inserted and has time to take effect before the operation has begun; (2) the intra-abdominal manipulations of the anterior approach are avoided; (3) the anterior approach cannot be performed efficiently except through an upper abdominal incision; and (4) we have found it an efficient and safe method. Hewer states that "experimental injections made in the post-mortem room with methylene blue showed that this technique does soak the splanchnic area efficiently." He also states that "posterior splanchnic block is a reasonably safe procedure if carried out with all precautions."

Management of the Patient on the Table.—The patient is lifted on to the operating table and a pillow is placed under the knees. This small degree of hip-joint flexion improves relaxation of the abdominal wall. The legs are held in position by a padded strap passed over the thighs just above the knees. The patient's head rests on one pillow, and the hands are placed under the head in the "sun-bathing" position. The arms in this position may easily be controlled and a further intravenous injection may readily be given, if required.

Oxygen Therapy

We believe that in all grave cases oxygen therapy is of great utility. We have used it as a routine, and have come to regard it of value in every case not only during operation but also pre- and post-operatively. Waters, Wineland, and SeEVERS (1931) have pointed out that morphine and the barbiturates are two of the many factors which may cause anoxia in the surgical patient. We use a B.L.B. mask with all ports closed, the oxygen flow being adjusted to 6 to 8 litres a minute. A flowmeter should always be employed, as the flow of oxygen may be inadequate though the bag may appear to be filling properly. A reducing valve should be used if available.

Points in Operative Technique

(a) The towel clips should not include the skin. (b) An adequate incision is important: a little extra length often allows the operation to be carried out with ease and without undue traction on the viscera. (c) A vaselined glove makes insertion of the hand and exploration of the abdomen a much less traumatic procedure. (d) The adoption of the Trendelenburg position in the lower abdomen and of the reversed Trendelenburg in the upper abdomen allows the intestines to fall away and often obviates the use of intraperitoneal packs. (e) A gentle operative technique is essential throughout. Retractors and packing should be avoided where possible, and traction on all tissues should be gentle and gradual.

Scope and Indications

We are aware that we are describing no new technique of regional anaesthesia, but we believe we have evolved a method by which its long-recognized advantages in acute abdominal surgery can be put to practical use. Regional anaesthesia is often supplemented by "light" inhalation narcosis, but in many of such cases we have observed that the inhalation narcosis has been anything but light and the regional anaesthesia in reality superfluous. While the method we describe is useful in "interval" surgery, we believe it to be of most value in the "poor risk" acute abdomen. We consider that, where possible, the patient should not undergo the ordeal of being conscious during the administration of a regional anaesthetic or during the subsequent operation. The advent of the short-acting barbiturates has in our opinion revolutionized the possibilities of regional anaesthesia. We have found that after adequate preliminary omnopon a single intravenous injection of evipan (usually 0.5 to 1 gramme in the "poor risk" abdomen) keeps the patient asleep throughout even a long abdominal operation if no unanaesthetized area is stimulated. In experienced hands the method we describe is safe and reliable and is not difficult to perform. It does require practice, and the anaesthetist must be fully conversant with the use and dangers of intravenous narcosis. The application of this method to abdominal war surgery should be of value.

Summary

The various types of regional anaesthesia in present use are discussed. A new method is described. It combines: (1) adequate pre-operative omnopon sedation; (2) the preliminary use of hexobarbitone B.P. (evipan) in preference to pentothal; (3) posterior bilateral thoracic-nerve block from D 6 to D 12 inclusive; (4) bilateral splanchnic block by the posterior approach of Kappis; and (5) pre-operative, operative, and post-operative oxygen therapy, using the B.L.B. mask.

The importance of gentle operative technique is stressed.

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TRICHINIASIS IN BIRMINGHAM

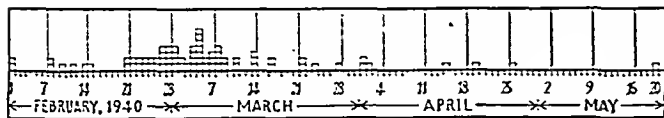
BY

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An outbreak of trichiniasis occurred in Birmingham during the months of February, March, and April, 1941. Seventy-eight definite cases were reported. The first was notified to the Public Health Department with a doubtful diagnosis of trichiniasis on February 24. By this time it was known that the disease was abroad. Accounts had been published of cases in Wolverhampton (Sheldon, 1941; Lee, 1941) and in Hertfordshire (Garrod and Maclean, 1941). A warning against eating undercooked pork or sausage had been broadcast by wireless, and similar warnings had appeared in the Birmingham press.

The course of the epidemic is illustrated in the graph: it will be observed that isolated cases occurred before and



Dates of onset of symptoms of 75 cases of trichiniasis occurring in Birmingham administrative area. Vertical divisions are weeks and days. One small square = 1 case. Two additional cases had onsets on January 10 and June 15 respectively. In one other case the date of onset was uncertain. Doubtful cases omitted.

after the main outbreak. Female patients predominated (81%). Six children were affected, the youngest a girl aged 4.

Clinical Findings

In general the clinical features corresponded closely with those described by Sheldon and by Lee.

Oedema.—The most constant feature (occurring in all cases but one) was oedema of the eyelids: this was to be expected, since it was made the main criterion of preliminary diagnosis. It was of a constant and characteristic type. It was nearly always symmetrical; in only one definite case in this series and in one doubtful case was it unilateral. The whole eye-socket filled up, and in the severest cases vision was totally occluded for a few hours. It tended to spread down to the angles of the jaws. The patients were often totally unrecognizable, and appeared bloated, coarse, and much older than their years. The oedema was in most cases the initial symptom, preceding by only a few hours the other characteristic features of the "toxic" stage of the disease—fever, malaise, and generalized pains. It persisted for about a week in the moderately severe cases, and occasionally for considerably longer. Its subsidence was gradual as a rule, and there was a tendency to recurrence, especially at night-time. Oedema elsewhere than in the face and eyelids may well have occurred unnoticed in many cases, for in those in which it was observed it was slight and was mainly at the wrists and ankles. Nevertheless the most remarkable feature of the oedema is its localization.

Frontal or orbital headache was common at the onset, and was occasionally the most distressing symptom. *Conjunctival injection*, slight or severe, was the rule; in three instances there were subconjunctival haemorrhages, which in one case took the form of rings round the corneo-scleral junctions. I saw no subungual haemorrhages, though I sought them regularly. *Fever*, as evidenced by temperature records, delirium, sweating, or flushes, was observed in 30 cases. It probably occurred in many more. Where repeated observations were made it was high and remitting (e.g., 100° to 104°) for the first few days, usually returning

almost to normal during the second week. The tendency was, of course, for these observations to be made upon the severer cases. *Malaise*—i.e., a general sense of ill-being—was constant in the first few days in all but the mildest cases. It was present even in the absence of other evidence of pyrexia. *Muscular pains* or stiffness occurred in 60 patients, either with the oedema or, more often, a few hours afterwards. The site was variable. A characteristic onset was of pain between the shoulder-blades, spreading up the back of the neck to the occipital region. Later the limbs were usually affected, and in the severer cases pain and stiffness were generalized. The pain was severe, aching or cramping in quality; it was worse on movement, especially after rest. There was often stiffness, weakness, or numbness of the limbs.

Gastro-intestinal symptoms—anorexia, nausea, vomiting, abdominal pain, constipation, or diarrhoea—occurred in 39 patients. In 9 these symptoms clearly and definitely preceded the "toxic" stage, and were pronounced: and it may justifiably be surmised that they represented that point in the disease when the worms are establishing themselves in the mucous membrane of the bowel. It is interesting to note that of these 9 patients no fewer than 6 (67%) gave a history of having consumed raw sausage, whereas of the remaining 69 cases only 7 (10%) admitted to this. I attribute this significant difference to the larger dosage of viable larvae in the raw sausage. A *rash* was present in 8 only of the definite cases. In 7 of these it was urticarial in type, and coincided with the oedema. This type of rash might perhaps have been expected more often in view of the other points of similarity (oedema and eosinophilia) to allergic conditions. Indeed, urticarial rashes were the commonest cause of difficulty in diagnosis (see below). Evidences of affection of the *nervous system* were few in this outbreak. A varying degree of drowsiness, lethargy, or listlessness was frequently present, and in three patients this amounted to stupor. One patient developed a transient quadriplegia. Two patients complained of pronounced dimness of vision for a few hours at the height of the illness.

The severity of the disease was difficult to assess, since I saw most of the patients on a single occasion only, and at various stages of their illness. Many of the patients were acutely ill, but I think it is true to say that in no case did the condition give rise to grave anxiety—the pulse and respirations remained good throughout. There were no deaths.

Diagnosis

The main criteria of diagnosis were oedema of the eyelids and eosinophilia. For practical purposes it was found necessary to decide upon an arbitrary scheme of diagnosis, and the following standards were adopted:

1. Diagnosis definite—trichiniasis:		
(a) Eosinophilia 10% or more	70	78
(b) .. 5-9% ; definite clinical picture	6	
(c) No eosinophil count ; definite clinical picture	2	
2. Diagnosis doubtful:		
(a) Eosinophilia 5-9% ; doubtful clinical picture	3	8
(b) .. less than 5% ; suggestive clinical picture	3	
(c) Investigation incomplete ; suggestive clinical picture	2	
3. Not trichiniasis:		
Eosinophilia less than 5% (or not measured) ; uncon-		
vincing clinical picture	16	
Total	102	

The eosinophilia is discussed more fully below. A "definite clinical picture" required oedema of the eyelids of pronounced degree and characteristic type without other apparent cause, or a lesser degree of oedema together with

muscular pains. It is realized that there are possibilities of error in this scheme, since other causes of oedema and of eosinophilia exist, and a mild or atypical trichiniasis may not present these features.

Group 3 were all cases notified as ? trichiniasis. They included urticarial and other rashes (9), frequently with some degree of oedema of the face or lids; "influenza" or "rheumatism"—i.e., muscular pains with or without fever or catarrh (2); mild degrees of facial oedema without other characteristic symptoms (2); paratyphoid fever (1); slight malaise without any characteristic symptoms (1); and undiagnosed pyrexia with facial oedema (1).

Biopsy was performed on two patients. In one case trichinella larvae were present in the excised muscle; in the other no larvae were found, but the muscle (gastrocnemius) showed degeneration of the fibres and infiltration by eosinophil cells. The latter patient had a 65% eosinophilia on the fortieth day of disease.

Many of the earlier cases were diagnosed only in retrospect—i.e., after it had become known that trichiniasis was about. They had for the most part been labelled "influenza," "gastric influenza," "kidney trouble," or "rheumatism." There is reason to suppose that many cases never came to the notice of the Health Department at all, either through failure in diagnosis or because they were too mild for treatment to be sought.

Blood Cell Changes

The presence and degree of *eosinophilia*, as stated above, was taken as one of the main criteria in diagnosis. Differential white cell counts were made on all but two of the cases and at various stages of the disease; it was not practicable to perform total counts, except in a few cases treated in hospital. The degree of eosinophilia showed little correlation with the day of disease. For instance, two cases of comparable severity had 5% and 44% respectively on the thirty-first day of illness. The greatest degrees of eosinophilia recorded in this series were 61% on the fourteenth day and 65% on the fortieth. The average was 24%. The reaction developed very early: a patient taken ill with swelling of the eyes and face and abdominal pain had 16% of eosinophils on the day of onset; there had been no previous symptoms. On the other hand, one patient still showed a 10% eosinophilia on the seventy-fifth day after the onset of illness, and another 4% on the 132nd day.

So far as can be judged in the absence of total counts a *lymphocytosis* occurred as well as eosinophilia. This is deduced from the fact that the ratio of neutrophil leucocytes to lymphocytes (large and small together) was markedly and consistently low (average 1.4 as against a normal of about 2.3), and that this ratio tended to fall still lower after the eighth week, when the eosinophilia was disappearing. Had the altered ratio been due to a replacement of neutrophils by eosinophils a return to normal would have been expected as the eosinophilia decreased.

The Intradermal Test

After the subsidence of the outbreak I was able, through the courtesy of Dr. Beeson of the Ministry of Health, to obtain a small quantity of trichinella antigen (a saline extract of desiccated larvae) wherewith to perform the Bachman intradermal test for trichiniasis. This test is stated to become positive about sixteen or seventeen days after infection (van Someren, 1939; Spink and Augustine, 1935), and to remain so for an indefinite period. The reliability of the test has been variously assessed. Calus (1938) found it to be positive in 74% of 66 patients (and in 5% of controls), and Heathman (1936), investigating 57

patients, regarded it as less reliable than the eosinophil count. I was informed, however, that the antigen supplied to me had been found very reliable in recent outbreaks in England, and I hoped it would prove of value in testing the validity of my arbitrary standards of diagnosis. Unfortunately the results were inconsistent in some preliminary tests on known (Group 1a) cases. Of 7 of these, 3 were positive, 2 negative, and 2 doubtful. I tested one patient whom I had classified as Group 3 ("not trichiniasis"); he had vomited on two occasions, but had had no other symptoms, and was investigated only because his wife was a doubtful case of trichiniasis. He gave a positive result; his wife was negative.

The results of these few tests are set out in the accompanying table. The numbers are too small for any conclusions to be drawn, except that the test is not by itself a reliable criterion of diagnosis. The reading of the test was complicated by the large proportion (50%) of patients

Table showing Results of Bachman Intradermal Test on Eleven Patients

Group	Result of Test			Total
	Positive	Negative	Doubtful	
1a	3	2	2	7
2a	—	—	1	1
2b	—	2	—	2
3	1	—	—	1

who gave some degree of reaction to the saline solution used as a control. The practical value of the test, except in hospital patients, is also limited by the necessity to remain with the patient for at least half an hour before a positive result can be excluded.

Inquiries into Causation

The habit of eating raw sausage reported by Sheldon (1941) and Jolly (1941) as common among people in the Midlands was found to be followed in Birmingham, where 22% of patients admitted to the habit in the past or present. Inquiries covered all forms of pork, but, though 9 patients denied having eaten sausages during a period of two weeks preceding the onset of the illness, in only one case was it felt that a probable source of infection other than sausage had been found. This was a pig's cheek. As one would expect, bacon was found to be the other commonly consumed form of pig-meat; it was not, however, eaten with anything like the frequency of sausage. In view of the inadequate curing of bacon under wartime conditions it has been suggested (Jolly, 1941) that it may convey trichiniasis. In the present investigation this was regarded as improbable in view of the fact that even lightly cooked bacon, being in thin slices, would be expected to reach temperatures lethal to trichinellae. Of the patients who had eaten sausage, only 13 admitted to having eaten it raw; while 19 were emphatic that it had been well cooked. The question of course arises, What degree of cooking is lethal to the trichinella? Also, What temperature is reached in the middle of a fried or grilled sausage? Jolly, quoting American workers, gives the answer to the former question as "55° C., gradually obtained." The latter remains, so far as I know, unanswered.

One is inclined to wonder whether the wartime sausage, with its low meat content and probably high water content, requires more cooking than the pre-war one in order to achieve this temperature throughout. Or perhaps the present-day sausage actually receives less cooking than its predecessor on account of the low fat content, which causes it to brown on the outside more rapidly, or on account of a tendency for inferior casings to burst more easily. These are matters of surmise: what is definite is that many

patients who developed trichiniasis denied with emphasis that they could in any circumstances have eaten raw sausage. A possibly significant point in this connexion is the frequency, almost amounting to regularity, with which the affected person had *cooked* the sausage, whereas usually other members of the family who had also partaken remained unaffected.

Incubation Period

Inquiries as to the number of days elapsing between the consumption of pork and the onset of symptoms yielded little reliable information owing to the difficulty of determining the day of consumption. Among 22 patients in whose case fairly definite information was obtained the average interval was seven days, but the scatter was very wide. One observation which may throw some light on the incubation period is that a group of six cases, isolated in space and time, all started their symptoms on a Saturday. Since chance is a most unlikely explanation of this, I take it to imply that in this group there was a tendency to eat sausages on one particular day of the week, and that there was a fixed incubation period. Three of these patients could give no definite date as to when they had had sausages; the other three had had them regularly on Saturdays. This suggests a seven-day or fourteen-day incubation period for this group, and the evidence pointed rather towards seven days.

Administrative Action

A circular letter was sent to all practitioners and hospitals in Birmingham drawing their attention to the prevalence of the condition, reminding them of the leading symptoms, and requesting them to notify all cases to the medical officer of health. There was some doubt as to whether the condition was compulsorily notifiable. All notified cases were visited by a sanitary inspector and subsequently (except for a few in whose case full information as to clinical picture and blood count was already available) by me. A special form, which included particulars of all pork consumed in the preceding two weeks, was completed. The retailer was visited and inquiries made as to the manufacturer or market. Acting on information thus obtained the chief veterinary officer endeavoured to trace the meat back to the farm or collecting centre. It was soon found that a large number of manufacturers of sausage were involved, including some of the biggest in the city. To trace the sources of the pork used by these manufacturers was far from easy: at that time the farmers were reducing their stock drastically owing to the rationing of feeding-stuffs, and the pigs were gathered together in collecting centres throughout the countryside, and thence distributed, not locally but over wide areas. So that the meat in a sausage eaten by one of our patients might have been derived from any one or more of several districts as far apart as Cornwall and Norfolk. Nor could observations made over a period of time be correlated, since the tendency was for each farm to kill off its whole stock and not to enter the market again.

The result of this inquiry was that fourteen widely separated districts were listed, each of which was connected (often indefinitely) with two, or in one case three, patients. It was felt that the information was not definite enough to justify further investigation at the collecting centres; and no connexion could be established between these districts and those supplying pork to other areas where trichiniasis had appeared.

Consideration was given to the feasibility of microscopically examining specimens of muscle from all sows and boars entering the Birmingham markets, but as the work involved would have been colossal, and this type of

inspection had given negative results elsewhere, it was regarded as impracticable. So reliance was placed on warning the people of Birmingham against the dangerous practice of eating raw or imperfectly cooked sausage or pork. This was done by means of notices in the daily press. It is thought that this action, while exerting little effect in terminating the outbreak, was probably influential in reducing the number of persons affected.

Discussion

It cannot be claimed that either the factors producing the outbreak or those terminating it have been at all clearly elucidated. It seems extremely likely that, as suggested by Jolly, the condition has been endemic in the Midlands for a long time, going unrecognized except during an occasional epidemic. If this be so, then it must be assumed that small quantities of trichinous pork are constantly entering the market for human consumption, and also that Midlanders regularly eat raw or undercooked pork. The latter assumption is not difficult to accept: the habit of eating raw sausage is not just a wartime one. The former suggestion is at first sight a reflection on our system of meat inspection, but in practice trichinous pork cannot be detected by ordinary inspection methods, except occasionally in a very well fed animal in which there are pronounced fat deposits at the poles of the cysts, or in very gross and very old infestations when there are many calcified cysts. Regular examination by microscopy is not practised in this country—an omission justified by the rarity of the disease.

Why did the disease suddenly assume epidemic proportions? Attempts to answer this question may follow two lines. It may be supposed that there was a sudden increase in the quantity of trichinous pork thrown on to the market; or it may be argued that changes in their feeding habits made the population suddenly more susceptible to infestation from the pre-existing source. It has already been mentioned that throughout the winter months of 1940-1 farmers were killing off their breeding stock owing to shortage of feeding-stuffs. This meant that many old sows and boars were suddenly turned into sausages. Obviously the older a pig the greater the chance that it will have become trichinized; furthermore, it is said that these older animals are far more prone than younger ones to kill and eat rats—an additional source of possible infestation which, it has been suggested, may act as a reservoir for trichiniasis in this country. A further reason why swine should become trichinized, during wartime is an alteration in the constitution or diminished care in the cooking of pig-swill. It might have been expected that the cooking of swill would have been carried out with more than ordinary care during recent months in view of the prevalence of foot-and-mouth disease: I am informed, however, that shortage of time and labour has resulted in an increased laxity in this respect. Reasons for believing that people are more likely to become infested with trichiniasis during wartime, irrespective of any increase in the degree of infestation of the pork, have already been adduced. They are (1) the increased consumption of sausage owing to the shortage of other forms of meat; (2) possibly an increase in the local habit of eating sausage-meat raw, associated with an increase in the number of women who go out to work, taking their lunch of sausage-spread with them; (3) alterations in the constitution of the wartime sausage (less meat and fat, more water, and poorer-quality skin) which make for inadequate cooking.

No one of the above factors would account for the appearance and localization of the epidemic: between them they may be held to do so.

Why did the outbreak end? The killing off of old pigs is clearly a self-limited process. The consumption of raw or lightly cooked pork may have been discouraged by propaganda, though I find it hard to believe that its effect would be felt for long. The former is more likely to have been the determining factor.

To sum up, I suggest that the killing off of old stock threw a few trichinosed swine on to the market. These produced overt disease in a few localities, which were determined by the pork-eating habits of the people: there were probably a number of such localities, but in only a few did the disease become prevalent enough to attract attention and thus be diagnosed. The need to slaughter these swine was determined by economic conditions, and was of limited duration.

The outbreaks draw attention to one fact of importance—trichiniasis exists among English swine. It is probably widespread, since the Harpenden cases were believed to be associated with pigs from East Anglia, the Penrith cases with local stock, and the Wolverhampton cases with West Midland stock, while those in Birmingham may have come from any one or more of a number of districts throughout England. The infestation is probably most of the time slight, as regards both the number of pigs affected and the severity of the disease.

I am indebted to Dr. H. P. Newsholme, medical officer of health for Birmingham, for permission to publish this account. It is also a pleasure to record the willingness with which medical practitioners furnished me with particulars of their patients, both in and out of hospital.

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Medical Memoranda

Crush Fracture of Sesamoid Bone of Thumb

That injury to a sesamoid bone may be the cause of the severe pain and disability of a "sprained" or "staved" thumb is suggested by the case reported below. In Pye's *Surgical Handicraft* (eighth edition, 1919, p. 205) there is a picture of an x-ray film illustrating a fractured sesamoid of the thumb. The text states: "The skiagram shows the result of a sprain of the thumb sustained by a medical student during a football match, and it will be noticed that the sesamoid bone is fractured; the thumb was forcibly hyperextended, with this result. As far as we know, this is the only case of fractured sesamoid recorded."

A man aged 62 was lightly holding the steering-wheel of his car in his right hand, the thumb being uppermost and pointing forwards and to the left, when he collided with a stationary car which had no tail light. The force of impact, though not great, was transferred through the steering column and wheel to the base of the thumb. He experienced sudden severe pain at the site, followed by stiffness and some swelling. When examined half an hour later the ball of the thumb was generally tender. Active movements of the thumb were impossible, and any attempt at passive movement resulted in great pain. The thumb was held in a semi-flexed position. A radiograph revealed no fracture or dislocation, but the sesamoid bone on the ulnar side showed a crushed appearance: the area of the shadow was increased, while the density was decreased (Figs. 1 and 2). Control films of the other hand confirmed the abnormality (Figs. 3 and 4). The hand was bandaged round a ball of cotton-wool, and complete recovery resulted in a few days.

The frequency with which such injuries occur, without a Bennett fracture or other recognized bony or articular derangement, is so well known that the term "staved" thumb is a household expression. It describes a condition causing a degree of pain and incapacity quite out of proportion to the violence of the injury. Unlike the ordinary sprain of other joints the symptoms pass off completely in a very short time. Bruising may occur, but is by no means common. Slight swelling in the region of the metacarpo-phalangeal joint is present in the early stages. Tenderness over the palmar aspect

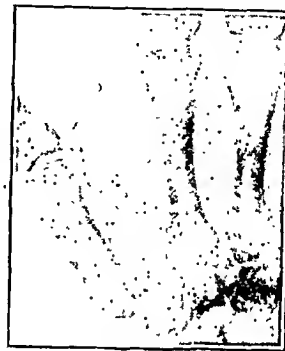


FIG. 1.—Injured thumb; back view.



FIG. 2.—Injured thumb; front view.



FIG. 3.—Normal thumb; back view.



FIG. 4.—Normal thumb; front view.

of the joint, extending proximally into the muscles of the thenar eminence, is the most constant sign.

On account of the delicate structure of the sesamoids and the difficulty of demonstrating them clearly on the x-ray film, injury to these bones is apt to be overlooked. Effusion into the tendon surrounding the sesamoid exerts pressure on the nerve endings and causes a reflex rigidity of the muscle. It is probable that such an injury exists in most cases in which the symptoms are out of proportion to the signs and appearances.

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E. Shaffer (*Ohio med. J.*, 1941, 37, 862) states that 1,575 cases of trichiniasis were reported in the United States during the period 1842-1914, and 2,968 were reported from 1915 to 1936, making a total of 4,543 cases during ninety-four years. The mortality rate for trichiniasis has fallen from 15.4% for 1842-1914 to 4.4% for 1926-36, indicating that more mild cases are now diagnosed and reported than formerly. There is a definite seasonal fluctuation in the occurrence of the disease, with a peak in the winter, particularly after Christmas and New Year holidays. Swine fed on garbage have trichinellae five times as frequently as do grain-fed swine, and are the principal source of human trichiniasis. If municipalities persist in feeding swine with garbage, Shaffer recommends that a law should be made requiring cooking of garbage before it is given to the swine.

Reviews

SULPHONAMIDE CHEMOTHERAPY

Sulphanilamide and Related Compounds in General Practice. By Wesley W. Spink, Associate Professor of Medicine, University of Minnesota Medical School. (Pp. 256. Approximately 16s. 6d.) Chicago: The Year Book Publishers; London: H. K. Lewis and Co., Ltd.

Orthodox lines which have been adopted in several transatlantic books on bacterial chemotherapy are followed in Wesley W. Spink's book. Introductory chapters on general principles and the properties of different compounds are followed by instructions for the treatment of different kinds of infection. Each book on this subject has an ephemeral advantage over its predecessors, and the new features in this are up-to-date descriptions of sulphanilylguanidine and sulphadiazine, as well as a chapter on local application, a subject also referred to in those dealing with dentistry and dermatology.

The greater part of the book is a sound and simple statement of well-established facts, but a much more interesting and debatable feature is the table in which the author has committed himself to a statement of the relative merits of the three principal compounds for treating fifty-seven different conditions. Sulphanilamide is given as the first choice for all haemolytic streptococcal infections, sulphapyridine for all pneumococcal infections except meningitis and septicaemia (for which sulphathiazole is recommended), and sulphathiazole for all staphylococcal infections except meningitis (for which sulphapyridine is recommended). Sulphathiazole is advised for gonorrhoea, sulphapyridine for ophthalmia neonatorum, and sulphanilamide for gonococcal arthritis; different drugs are also recommended for meningococcal infection according to whether the meninges or the blood stream is involved, regardless of the fact that commonly both are. It is only fair to say that this table contains a good many question marks, and the author is to be complimented on so enterprising an attempt, but it would be hard to support some of his decisions by any solid evidence. Two succeeding tables list diseases in which sulphonamide compounds are of doubtful and of no value respectively; anthrax should be expunged from the second of these. A large amount of dogmatic statement is also compressed into a small space in a table of toxic manifestations caused by the same three drugs, twenty-five separate conditions being listed with seven degrees of frequency. "Common" (ranking next to "frequent") is the adjective used of the occurrence of drug fever, dermatitis, hepatic damage, jaundice, and moderate anaemia during treatment with sulphanilamide, and of the first four it is said, "may be serious: discontinue drug." This lurid picture scarcely tallies with common experience. Although these items are open to criticism, the reader will be grateful to the author for expressing his views so plainly and exactly.

STERNAL PUNCTURE

Sternal Puncture: A Method of Clinical and Cytological Investigation. By A. Piney, M.D., M.R.C.P. With a foreword by Lord Horder, M.D., F.R.C.P. (Pp. 77. 12s. 6d. net.) London: Heinemann Medical Books. 1941.

Examination of the bone marrow during life has become progressively easier, as biopsy of the tibia has been followed in succession by sternal trephine and sternal puncture. It is true that needle puncture cannot tell us all that trephining and histological sections can, but its greater simplicity for patient and operator makes it the method of choice in most instances. Increased interest in the bone marrow has been reflected in a growing literature, and shortly before the war articles and monographs on this

subject were appearing at an average rate of more than one a week. Most of these were technical and addressed to readers with a working knowledge of haematology, and there is probably still a public for the type of small primer which Dr. A. Piney has just published. After a brief historical introduction the author describes the cytology of the marrow and the "myelogram" or differential count of the normal marrow smear. There follows a description of the myelogram in the various blood disorders, infections, and protozoal diseases.

The book is written with the easy charm which has made Dr. Piney's previous books deservedly popular and should serve a useful purpose in introducing the beginner to this instructive technique. The price seems to us unduly high for a book with only 77 pages and a single small colour plate. Piney follows other authors in stating that the bone marrow in idiopathic hypochromic anaemia is characterized by a predominance of immature normoblasts, most of which are large and strikingly basophilic. Bodley Scott's work suggests that this is not in fact true, the characteristic cell in all iron-deficient marrows being a small, missbapen, polychromatic normoblast with a pyknotic nucleus. The best way to learn the technique of sternal puncture is to watch someone else carrying out the operation. Piney suggests going through the angle of Louis, which is perhaps not the easiest approach, and he does not emphasize that only a small quantity of marrow, 0.1 to 0.2 c.cm., should be aspirated.

A VARIED MEDICAL CAREER

It Passed too Quickly. An Autobiography. By Air Vice-Marshal Sir David Munro, K.C.B., C.I.E., M.B., F.R.C.S.E., LL.D. (Pp. 304. 15s. net.) London: George Routledge and Sons, Ltd.

Sir David Munro has led the eventful and happy life that justifies the title of his book. After graduating M.A. at St. Andrews he went to Edinburgh to take the M.B., Ch.B., and gives a very good word-picture of student life in these two Scottish universities. He was by temperament as much a soldier as a doctor, and this led him to enter the Indian Medical Service. The first part of his service was with Indian infantry and cavalry regiments of the North-West Frontier Force, and he describes the duties which fell to the lot of a regimental medical officer in the stirring and dangerous surroundings of the frontier outposts of India—the Malakand, Khyber Pass, Waziristan, these no-man's lands between Afghanistan and India which have ever been a source of trouble. Later he was transferred to Bengal and became deputy sanitary commissioner, which involved lecturing on public health in Calcutta University, but a longing for clinical work led him to apply for, and obtain, a district civil surgeoncy. In this capacity he found ample scope. As civil surgeon in charge of the headquarters hospital of the district he had to be chief operating surgeon, physician, gynaecologist, and pathologist. He gave the systematic lectures on public health and vital statistics at Calcutta University and was professor of mental diseases and professor of ophthalmology, while for eighteen months he combined the posts of first surgeon at the European Presidency Hospital and superintendent of the European Asylum—a veritable medical Pooh-Bah. He kept himself physically fit by sports and games—tiger shooting, racing, steeplechasing, pig-sticking, and golf: in the last-named he played in the golf championship of Northern India.

The author commanded general hospitals in Mesopotamia and Palestine during the 1914-18 war, and in 1919 he left the I.M.S. to join the R.A.F., which was starting its own medical service. He began by studying the special medical problems of aviation and rose to be Air Vice-Marshal and Director of Medical Services, R.A.F. In 1930

he became secretary of the Industrial Health Research Board of the Medical Research Council. In 1938 he was made Rector of St. Andrews University. Though written in lighter vein and for the general public, his book will be found full of interest by medical men, especially those who by force of circumstances stay at home and do not know the wide horizon, the golden land of opportunity which awaits members of the profession who go out to the Empire to practise.

PHYSIOPATHOLOGY OF THE EXTRAHEPATIC BILIARY PASSAGES

Fisiopatologia del Hepato-Colédoco: Colangiografía Operatoria. By Pablo L. Mirizzi. (Pp. 279. No price given.) Buenos Aires: "El Ateneo."

The reviewer has not been able to find an existing English equivalent for the compound term "hepato-colédoco," which neatly suggests the physiological reciprocity between the hepatic duct (hepático) and the common bile duct (colédoco). In this handsomely produced and lavishly illustrated monograph the author, who is professor of clinical surgery in the University of Córdoba (Argentina), has summarized his views and experiences of the technique of radiographic visualization of the extrahepatic biliary passages by the direct injection of contrast media. The first chapter deals briefly with the anatomy of the bile passages, while the second is a rather more detailed account of their physiology, with particular reference to the hepatic and common bile ducts. In Chapter III are discussed the advantages and disadvantages of operative cholangiography and the techniques of injection and radiography. The results of the author's own experiments on thirty-seven dogs are described in the following chapter. The contents of further chapters are well indicated by their titles: V, The Normal Biliary Tree; VI, Odditis (an exhaustive account of this condition); VII, Stenosing Pancreatitis; VIII, Lithiasis (of the hepatic and common bile ducts); IX, Anomalies (of the hepatic and common bile ducts). The final and tenth chapter is devoted to a consideration of errors of technique. The bibliography is conspicuous by a complete absence of references to British sources, though French, German, and North American authors are freely cited.

Notes on Books

Of Sir COMYNS BERKELEY'S services to gynaecology, and so to the welfare of our women patients, not the least is his textbook, *Gynaecology for Nurses and Gynaecological Nursing* (eighth edition, Faber and Faber, 8s. 6d.). It contains just about as much information as can be written down profitably, as an accompaniment to experience. All that a nurse need know seems to be there, including specimens of G.N.C. examination questions, which sometimes, however, seem to ask for more than a nurse need know. The price is low, the format comfortable, the style clear, with helpful paragraphing. Though no two gynaecologists would agree on every detail, Sir Comyns Berkeley has steered through the whirlpools of controversy, and has always left room for an individual gynaecological surgeon's orders to his nursing staff. The one-page chapter on "The Bearing of the Nurse" is a gem. The tabulated systems of nursing are clear and reliable. Could the index be a little fuller next time, including, for instance, "Fistula"?

The *Proceedings of the Cardiff Medical Society* for the session 1940-1 have been published by William Lewis (Printers) Limited of Cardiff. They include an article on blood transfusion by Dr. R. Drummond, regional blood transfusion officer for Wales; reports of clinical meetings and discussions; and the text of Sir Thomas Lewis's annual address to the society on April 8, 1941, entitled "Caleb Hillier Parry, M.D., F.R.S. (1755-1822): A Great Welsh Physician and Scientist." Sir Thomas described Parry as a man who in the fullness of his career was an eminent physician

of Bath, a philosophic writer in advance of his times, a progressive agriculturist, and a clinical scientist of outstanding merit. He quotes from the clinical description that was Parry's masterpiece—the first account of the disease exophthalmic goitre, written in 1786.

Preparations and Appliances

AN IMPROVED LARYNGOSCOPE

Prof. R. R. MACINTOSH, D.M., D.A., writes from the Nuffield Department of Anaesthetics, Oxford:

The laryngoscope illustrated incorporates an epiglottis retractor and an improved method of illuminating the larynx.

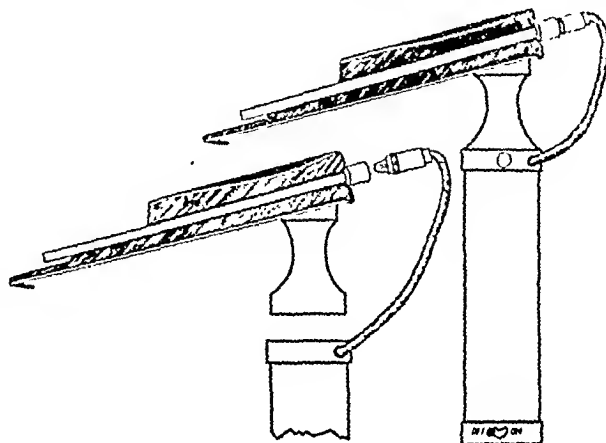


FIG. 1

Epiglottis Retractor.—When the blade of a laryngoscope is inserted the epiglottis is at first pushed backwards over the laryngeal entrance (Fig. 2a). Every anaesthetist has on occasion had difficulty in everting the epiglottis so as to expose the larynx. When the new blade is used the metal elevation passes over the epiglottis, which then lodges in the notch (Fig. 2b). When the blade is withdrawn slightly the epiglottis is everted (Fig. 2c) and the larynx comes into view.

Illumination.—The orthodox illumination consists of a small electric bulb attached to the blade. This bulb is difficult to sterilize, expensive (6s. 6d.), fragile, and if it breaks in the presence of ether vapour or cyclopropane might cause an explosion. In the new laryngoscope the source of light is an ordinary robust torch bulb (price 1s.) attached not to the blade but to the battery in the handle by a flexible lead. From the bulb the light is carried to the field of operation by a pencil-shaped rod of euvrelite fixed to the blade. The blade is readily detached from both bulb and handle and after use is washed and boiled.

I am indebted to Mr. R. Salt, technician to this department, for his help in making the original model. The laryngoscope can be obtained from either Medical and Industrial Equipment Ltd., of 12, New Cavendish Street, London, W.1, or Vann Bros., Ltd., 63, Weymouth Street, London, W.1.

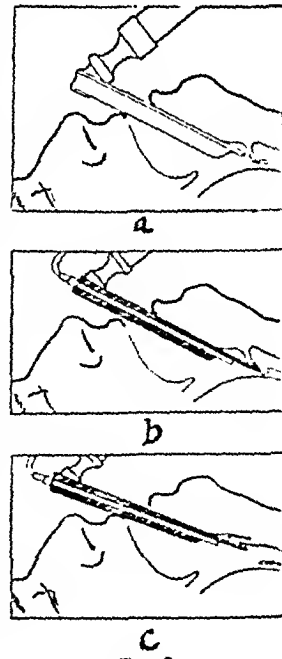


FIG. 2

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY, DECEMBER 27 1941

REFRACTORY ANAEMIA

Recent improvements in the treatment of blood diseases have brought into prominence a group of cases in which the anaemia does not respond to treatment by iron or liver, although no simple cause for anaemia such as haemorrhage, toxæmia, or neoplasm can be detected. One of the first things to be suspected in such a case is leukaemia of the leucopenic type. In the early stages of subacute myeloid leukaemia neither spleen nor lymph glands may be palpable, and the presence of immature cells in the blood stream may be difficult to establish with certainty. In such cases the diagnosis can be made by sternal puncture, for the bone marrow is always infiltrated. In subacute lymphatic leukaemia the sternal puncture is not always pathognomonic,¹ but if at the same time there is no enlargement of lymph glands this diagnosis can for all practical purposes be excluded. An obscure haemolytic anaemia is another possibility, but this will be revealed by persistent reticulocytosis and an increased excretion of pigments in the urine and the faeces. In severe hepatic disease there may be a megalocytic anaemia, but the evidence of liver damage is usually obvious. Myxoedema is another condition in which pernicious anaemia may be closely mimicked. When all these possibilities have been discarded there remains a residuum of cases in which the common factor is anaemia which resists all treatment except transfusion. Bomford and Rhoads² have had the unique experience of studying sixty-six cases of this type at the Rockefeller Institute, and their findings are of wide interest.

The difficulties of nomenclature are considerable, and they prefer to call these cases "refractory anaemia." They can be subdivided, according to the appearances of the bone marrow, into four groups. In the first group the marrow is cellular and relatively mature; erythropoietic cells usually predominate over leucopoietic cells; the authors include the achrestic anaemia of Israels and Wilkinson³ in this group. The second group is the classical aplastic anaemia in which the marrow is fatty and few haemopoietic cells are present. The third group is the most difficult and disputed: the marrow is cellular with a predominance of cells somewhat resembling lymphocytes; the other tissues, however, show no evidence of lymphatic infiltration, and it is believed that the cells in the bone marrow are atypical nucleated red cells. In the fourth group there are fibrosis, sclerosis, and giant-cell hyperplasia of the marrow. The distinction between these groups is not hard and fast, and successive biopsies show that the marrow may pass

from one stage to another. Moreover, the changes in the rest of the body differ little in the four groups. Extramedullary haemopoiesis is greatest in the sclerotic type, but it occurs to some degree in all types; haemosiderosis and degeneration of liver cells may also be present in all. There is evidence that exposure to a single haemotoxin—benzol—may produce all these changes except possibly sclerosis of the marrow. Myelosclerosis differs also in the normal platelet count and the strong tendency to enlargement of the liver and spleen. Many haematologists, indeed, would regard myelosclerosis as akin to Hodgkin's disease, and of a different nature from the other three groups, which can be regarded as toxic-aplastic reactions of the marrow. The position is complicated, however, inasmuch as benzol poisoning may lead to leukaemia, and refractory anaemia may sometimes be a phase in the development of the same process.

Clinically all these refractory anaemias present much the same picture of anaemia, leucopenia, and, with the exception noted, thrombocytopenia. The colour index is usually normal or above normal, and in cases of long duration a considerable megalocytosis may develop. One of the most interesting discoveries is that the breakdown of blood is often accelerated in these patients, pigmentation of the skin and haemochromatosis are frequent, and transfused blood may be destroyed more rapidly than normal. The disease occurs at all ages, and remissions are not unusual. More than a third of the Rockefeller patients were known to have been exposed to potentially toxic agents, of which benzol and its synthetic derivatives, x rays, and radio-active materials were the most frequent. Volatile insecticides and paraphenylene diamine hair-dyes are new items in this sinister catalogue. The authors regard removal from such potentially toxic substances as the most important element in treatment; in early cases it is often curative. In some cases the toxin may be endogenous, a suggestion supported by Rhoads's earlier work on the effect of indole. Idiosyncrasy must usually be present for so severe a reaction to occur. There is both experimental and clinical evidence that defective diet may be one factor responsible for it. The proof that defective liver function is another factor is even stronger. Both biochemical and anatomical signs of liver damage can be found in many of the cases. The authors' working hypothesis of the aetiology of refractory anaemia is that "the disorder is due to a conditioned susceptibility to toxic substances, usually exogenous or endogenous aromatic hydrocarbons, associated with hepatic dysfunction, a failure of biochemical mechanisms of detoxication, and the circulation of haemolytic substances, and that these haemolysins cause either an abnormal form of haemolysis and thus an abnormal reaction in the marrow, or that they destroy both circulating red cells and developing cells in the marrow, thus producing hypoplasia or other abnormal forms of marrow."

Apart from transfusion the only remedy which seemed to have an effect was baker's yeast in large doses. In very rare cases, where haemolysis is clearly excessive, splenectomy may be contemplated, though it is in no sense a cure. Prevention must remain the most important weapon. This long paper is of more than passing

¹ *Acta med. scand.*, 1941, Supp. 112.
² *Quart. J. Med.*, 1941, 10, 175, 235.
³ *Ibid.*, 1936, 5, 69.

interest when so many of our workpeople are exposed to the hazards of potentially toxic substances in war industry. Trinitrotoluene¹ produces this same combination of liver damage and aplastic anaemia in the unfortunate few who possess an idiosyncrasy for it, and those who are working on the problems of prophylaxis and early detection of such idiosyncrasy will learn much from the ideas and technical methods which Bomford and Rhoads have developed.

THE MILK (SPECIAL DESIGNATIONS) REGULATIONS, 1941

The Minister of Health, in the exercise of his powers under the Food and Drugs Act, 1938, has recently issued as a provisional Order the Milk (Special Designations) Regulations, 1941. The Order permits local authorities to grant licences to use the special designation "pasteurized" in respect of milk which has been heated at a temperature of not less than 162° F. for not less than fifteen seconds in apparatus of a type approved by the authority. The use of the process—for long known as high-temperature short-time pasteurization (H.T.S.T.)—is therefore now officially sanctioned. The widespread employment of the phosphatase test by authorities controlling licensed pasteurization plants has in the last two or three years shown that in an alarming number of cases the terms of the licences have not been observed. This, it is to be noted, applies to the holder-pasteurization system of heating at 145° F. for thirty minutes, which alone until now has been officially permitted. It is well known that this process carried out in well-constructed and properly controlled apparatus can be relied upon to ensure the freedom of milk from living pathogenic organisms, to cause minimal damage to the nutritive and physical properties of milk, and to improve the keeping quality. This process, based on careful laboratory experiment and proved by years of practical experience, is one which is well adapted to proper control by the licensing authorities. The flow of milk through the apparatus is required to be totally arrested for a period of not less than thirty minutes at a temperature of not less than 145° F. Both time and temperature afford ample margins of safety. Nevertheless, the control of apparatus designed to conform to the excellent official requirements demands knowledge, skill, and diligence from the representatives of the licensing authorities. That these have not always been forthcoming has been revealed by the phosphatase test.

What, then, is the reaction to the new Order? The holder type of plant occupies much space, requires much metal, is difficult to clean, and is necessarily rather inflexible in operation. Existing plants are wearing out and must be replaced, and the difficulties of operation imposed by war conditions are great. But the safety of the milk supply is more than ever necessary. These considerations have avowedly prompted the Minister to sanction the use of apparatus which occupies little space, is easy to clean and maintain, and is notable for its flexibility—all of which are desirable attributes in war-time. Further, there is evidence that the H.T.S.T. pro-

cess disposes efficiently of pathogenic organisms and that changes in the physical, chemical, and nutritive properties of the milk are, as in the holder process, minimal. The essential difference between this and the holder system is that at no time is the flow of the milk actually arrested. Moreover, the margins of safety, though similar on a relative basis, are less in terms of absolute time and temperature, and demand great precision in control. The Order requires that the apparatus shall be thermostatically controlled, fitted with an automatic device to divert milk which has not been properly heated, and furnished with such indicating and recording thermometers as the licensing authority thinks requisite. The licensing authorities must also decide on the suitability of the apparatus and thermometers used.

Much that is not categorically stated is laid on the licensing authorities, and it is clear that the H.T.S.T. process demands a well-informed and technically minded inspectorate. It will be necessary for them to recognize the lag of thermometers in responding to temperature changes, to bear in mind the mechanics of the flow of liquids through pipes, tubes, or their equivalents—the so-called "holder" section—to ensure the minimum holding time of fifteen seconds, and to be sure that the rate of flow of the milk through the machine, which determines the holding time, does not vary. Thermometers and recording apparatus must be checked against standard thermometers, and the considerations governing their positions in the plant must be appreciated. Great advances in the design of plant and control apparatus have been made in recent years and some of the essential parts of the newer apparatus are familiar to many, as they have for long been incorporated in holder machines. This, coupled with a substantial volume of satisfactory experience of the practical working of H.T.S.T. machines here and in America, goes far to allay any anxiety which may be felt as to the capacity of local authorities to implement the new Order.

The Order is provisional and the times are abnormal, but the safety of the milk supply must be assured. The advantages of the new system may well outweigh any apparent difficulties of administration and lead to important changes in the milk industry. Local authorities will no doubt take the steps necessary to dispel the doubts of those who maintain that licensing of plants should be in the hands of the central authority.

DIABETOGENIC ACTIVITY AND GROWTH

In 1937 F. G. Young¹ discovered that a short period of injections with anterior pituitary extracts induced in dogs a permanently diabetic condition—a condition he calls pituitary-diabetes. Later it was shown that the treatment caused changes in the islet tissue of the pancreas.² The findings served to explain the glycosuria which H. M. Evans and his colleagues³ found in some of their puppies treated with pituitary growth-promoting extracts, an observation not particularly stressed at the time and apparently not further investigated. In an important paper published elsewhere in

¹ *Lancet*, 1937, 2, 372.

² Richardson, K. C., and Young, F. G., *Lancet*, 1938, 1, 198.

³ *Proc. Soc. exp. Biol.*, N. Y., 1931-2, 29, 85.

this issue Young has now brought forward evidence relating the growth-promoting and diabetogenic actions of pituitary extracts. The chemical properties of the two active extracts are similar, and Young's diabetogenic extracts have contained growth-promoting activity. In his first experiment he finds that injection of a pituitary extract which has diabetogenic activity in adult dogs did not produce glycosuria in puppies, even when given in more than six times the dose active in the adults; there was, however, considerable acceleration of increase in body weight. One of the puppies eventually developed glycosuria at a weight of 20 kg.; this is persisting at the time of writing. In a second series of experiments extracts which are diabetogenic in normal adult dogs and similar extracts which have lost their diabetogenic activity were injected into pituitary-diabetic dogs. These extracts were known to contain pancretrophic activity—that is, they cause an increase in the islet tissue and insulin content of the rat's pancreas. The results were not completely consistent, and the variations in response probably depended on the amount of undamaged islet tissue surviving in the pancreas of the pituitary-diabetic dogs. In some cases the severity of the diabetic condition was increased; in others it was ameliorated. These contrary results appear to be bound up with the nitrogen metabolism of the dog: when the diabetes is alleviated there are nitrogen retention and increase in body weight; when the condition is intensified there are increased nitrogen loss and fall in body weight. Growth-hormone preparations are known to induce nitrogen retention, and it is probable that this action is mediated by the islets of Langerhans.

An important aspect of the experiments lies in the clues they give to some of the factors in clinical diabetes. The majority of adult diabetics are over weight, and White has found that many diabetic children are above the average height. There is evidence that children have greater amounts of islet tissue in proportion to body weight than have adults, and if this condition holds in the dog the relative resistance of the puppies to diabetogenic extracts may be explained, the greater amount of islet tissue being sufficient for normal blood-sugar regulation, even in the presence of pituitary diabetogenic activity. Young puts forward the theory that slight pituitary overaction in the child may cause compensatory islet hypertrophy with nitrogen retention and growth; in the adult the same may occur, the stimulus increasing body weight but not being enough to cause skeletal changes. It is then suggested that the islet tissue may not be capable of maintaining this hypertrophy, so that lesions become predominant and the symptoms of diabetes follow. These suggestions and the evidence for them are considered in greater detail in the discussion in Young's paper, but enough has been said to demonstrate the possibilities of the hypothesis. Many cases of diabetes may therefore be caused by pituitary-pancreas imbalance rather than by primary pancreatic lesions. This suggestion obviously affords scope for future experiments, and it is to be hoped that Young will be able to continue his researches not only into the mechanism of production of diabetes but also into the vexed question of the nature and activity of the growth hormone. It may be noted that he is careful

to refer to "growth" in inverted commas, as his data at present only refer to changes in body weight, neither the components of this weight increase nor the skeletal changes having been determined in the present preliminary statement.

AETIOLOGY AND TREATMENT OF OSTEO-ARTHRITIS

In most cases osteo-arthritis is a degenerative process set up by repeated small injuries, often incurred during work. Once the cartilage has been even slightly injured the degenerative process progresses and causes steadily increasing disability; but in a large number of cases pain is not a conspicuous feature, and in consequence treatment is not seriously undertaken until the removal of the more obvious causes by change of occupation is likely to be of little effect. Magnuson¹ has carried out extensive experiments on dogs to investigate the changes that take place after slight injury to the cartilage and the mechanism by which they are produced. As an outcome of this work he has devised, and successfully performed, an operation in the human subject to which he has given the name "joint débridement." He has demonstrated that local areas of roughened cartilage may result from superficial injury which gradually progresses more deeply; or the degenerative process may begin in the matrix and gradually lead to fissuring and degeneration of the articular surface. Continual friction by the use of the joint leads to further damage round the original site and on the surface of the opposed cartilage. Magnuson has found it difficult to explain the causes of proliferation of bone round the edges of the joints—an important cause of limitation of the range of movement and often of pain—but he does not refer to the work of Corbin² at Stanford University, who obtained some interesting results by severing the lumbosacral nerve roots containing afferent fibres from the hip-joints. The resulting excessive range of movement and abnormal position of the joint led to erosion and fibrillation of the cartilage and to enlargement of the head of the bone and the acetabular cavity, apparently with the object of giving additional support to the limb. Pearson in 1928 produced evidence that degenerative changes take place in the posterior root fibres, as a result of arteriosclerosis affecting the column of Goll, the ability to perceive vibratory stimuli being thus diminished; it is suggested that the influence of arteriosclerosis in osteo-arthritis is exerted in this way and not directly through the blood supply of the joint, which Keefer and Myers have shown is not affected in proportion to the severity of the arthritic changes.

The operative procedure devised by Magnuson is to shave away the roughened areas completely and to remove all exostoses which may give rise to friction and interfere with the normal movements of the joint. The roughened surface being thus removed, the progress of the disease is arrested or at least delayed; the denuded areas become covered with fibrocartilage, which serves as a satisfactory substitute for the normal hyaline cartilage. Careful choice of patients is important; the full co-operation of the patient is essential. Special attention must be given to movement of the joint: this should be started on the fourth day after the operation and carried out under the close supervision of the surgeon. Magnuson has operated on sixty-two cases and has achieved good results in sixty; in the remaining two cases the patient did not co-operate and did not remain under his control. Although the number of cases is too small for exact conclusions to be drawn from this experi-

¹ *Surg. Gynec. Obstet.*, 1941, 72, 1.

² *Arch. Surg.*, Chicago, 1937, 35, 1145.

ence, the results appear to justify further trial in suitable cases of this distressing complaint. The time since operation in Magnuson's cases has varied from sixteen years to six months: it is obvious that if the operation is to be regarded as a success relief from symptoms, even if not permanent, should at least last for a period of years. It is probable that the best results will be obtained only in comparatively young subjects with clear evidence of repeated traumata as a cause, and that when there is evidence that arteriosclerosis is a contributory factor the results are less likely to be satisfactory.

CLASSIFICATION OF CROUP

Gilbert, Meyersburg, and Silverberg,¹ in analysing a series of 226 cases of croup admitted to the Kingston Avenue Hospital, Brooklyn, New York, call attention to the great decrease in the incidence of diphtheritic croup, whilst the number of cases of non-diphtheritic croup remains about the same. Before the use of diphtheria prophylactic and antitoxin 60% of the cases were diphtheritic, but in the series under review observed during one year the incidence of diphtheria was only 7%. The authors apparently assume that this remarkable change in incidence is due entirely to protective immunization, for they make no comment on the possibility that other factors may also be concerned. The analysis is therefore chiefly related to the non-diphtheritic group, for which a varied and consequently confusing nomenclature has evolved. The authors propose the following classification: (1) diphtheritic croup—(a) diphtheritic obstructive laryngitis, (b) diphtheritic obstructive laryngo-tracheitis, (c) diphtheritic obstructive laryngo-tracheo-bronchitis; (2) acute catarrhal laryngo-tracheitis; (3) supraglottic oedematous obstructive laryngitis; (4) subglottic obstructive laryngitis and tracheitis—(a) subglottic exudative obstructive laryngitis and tracheitis, (b) subglottic oedematous obstructive laryngitis and tracheitis; (5) acute obstructive laryngo-tracheo-bronchitis; (6) unclassified, due to allergy, foreign body, and chemical irritants. For diphtheritic croup the authors recommend in general 20,000 units of antitoxin intramuscularly and 10,000 units intravenously. Laryngoscopic suction is employed when it appears indicated. In the severe form of diphtheritic obstructive laryngo-tracheo-bronchitis tracheotomy is required and suction is carried out by passing a bronchoscope through the tracheotomy wound. The two patients with such condition in the series treated in this way both recovered.

Turning to the large non-diphtheritic group the authors draw special attention to the supraglottic oedematous obstructive laryngitis, in which the swelling affects the epiglottis and aryepiglottic folds. Tracheotomy is indicated in preference to intubation, for the swollen mucous membrane overlaps the upper end of the intubation tube and blocks the airway. All the six patients in the series treated by tracheotomy recovered. The authors believe that supraglottic and subglottic oedema rarely, if ever, occur together. For the subglottic obstruction laryngoscopic suction is recommended, and they advise tracheotomy in preference to intubation in all cases in which suction is not sufficient to provide relief. Acute obstructive laryngo-tracheitis and acute obstructive laryngo-tracheo-bronchitis must be distinguished from pneumonia by the physical signs indicating obstruction. Acute obstructive laryngo-tracheo-bronchitis, however, has a high mortality, but is treated on the same lines as the other forms of croup, in which the prognosis is good. The authors have very little information to offer on the bacteriology or chemotherapy of the conditions discussed.

SOLAR URTICARIA

In contradistinction to sunburn, which is solar erythema and very common, urticaria as a result of exposure to sunlight is very rare. Several cases, however, have been described, the first of which appears to have been that of Duke in 1923. He studied this case in some detail and suggested the name "urticaria solaris" for the condition. His patient was a woman aged 43 who had been affected four years. Duke was able to reproduce the lesions by sunlight filtered through colourless or violet glass and also by electric light. X rays were ineffective. He thought that the spectral region responsible was the visible portion together with the far red and infra-red. A good many cases have been described since that time and rough attempts have been made with filters of various colours to determine the part of the spectrum which is to blame for the manifestation. But the use of filters is full of pitfalls for the unwary, for many filters have broad transmission bands well outside the spectral range that their colour suggests. The one readily available "cut-off" filter which can be relied on is ordinary window glass. It absorbs almost all wave-lengths shorter than about 3,200 Angstrom units—that is, almost all the ultra-violet region. Dr. Arnold² of Hawaii had the opportunity of studying a case in some detail in a young man of 26 who, when he came under observation, had been subject to the condition for some five years, although owing to the patient's early departure the investigations could not be completed. His reaction to sunlight filtered through window glass was just as severe as to direct sunlight, but he was not at all sensitive to light from the air-cooled quartz mercury vapour lamp. He was also very little sensitive to photoflood lights, which include much red and infra-red, or to the carbon arc lamp, which includes much violet and ultra-violet. These observations seem extremely difficult to explain. More information was obtained from the study of filter data. To epitomize the results of these investigations, it may be stated that the maximum response was elicited from radiation of wave-length from 3,800 to 5,000 Angstrom units, but all the same the four mercury lines in and adjacent to that region must be ineffective, or there would be a response to the mercury vapour lamp. No response at all was obtained from irradiation through the Wratten green gelatin filter of thirty minutes' sunlight. This filter transmits not only green but the entire infra-red portion of the spectrum, and these regions must therefore be exonerated. It appears probable that the effective rays are to be found in the blue and violet regions, but their exact position cannot be clearly defined.

At the last Court of Governors of the Middlesex Hospital Sir Alfred Webb-Johnson was elected a Vice-President of the hospital. The Court desired to recognize not only his election as President of the Royal College of Surgeons but also his invaluable services in the planning and rebuilding of the hospital, and in the raising of so large a part of the sum required for the reconstruction scheme. This is the first occasion on which this honour has been conferred upon an active member of the honorary staff.

We regret to announce the death of Dr. Robert Dawson Rudolf, C.B.E., F.R.C.P., emeritus professor of therapeutics in the University of Toronto and consulting physician to the Toronto General Hospital and Sick Children's Hospital. Dr. Rudolf during the last war was consulting physician to the Canadian Forces in England with the rank of Colonel C.A.M.C.

¹ Arch. Otolaryng., Chicago, 1941, 24, 231.

² Arch. Derm. Syph., Chicago, 1941, 43, 647.

REGIONAL HOSPITAL SERVICES POLICIES OF NUFFIELD TRUST AND B.H.A.

The British Hospitals Association has issued a "Memorandum of Policy on Regionalization of Hospital Services," although the uncouth word "regionalization," as it explains, is to be dispensed with so far as possible in favour of the term "co-ordination." The memorandum was prepared before the Minister of Health's statement in the House of Commons on October 9 defining the Government's post-war policy on hospitals, but no amendment has been found necessary. The document is really a postscript, although a very substantial one, to a pamphlet by the Nuffield Provincial Hospitals Trust on "The Co-ordination of Hospital Services," which should be read first.

The Nuffield Trust, founded two years ago, has for its object the co-ordination on a regional basis of hospital and ancillary medical services throughout the Provinces, Scotland, Wales, and Northern Ireland. For the London area, so far as voluntary hospitals are concerned, the King Edward's Hospital Fund serves as a central financial organization. The Voluntary Hospitals Commission, under Lord Sankey, recommended the division of the country into regions, with a council in each region to correlate hospital work. The necessity was recognized for co-ordination not only between voluntary hospitals themselves, but between voluntary and municipal, if overlapping was to be avoided, the best use was to be made of available accommodation, and consultation was to take place before new services were started. With these considerations in mind Lord Nuffield created and financed the Trust. During the last eighteen months preliminary conferences have been held in many large centres, and a number of regional or divisional councils have been formed or are in process of formation.

General Medical Policy of Nuffield Trust

A statement by the Medical Advisory Council of the Nuffield Trust—a council which comprises twenty-four leading representatives of medicine under the chairmanship of Sir Farquhar Buzzard—is embodied in the Trust pamphlet. The Council points out that the problem facing each region is, while centralizing the more expensive and specialized methods of investigation and treatment at the larger hospitals, to ensure that these are accessible in case of need to every practitioner and patient within the region. The small and scattered hospitals must be linked up, by visits from the consulting staff and in other ways, with the "key" hospital (meaning by the latter teaching hospitals or, in divisions where there are no medical schools, large non-teaching hospitals). Such linkage will be one method of bringing the general practitioner into closer contact with the "key" hospital.

The distribution of consultants and specialists in the new or future "regions" has been unequal. In some areas it may be advisable for consultants, while nominally on the staff of the "key" hospital, to reside in an outlying area and serve a group of small hospitals. Perhaps medical appointments may be made, not to individual hospitals, but to a region or group of hospitals within a region, so that each member of the staff may eventually carry out the work for which his abilities and experience most suit him, whether general consulting practice, one of the specialties, teaching, or research.

The findings of the Interdepartmental Committee on Rehabilitation, published in 1939, have the approval of the Medical Advisory Council, but fracture services in themselves are not considered to be enough; what is needed is an "accident service" organized regionally to treat not only fractures but lacerations and contusions, burns and scalds, and sepsis as a result of injury.

As for pathological services, these in the large teaching hospitals leave little to be desired, but in the country as a whole they fall far short of requirements. The Council urges that

existing laboratory facilities should be co-ordinated on a regional basis, which would increase their efficiency in various ways, enabling any laboratory within the region to have in a consultative capacity the services of a highly skilled bacteriologist, morbid anatomist, or other expert. It sets out certain conditions to be secured in the administration of pathological services, the principle being that all such work should be done by pathologists attached to public health laboratories, hospitals, or university departments; that all clinical pathology should be done by pathologists working in hospital laboratories; and that in each region or division there should be at least one public health laboratory concerned mainly with epidemiological work and co-operating in that field with medical officers of health and general practitioners.

How Regions are to be Determined

The British Hospitals Association in its complementary memorandum states its entire agreement with the principles of co-ordinated hospital services as described by the Nuffield Trust. The Association has had its own regions and regional committees, but to avoid confusion it is renaming them "areas," their boundaries to be so far as possible coterminous with those of the "divisions" or parts of regions through which co-ordination will be developed locally. Close contact between the B.H.A., the Trust, and King Edward's Hospital Fund has been ensured by arrangements for representatives of each body to sit on the councils of the others.

In proceeding to effect co-ordination the local area committee of the B.H.A.—which represents voluntary hospitals only—if it feels that local conditions are favourable, will invite representatives of the local authorities to a preliminary conference and proceed to a detailed examination of a scheme, not overlooking contiguous areas. Alternatively the Nuffield Trust may, after consultations, take the initiative of calling a preliminary conference to which representatives of both voluntary hospitals and local authorities will be invited. The voluntary hospitals as such will from time to time have a policy or unanimous view to express, and this can be done through the area committees; the regional council consists of municipal as well as voluntary representatives.

It is fully recognized that it is not competent for voluntary hospitals alone to determine areas; the views of local authorities are of at least equal importance. Nor must areas be considered as surrounded by a Chinese Wall or unbreakable barriers; a region or division is merely a unit formed after taking into consideration a number of factors, such as the nature of the hospital services generally available. It is not desired to interfere with the freedom of the patient in his choice of doctor or of the doctor in his choice of hospital or consultant. The unit must be formed naturally, and in its formation there will be no compulsion on a particular hospital.

There are hospitals which are apprehensive of co-ordination as threatening their existence or development.

"... Co-ordination does not mean the domination of the unit by one centre; it does not mean a concentration of all the specialist services at, for instance, a teaching hospital and the reduction of all other hospitals in the region to a secondary standing; but on the other hand it does mean the improvement and the maintenance of an adequate standard of services in the region or division."

This may be accomplished in some cases by concentrations of services, in others by dispersal.

Again, the regional and divisional councils are essentially advisory bodies, or are executive only to such extent as powers are given to them unanimously by their constituents. Co-ordination, in fact, is a reciprocal matter between voluntary hospitals and agencies on the one hand and local authorities on the other. It calls for mutual understanding and confidence and a pooling of knowledge and facilities.

H. R. Russell and R. C. Page (*Amer. J. med. Sci.*, 1941, 202, 355) point out that, as vitamin K belongs to the group of fat-soluble vitamins, it should be absorbed through the skin. Accordingly they applied 10 milligrammes of synthetic vitamin K analogue in an ointment base to a series of newborn infants. A single application was found to be effective in preventing hypoprothrombinemia.

AWARDS FOR GALLANTRY

The awards of the M.B.E. (Civil Division) to Dr. William Louis Murray Bigby, assistant medical officer of health for civil defence, Southampton, and to Dr. John Findlay, doctor in charge, first-aid post, Civil Defence First-aid Post Service, Peterhead, and the B.E.M. (Civil Division) to Mr. R. A. Gow, caretaker, Civil Defence First-aid Post Service, Peterhead, are announced in the second *Supplement* to the *London Gazette* dated December 12. The announcements read as follows:

Dr. Bigby: Dr. Bigby has been on duty throughout the period of air raids on Southampton. He has worked long hours helping to extricate trapped people, and on several occasions has entered wrecked buildings in order to relieve the sufferings of the injured. He has shown courage and qualities of leadership without regard to his own safety."

Dr. Findlay and Mr. Gow: "A high-explosive bomb demolished a building, and members of a first-aid post were injured and trapped. Dr. Findlay was thrown to the floor and injured, but despite this, at grave risk to himself, he crawled under the loose debris and gave injections to three casualties. He then organized the removal of the post to a temporary site, where he again took charge. Dr. Findlay showed qualities of leadership, courage, and devotion to duty, and in his work of rescue was helped by Mr. Gow, who, although badly shocked, courageously worked with the doctor for two hours, searching for the injured men."

Reports of Societies

WARTIME RATIONING AND CHILDREN'S HEALTH

At a meeting of the Section for the Study of Disease in Children (Royal Society of Medicine) on November 28, with Dr. A. G. MAITLAND-JONES in the chair, a discussion took place on the effects of wartime rationing on child health.

Dr. E. M. WIDDOWSON mentioned a dietary survey carried out during the years 1935-9 on 1,000 individual middle-class children, the data of which had since been re-analysed to show the effects that rationing must have had on the diets of these children. The pre-war consumption of most foods, whether now rationed or unrationed, was found, as might be expected, to rise with increasing age. A comparison of the intake before the war of foods now rationed with the actual rations to-day gave an idea of what the changes must have been. Up to the age of 6 children with the green ration book got half the adult allowance, and from then onwards the full adult ration. Up to the age of about 8 children were just as well off in respect of butcher's meat as before the war, but boys of 15 before the war were eating about three times as much meat as they were now allowed. The average boy was also eating before the war about twice as much sugar as now. Butter was much reduced in the child's wartime dietary, but the position was different with regard to cheese, which was eaten by only a small proportion of children in pre-war times. If the child below 8 was eating the whole of his rations he was just as well off as before the war, except for butter; the child over the age of 8 was not as well off, and adolescents had had to make a big change in their dietary habits. All this was on the assumption that the rationing system was rigidly followed, whereas, of course, in the ordinary family it would not be, the older children probably receiving larger helpings of pudding made with the family's sugar and jam ration, and in boarding schools for children of 14 to 18 the effect of rationing was probably most markedly seen. Milk had only just begun to be severely restricted, but children were in a priority group, and with the help of school milk might get, until leaving school, even more milk than they got before the war. The children who suffered most were those who left school at 14, when calcium requirements were at their maximum. The availability of vitamin C was reduced, not on account of rationing but because of the scarcity of fruit. Scurvy, however, did not seem to have appeared.

Recognition of Dietary Deficiency

Dr. D. C. WILSON said that it was important to appreciate the difference between examination for signs of malnutrition carried out during routine school inspection and the use of growing children as indicators for the detection of signs of dietary deficiency within a community. During medical inspection the state of nutrition was assessed according to the standards laid down by the Board of Education. Such examination was useful in drawing attention to the many different causes in home and school life which might adversely affect the child's well-being, and thus permitting the application of the appropriate remedy. For the early detection of specific dietary deficiency within any group special tests were necessary, and these, applicable under wartime conditions in English schools, were described.

Dr. HELEN MACKAY said that it must not be supposed that because a child's ration had been calculated he would get it, and that there was no need to look for deficiency disease. Distribution was often far from ideal. A great deal depended on whether the people who looked after the children knew the best substitutes for food in short supply and how to use them. There was a general impression among paediatricians and in the public health services that tuberculosis had increased. One could only guess how much of this was due to the wholesale discharge of cases at the beginning of the war, how much to the consumption of unboiled tubercle-infected milk by evacuated city children accustomed to pasteurized milk, and how much to deficient diet. She emphasized the importance of looking for objective evidence in deficiency diseases; the subjective classification in many public health reports seemed utterly useless. There was some increase of rickets last winter, but she had not seen any signs of scurvy in her clinic, nor any increase in angular stomatitis or conjunctivitis. The proposal for well-balanced school meals should be supported. Something ought also to be done for mothers of young children, who probably suffered from giving away their rations.

Vitamin C Deficiency in Children

Dr. W. W. PAYNE said that children at a base hospital in the spring of 1941 were examined by a single saturation test and found to be uniformly deficient. The hospital diet was very inadequate in vitamin C and was estimated to give only 6 mg. of ascorbic acid a day with average helpings of vegetables. Supplements of 50 mg. ascorbic acid daily for fourteen to twenty-one days failed to saturate. On giving the full saturation dose (50 mg. ascorbic acid per stone daily), it was found that only fourteen out of twenty-seven became saturated within three days. In seven of these the failure to saturate was probably due to the illness. Thus six of the twenty-seven children tested were very deficient in vitamin C, having an approximate deficit of 1,000 mg. of ascorbic acid. Once these children were saturated it was found that a dose between 20 and 40 mg. a day sufficed to keep them so. Certain non-febrile diseases appeared to require more ascorbic acid—for example, chorea, ulcerative colitis, and coeliac disease.

Dr. J. A. GLOVER said that the school child at the beginning of this war was in far better condition than his predecessor in 1914—bigger, better nurtured, better clad, cleaner, and more resistant to infection. It was impossible to disentangle the effects of rationing from those of many other abnormal factors which influenced wartime health and nutrition, such as evacuation, closing of schools, and shelter life. The most reliable evidence against deterioration was the opinion of the great majority of school doctors, nurses, and teachers. The decreased incidence of infectious diseases might also be regarded as evidence against deterioration. There was a temporary increase of scarlet fever and diphtheria in the last quarter of 1939, but it died away very rapidly. Tuberculosis had possibly increased to some extent, but his impression was that the incidence of acute rheumatism and chorea had somewhat decreased.

Dr. H. P. BAYON spoke of the importance of iron in the nutrition of children. The greatest trouble in practice was the weaning period, with lack of eggs and oranges and unreliable supplies of cod-liver oil. It was not enough to have the requisite iron or vitamins in the food if the food was not

easily assimilable. Palatability had to be considered along with nutrition.

Prof. A. St. G. HUGGETT said that if the mother during pregnancy were on a short diet the child would benefit at the expense of the mother at first, but if the shortage continued the child also would be affected and show anaemia after birth. From certain records of infants born during the first six months of the present year there appeared to be some loss of weight. It was likely that infants would show less resistance to disease unless the mother's diet during lactation could be kept well up to requirements. With regard to vitamin C, ascorbic acid tablets were not a good substitute for fresh vegetables. Bread became more important with the cutting down of milk, but unless something were supplied to lubricate the bread the right quantity for the pregnant woman would not be taken, and both she and the child would suffer.

MODE OF ACTION OF CHEMOTHERAPEUTIC AGENTS

The Biochemical Society held a discussion meeting on the mode of action of chemotherapeutic agents on November 29 at the Courtauld Institute of Biochemistry, Middlesex Hospital, Prof. E. C. DODDS being in the chair.

General Principles

Dr. G. M. FINDLAY, in opening the discussion, said that chemotherapeutic action might be classified as direct or indirect. Except in the case of parasites present in the intestinal canal it was essential that the chemotherapeutic drug should be absorbed into the body, that it should penetrate to the site where the parasites were acting, and that it should not be excreted or converted too rapidly into an inert form. Time must be allowed for chemotherapeutic action and, in some cases, for the conversion of the compound from an inactive into an active form.

When once the drug and the parasite had been brought face to face three stages might be distinguished—adsorption, interference with metabolism, and death or such injury to the parasite that it was destroyed by the phagocytes of the host. An adsorbed chemotherapeutic drug might prevent an essential food factor from being absorbed, or it might cause a breakdown in metabolism by combining with a specific substrate or by competing with an essential cell metabolite for an enzyme or coenzyme. One break in the chain of metabolic reactions might rapidly give rise to others. Specific immune serum and sulphapyridine did not compete for the same receptor group in the pneumococcus and might therefore enhance one another. Parasites might be killed in the body without the aid of phagocytes, but usually when a parasite had been damaged it was destroyed by the normal defence mechanism of the host.

Indirect action produced such changes in the environment that parasites could no longer grow. Physical changes might prevent growth, the temperature or the pH reaction be altered, the formation of immune bodies stimulated, or the character of the cells altered, as in the treatment of gonococcal vulvovaginitis in children with oestrogen preparations. The highly specific action of certain drugs, and the no less specific reactions of certain closely allied parasites, could be explained by postulating that after adsorption of the compound at the parasite-solution interface the nature of the interference with the metabolism of the parasite depended on what groupings in the molecule of the compound came within the influence of other acceptor groups in the parasite: there was thus a multi-point action.

Penicillin

Prof. A. FLEMING, continuing the discussion, said that in 1929 he had applied the name "penicillin" to an antibacterial substance of unknown constitution elaborated by *Penicillium notatum* when grown in ordinary bacteriological media or in a modified Czapek-Dox medium. The action was mainly bacteriostatic and showed a high degree of specificity. Pyogenic cocci, clostridia, and some other bacteria were sensitive, while the coli-typhoid, haemophilic chromogenic bacilli, and others were insensitive. Pathogenic Gram-negative cocci (gonococcus,

meningococcus, and *M. catarrhalis*) were sensitive, while saprophytic varieties (e.g., *M. flavus*) were, insensitive, penicillin thus differing from the sulphonamides.

The action of penicillin was not interfered with by substances that inhibited sulphonamides—bacteria, bacterial extracts, pus fluids, tissue autolysates, peptones, and *p*-aminobenzoic acid. Penicillin was non-toxic to leucocytes and animals, but in low dilutions it affected the morphology of bacteria and interfered with division. As penicillin and also gramicidin were apparently of a different constitution from the sulphonamides, the isolation and synthesis of the pure active principles would open up a new chemotherapeutic field.

Trypanocidal Drugs

Prof. WARRINGTON YORKE described the action of the aromatic diamidines which were evolved by Dr. Ewins, after it had been shown that synthalin (decane diguanidine) acted on trypanosomes not by reducing the sugar but by direct toxic action. Some aromatic diamidines exhibited a remarkable trypanocidal activity. The most active were 4:4'-diamidino-stilbene, 4:4'-diamidino-diphenoxy-propane, and 4:4'-diamidino-diphenoxy-pentane. Cases of kala-azar had now been successfully treated by diamidino-stilbene—Indians, children in the Mediterranean area, and patients with the Sudanese variety, which was resistant to antimony. Babesia infections in dogs were cured by the stilbene and propane derivatives, the stilbene being highly active against *Trypanosoma congolense*. The compounds had a highly specific action. Drug resistance appeared to be due to a change in the surface layer of the parasite. Trypanosomes resistant to a number of compounds had now been prepared, including a diamidine preparation. It had also been possible to prepare a diamidine-resistant *Babesia* and a plasmoquine-resistant strain of *Plasmodium knowlesi* in the monkey.

Dr. F. HAWKIN, discussing trypanocidal substances, said that from the phenomenon of drug-resistance four kinds of receptors on the trypanosome were recognized. Trypanocidal action comprised fixation of the drug, secondary chemical reactions inside the cell, and death. Only about the first process was much known: it occurred quickly in a few minutes and was reversible. With arsenical compounds fixation apparently depended on the trivalent arsenic atom linked to a benzene ring. Certain side chains ($-\text{NH}_2$, $-\text{OH}$) prevented fixation on animal cells but not on normal trypanosomes; the receptors of resistant trypanosomes were modified. Over a wide range the amount of drug fixed was proportional to the concentration in the surrounding fluid; in the case of acriflavine the partition ratio—concentration inside the trypanosome/concentration outside—was 8,000 for normal trypanosomes, 60 for resistant trypanosomes. Fluorescent compounds, acriflavine, and diamidino-stilbene were concentrated in the blepharoplast and cytoplasmic granules of the trypanosome.

Ehrlich's Theory

Sir HENRY DALE, after congratulating the Society on arranging a discussion meeting in wartime, emphasized the importance of having a theory of chemotherapeutic action. It was one of Paul Ehrlich's great contributions to the subject to have produced a theory which, though it would probably not survive unmodified, had given a tremendous stimulus to research. His speculations had sometimes appeared more plausible than convincing; but it was remarkable in how many cases they had eventually proved to be well founded. An example was Ehrlich's explanation of the action of certain dyes on infection by trypanosomes as due to injury of the reproductive power of the trypanosomes without affecting their other vital functions. At the time this suggestion seemed artificial and unconvincing, but when Dobell and Laidlaw found a method for growing *Entamoeba histolytica* in permanent culture *in vitro* it could be demonstrated that the action of emetine was just of this type. Another factor of chemotherapeutic activity which he believed to have importance was the "factor of persistence."

Effective chemotherapy was usually, if not always, a war of attrition rather than a "Blitzkrieg." This seemed to be the reason why a quinquivalent arsenical on the one hand, or an arseno-compound on the other, was a better chemotherapeutic agent than the arsenoxide produced by reduction from the one

or by oxidation from the other, although the arsenoxide was recognized as the directly parasitocidal agent. In the same way, sulphaguanidine seemed to owe its effectiveness in bacterial dysentery to its poor solubility, enabling it to remain in solid form in the intestinal contents and to keep up a steady, low concentration in contact with the infected mucous membrane. Aromatic diamidines, the brilliant promise of which had been made clear by the results which Prof. Yorke had reported, might similarly owe part of their superiority to their limited solubility. He ventured to suggest as problems the solution of which might greatly accelerate advance in parts of the field of chemotherapy, the discovery of a method of keeping trypanosomes alive and reproductive indefinitely in artificial culture, and the discovery of a method of treating a strain of trypanosomes which had acquired drug-resistance, so as to restore the normal susceptibility.

Some Modern Observations

Dr. D. D. Woods spoke of the interference of antibacterial agents and essential metabolites. This interference might be due to the formation of a compound between the antibacterial agent and the essential metabolite, as between mercury salts and $-SH$ compounds, or by inhibition of an enzyme reaction involved in the synthesis or utilization of an essential metabolite. An example of this was the competitive inhibition by sulphanilamide of an enzyme reaction involved in the further utilization of *p*-aminobenzoic acid, this inhibition occurring by virtue of the chemical relationship of sulphanilamide and *p*-aminobenzoic acid. The latter had been isolated from natural sources and was a growth factor for *Clostridium acetobutylicum* and higher organisms. On this hypothesis the following substances, all chemically related to a known essential metabolite, the latter shown in parentheses, were found to have some antibacterial activity: pyridine-3-sulphonic acid and amide (nicotinic acid and amide); aminosulphonic acids (analogous aminocarboxylic acid); sulphonic acid analogue of pantothenic acid (pantothenic acid); indole-3-acrylic acid (tryptophan); barbituric acid (uracil).

Dr. H. McLWAIN said that an organism which was deprived of the use of enzymes or metabolites by various types of interference was nutritionally more exacting than in its normal state. *Bact. coli* and *Str. haemolyticus*, inhibited by acriflavine components, required for further growth two types of material not normally required. Type I was best replaced by nucleotides; Type II by a concentrate of amino-acids, but partly by phenylalanine. In the presence of Type II compounds, but not without, artificial hydrogen carriers were further active against inhibition of *Bact. coli*. Type I compounds formed complex salts with acriflavine components. The inhibitors probably inactivated enzyme systems of which Type I compounds were essential parts, of which Type II compounds were substrates or products, and of which some could be replaced by the hydrogen carriers.

Dr. W. H. LINNELL described the relation between chemical constitution and bactericidal action in certain amino-acridines. Among the isomeric diamino-acridines, a 1-amino group caused complete loss of bactericidal activity and reduced toxicity; a 2-amino group increased activity, and this was further enhanced by another amino group in the 2-, 3-, 4- (in the other ring), or 5-positions, accompanied by increased toxicity in the case of a second 2-substituent. When two 3-amino groups (=3:7) were present activity was moderate, but the 3:8-diamino-acridine (=2:7) was as active as proflavine but less toxic. A 4-amino substituent conferred small activity, while position 5 was highly active but probably led to increased toxicity. Albert had shown that similar differences in activity existed among the five isomeric mono-amino-acridines, their activity paralleling their strength as bases and their partition coefficients between oil and water. The corresponding acridones were inactive, as were certain amino derivatives of 5:10-dihydroacridine and of iminodihydroacridine, suggesting that the intact acridine molecule was necessary.

Mr. L. G. GOODWIN said that the uncertain action of antimony in protozoal diseases, of which the resistance of Sudanese kala-azar to antimony was an example, was an added difficulty in investigating its mode of action. The active form of antimony might be the stiboxide grouping, but while this was

probable in trypanosome and schistosome infections, it was unlikely in leishmaniasis, where quinquivalent compounds were the most effective and massive dose therapy was successful.

Excretion of antimony after doses of the quinquivalent compounds or of stibophen was much more rapid than with tartar emetic. There was some indirect evidence that the rapidly excreted fraction of the drug passed through the body unchanged. Both direct toxicity action on parasites and stimulation of the host's defence mechanisms were produced by antimonials. Increased phagocytosis might be of primary importance in leishmaniasis, though histological work on the spleens of infected hamsters injected with a quinquivalent antimony compound suggested some degree of direct action.

Dr. E. CHAIN described the chemical and physical properties of penicillin in relation to its bacteriostatic action. It is a strong acid with two, or a multiple of two, acid groups. A purified barium salt gives a carbon content of 55% and an H content of 6.3%; only C, H, and O are present in the molecule. Methoxyl groups cannot be detected, but two hydroxyl groups are present. The dried Ba salt of penicillin keeps indefinitely, and in watery solution is most stable between pH 5 and 7. With heavy metals, except Fe⁺⁺⁺, it forms water-soluble salts. The antibacterial action is lost by oxidation with hydrogen peroxide and potassium permanganate. Dr. E. P. ABRAHAM said that the instability of penicillin necessitated three methods of purification dependent on distribution between solvents, adsorption, and reduction. The crude barium salt obtained from an amyl acetate extract of the medium has an activity of 15 to 25 units per mg. Distribution between water and ether at pH 2 and pH 6, adsorption of impurities by charcoal, and chromatographic analysis on alumina yield a light yellow barium salt with an activity of about 150 units per mg. On reduction of this material in neutral solution with aluminium-mercury couple, the remaining pigment is adsorbed by alumina. The white barium salt obtained from the supernatant has an activity of 240 units per mg. It completely inhibits staphylococcus in a dilution of 1 in 5,000,000, partially in a dilution of 1 in 16,000,000.

Dr. F. R. BRADBURY had studied the behaviour of sulphanilamide, *p*-aminobenzoic acid, and chemically related compounds, aniline and sodium benzenesulphonate, at the surface of *Bact. coli* by electrokinetic methods. The shapes of the curves relating variation of mobility with time of contact for sulphanilamide and *p*-aminobenzoic acid were quite different from those of the curves for aniline and sodium benzenesulphonate. The curves for sulphanilamide and *p*-aminobenzoic acid were similar, suggesting that the two compounds behaved in a like manner at the bacterial surface.

Prof. A. ST. G. HUGGETT said that dyes such as chlorazol sky blue F P S (Chicago blue) and chlorazol fast pink B K S were excellent anticoagulants. Structurally they resembled afridol violet, from which Bayer 205 was derived; they had a trypanocidal action, while Bayer 205 had an anticoagulant action. The dyes acted at two points in the clotting mechanism as antikinase and antithrombin. Their anti-enzyme action with blood clotting might have an analogy to their mechanism as trypanocidal agents.

PLANNING IN THE FEVER SERVICE

The Fever Hospital Medical Service Group of the Society of Medical Officers of Health met last month at B.M.A. House to consider the position of infectious diseases hospitals and of pathological services in post-war planning.

Fever Hospitals

Dr. H. STANLEY BANKS (L.C.C.), who opened the discussion, thought that fever hospitals as well as general hospitals should be regionalized. Modern fever hospital work required the equipment of a general hospital—for example, first-class laboratory service, x-ray department, operating theatre, and physiotherapy. Experience showed that wards for the "general sick" could quite well be a success in fever hospitals. In future fever units and general units should be combined under one administration. He pointed out that over 80% of fever hospitals, excluding those in London, had fewer than fifty beds.

and about 55% fewer than twenty beds. Many of these small hospitals should be either closed or linked up with others. It was of first importance to determine the best method of administration of a regional authority. The usual local authority method by which a chief medical officer appointed by the authority was responsible for both the management and medical direction inevitably led to a centralized bureaucracy. This might be efficient for a time by improving the backward units, but soon failed because of the atrophy produced at the periphery. Medical progress depended primarily upon the maintenance of initiative at the periphery and secondarily upon support from the centre. There should be a proper balance of power and responsibility between the two. This might be done by leaving medical direction to the hands of local and regional medical committees of senior staff. The regional committee could make itself responsible for conveying all necessary medical advice and direction to the authority, by the use of a whole-time staff if necessary. Some such scheme of decentralization of medical direction was essential to preserve the vitality of a hospital service.

Dr. L. J. M. LAURENT (L.C.C.) suggested that voluntary hospitals, owing to increasing grants from the State, were bound to come under State control. They enjoyed a semi-independence which helped medical progress but did not further mutual support. Municipal hospitals under the management of local authorities had become as efficient as voluntary hospitals, but laboured under a highly centralized administration. Any future scheme of hospital planning should avoid the disadvantages of both, and also especially avoid the perpetuation of a dual system of hospitals. The creation of a regional authority which would control both kinds, treating them as equal partners, would be a step in the right direction. A unified system of national hospitals might eventually be achieved. Modern fever hospitals approximated so much to general hospitals that they should naturally come under the same authority in any future scheme. Small fever hospitals should be replaced by larger units serving adjacent areas. As a result of the war the large fever hospitals were now treating cases of tuberculosis, chronic sick and senile patients, pneumonias, skin disorders, and casualties, besides cases of notifiable disease. After the war a diminution of infectious diseases was to be expected. The beds left vacant could no doubt be utilized for the treatment of cases similar to the above. For the needs of medical education they should be allowed to receive fever patients from larger areas than at present. The building of an infectious diseases block attached to a general hospital would be of mutual benefit to both sections.

Dr. A. A. CUNNINGHAM (L.C.C.) thought that much of the open-ward accommodation in large fever hospitals could be made available for general medical and surgical cases. This practice was initiated in London before the war. The head of a hospital should be a medical superintendent, not a layman, but there should be well-paid posts for good clinicians. Teaching hospitals should have a voice in the appointment of those who trained students in infectious diseases.

Pathological Services

Dr. J. E. MCCARTNEY (L.C.C.) said that a pathological service must provide for all classes—not only for hospitals but also for medical practitioners and public health work. It was essential to have the laboratory as near the patient as possible; therefore the technical work should be decentralized as much as possible. On the other hand, it would be advantageous to centralize and standardize, so far as practicable, supplies, equipment, conditions of service, etc. The country would be divided into a number of regions, defined geographically and according to population and existing facilities, each of which would be an administrative entity. The regions would be divided into groups each under a group pathologist, situated in the main laboratory of the group. A group laboratory would be similar to an L.C.C. group laboratory, adequately staffed and equipped. According to requirements there would be subgroup laboratories staffed by assistant pathologists, and where work was insufficient for a medical staff a technician would be employed. No separate public health laboratories as such would be provided, but the medical officer of health would be in touch with the group pathologist in his area, who would arrange for all patho-

logical work. If epidemics occurred it would be possible to bring the laboratory to the epidemic by means of a mobile laboratory staffed by personnel from less busy parts of the region. The pathological work of the region would be co-ordinated by a regional pathologist, who should not be a whole-time administrator but attached to or in charge of a laboratory, and whose work would be mainly technical. All regions would be co-ordinated by a director of pathological services. Technical and administrative sides would be run by a committee consisting of regional pathologists and administrative staff—for example, for personnel, finance, buildings, etc. Thus the whole country would have a pathological service, co-ordinated and correlated. London would be organized on similar lines to suit its particular requirements. The L.C.C. Pathological Service now functioned as a regional laboratory service with its group and hospital laboratories, centralization of supplies, and administrative services. He suggested that this service should be the basis of a national one. As regards teaching, there should be full co-operation with University teaching departments, many of which would be the main regional laboratories.

Dr. R. CRICKSHANK (L.C.C.) thought that the establishment of laboratory services in close association with infectious diseases hospitals needed to be greatly developed, for laboratory help was essential in the diagnosis, treatment, and control of most infectious diseases. Besides, a laboratory *in situ* helped to maintain a high standard of work in the hospital and encouraged co-ordinated investigation and research. For the proper discharge of this last function the laboratory staff must not be overburdened with routine work, and, more important, the intellectual calibre of the personnel should be high. In the past the clinical pathologist had often been regarded as inferior to his colleagues in the teaching and research departments, but with full-time adequately paid posts and encouragement of research clinical pathology should be able to attract the best brains to its service. The laboratory doing the bacteriological work of the infectious diseases hospital should also do the public health bacteriology of the surrounding area. Such an arrangement seemed specially desirable in the London area, where the liaison between the borough M.O.H. and the local isolation hospital was not as close as it might be. Field epidemiology, at present rather neglected, would also be encouraged by a system of regional laboratories such as the L.C.C. had established in London. Dr. R. A. O'BRIEN was of the opinion that no scheme for the future of the pathological services need look further than the L.C.C. group system for a plan on which to build. Dr. E. C. BENN (Sectorit Hospital, Leeds) agreed with previous speakers that hospital regionalization was inevitable. He pointed out that each part of the country had its own special problems which required individual solution, and he thought one of the major obstacles to be overcome was local prejudice. Full pathological service should be available to every hospital, but small units attached to small hospitals were as a general rule to be avoided in the interests of economy.

The Sector System as a Basis

Dr. A. G. TROUP (Willesden) endorsed the opinion that the admission of ordinary medical and surgical cases to isolation hospitals was quite a safe procedure from the cross-infection point of view, and gave his experience in this direction in the Willesden Isolation Hospital. Fever hospitals must be considered in any scheme in order that all available beds could be utilized for the maximum benefit of the community. He thought that in the London area the sector system might form the basis on which to found the post-war scheme. He supported the principle of enlarging the better and more modern fever hospitals, and either using for a different purpose or closing the others. This had been indicated in the Local Government Act of 1929 and the Public Health Act of 1936, but no progress had been made owing to the absence of compulsory powers. Finally, he supported the suggestion for some form of regional pathological service.

Dr. F. GRUNDY (M.O.H., Luton) considered that, as pathological services were so highly specialized, a regional or national organization of some sort was ideal. He preferred to substitute for Dr. McCartney's "mobility of personnel" a flexibility of personnel, as he considered that pathologists should remain

specially prepared cinema film called "Out of the Shadow" was shown.

I agree with Dr. Jamison that much could be done by talks on the wireless, but such talks could not altogether replace the more intimate lecture to a small audience which is followed by questions and answers. It is to be hoped that under the Cancer Act the education of the public concerning cancer by means of such lectures will be carried out on a much larger scale, as in my opinion this is the only way to get rid of the fear which is one of the main obstacles preventing the early diagnosis of the disease.—I am, etc.,

MALCOLM DONALDSON,

London, W.1, Dec. 15. Chairman of the B.E.C.C. Propaganda Committee.

Haemoglobin of Pregnant Women

SIR,—During the years 1937 and 1938 and the first two months of 1939 the haemoglobin of patients on their first attendance at the ante-natal clinic of an L.C.C. hospital in North London was determined by Haldane's method. These tests were done at first by Dr. S. H. G. Robinson and later by Dr. W. W. Kay, who has made an extensive analysis of the results which, it is hoped, will be prepared for publication later. There were 2,005 patients, the average of the figures representing the percentage haemoglobin was 84.7, and 107 patients (5.3% of the total) had less than 70% of normal haemoglobin.

After the beginning of the war determinations of haemoglobin were not made for each ante-natal patient until early in 1941. Drs. H. A. Ash and J. M. Alston have supervised from the middle of April to the middle of December of this year the testing of 814 patients at the time of their first attendance, and the average of the haemoglobin figures was 70.8, which is 13.9 less than the comparative figure for the group before war began, and 319 of these (39%) had less than 70% of normal haemoglobin.

In suggesting that it may be concluded that pregnant women in this part of London are distinctly more deficient in haemoglobin than before the war we draw attention to a number of factors which show, we think, that the two groups of figures are comparable. First, the test was made from freely flowing capillary blood in the pre-war group and in almost 40% of the wartime group; from the remainder of this second group venous blood kept fluid by shaking with crystals of ammonium and potassium oxalate was used; the average percentage figure for the specimens taken from venous blood was 2.5 less than for capillary blood and 1.5 less than for the whole of the wartime series. Secondly, before the war many different standard haemoglobin tubes were used for the series of determinations, and these tubes were, by general experience of them, believed to be satisfactory, but since war began it has been found by many pathologists that newly supplied tubes are often inaccurate. For that reason, by the kind collaboration of Dr. Lucy Wills, Royal Free Hospital, the tube used for the determinations in this year's series was checked with and found equal to a standard authenticated by oxygen-combining power. Thirdly, grouping of the patients by ages showed a distribution which was nearly the same before and since the war, and at any rate it was found in the pre-war series that it was only after the age of 35 years that age alone appeared to be associated with haemoglobin significantly below the average. In the pre-war series 8% of the patients were over 35 years and in the war series 9%. Fourthly, the almoner of the hospital has told me that, although she is unable to make an exact comparison of economic circumstances of the patients in the two groups, she does not think that since the war there have been less favourable financial circumstances than before. Fifthly, the distribution according to stage of pregnancy was sufficiently similar in the two groups.

The average figure for the haemoglobin of patients in 1937 was almost the same as 1937 and 1938 taken together (83.5% and 84.7% respectively), so that the state of haemoglobin deficiency was apparently stable in 1937 and 1938. The decrease found in 1941, therefore, is not the continuation of a progressive decrease which was going on before the war. In 1937 and 1938 anaemia was present, as shown by the average haemoglobin value of 84.7% and by the fact that almost exactly two-thirds of the patients for whom the red corpuscles

were counted had a colour index below 0.94. An analysis of colour indices has not been made in 1941, but from the fall of the average haemoglobin value to 70.8% the anaemia is obviously intensified. The conclusion which we think may be drawn is that during this year food taken by pregnant women in this part of London has been inadequate in iron.

We thank the medical officers and members of the nursing staff of the hospital for assistance; and for care and enthusiasm in technical work during this year we are indebted to Mr. R. Rodnight.—We are, etc.,

W. W. KAY, M.Sc., M.B.

J. M. ALSTON, M.B., M.R.C.P.Ed.

Group Laboratory, Archway Hospital, N.19, Dec. 12.

Haemoglobinometry

SIR,—In their letters Dr. Robert Campbell (November 22, p. 747) and Dr. A. J. E. Mills (December 6, p. 823) point out difficulties in determining the amount of haemoglobin present in blood. It needs to be emphasized that the usual manner of expressing the haemoglobin value is as a percentage of an arbitrary normal, which varies according to the method employed. The normal value is accepted as 100%, this being convenient for calculating the colour index. In Haldane's method this 100% is equivalent to 13.8 grammes haemoglobin per 100 ml. blood; whereas on the Sahli scale the 100% represents 17.3 grammes haemoglobin, or 124% Haldane.

When employing either method these differences must be taken into account, and each tube used for the dilution of the blood should be carefully examined before use. Most haemoglobin tubes are graduated as grammes Hb%, and also according to the arbitrary percentage of Sahli or Haldane. If these tubes are interchanged it is evident that anxiety as to the accuracy of haemoglobin determinations may arise. It would therefore seem desirable that haemoglobin estimations should be reported on a scientific basis as grammes Hb/100 ml. rather than a percentage of an alleged normal. If the latter be used then the method employed must be stated.

Regarding the use of the Sahli instrument, a wait of ten minutes before matching the colour developed with the standard suffices for clinical use. It may be remarked that provided the same technique is employed each time comparable values will be obtained as to the progress of any case.—I am, etc.,

Miller General Hospital, S.E.10, Dec. 9.

W. SMITH.

Red-cell Suspensions in Anaemia

SIR,—I was interested to read Dr. K. B. Rogers's letter on the above subject (December 6, p. 823).

I have given about forty transfusions of cell concentrate, but I find it very difficult to fix with any precision the haemoglobin rise per volume of concentrate given. This must depend on so many factors, such as blood volume, body weight, and capacity of storage of transfused cells, that even an approximation cannot be reached which will be applicable to all cases.

Perhaps an example of two recent cases will emphasize this. These patients were transfused with blood drawn off on the same day, stored for the same time (two days), and decanted on the same day. Further, the same volume was used, and other factors were strictly comparable. The first case, a thrombocytopenic purpura, had a rise of 1% haemoglobin per 28 c.cm., while the other, a gastro-enterostomy, had a rise of 1% per 35 c.cm. The variation in results will be found with fresh blood transfusion also.

It seems to me that it is impossible to achieve mathematical precision in a matter with so many variables.—I am, etc.,

ARCHD. L. GOODALL, M.B., Ch.B.

University of Glasgow, Dec. 15

F.R.F.P.S., D.P.H.

Congenital Arteriovenous Anastomosis

SIR,—The interesting case described by Dr. A. G. Watkins (December 13, p. 849)—whether there is a free arteriovenous communication or not—shows some dilatation of the internal saphenous vein and increased length of long bones in the affected leg, and therefore obviously belongs to the somewhat loose group which in 1918 (*Brit. J. Child. Dis.* 15, 13) I described under the heading "Haemangiomatic Hypertrophy of Limbs," including congenital phlebarteriectasis and so-called "congenital varicose veins." On these last I wrote a further note in 1936 (*Brit. J. Child. Dis.* 33, 102). Since 1918 a considerable number

of cases have been described in England and abroad as examples of "haemangiectatic hypertrophy." The increase of length probably occurs only when there is increased blood supply to the growing skeleton of the limb, and is occasionally imitated in Nature's experimental laboratory when a child's long bone is subjected to chronic active hyperaemia as the result of congenital syphilitic osteitis or some other chronic bone infection. Though continual active hyperaemia is the probable direct exciting cause of the increased length of bones in haemangiectatic hypertrophy, the cause of the congenital (developmental) abnormality in the blood vessels remains almost as unexplained as does the monstrous growth of fingers or toes affected by genuine gigantism.

The occurrence of the temporary discharge of lymph suggests that in addition to the haemangiectatic there is also a lymphangiectatic condition present, and that the limb is destined to become the site of intermittent lymphorrhagia. Wherever there is developmental lymphangiectasis a leakage may occur, which, according to the site, will be manifested by lymphorrhagia on the surface of the body, chylothorax, chylous ascites, chyluria, or chylous discharge from the uterus or elsewhere; the discharge of lymph or chyle in such cases may be only temporary or intermittent.—I am, etc.,

London, W., Dec. 13.

F. PARKES WEBER.

Encopresis in Children

SIR,—I was interested in Dr. Charles Burns's article on encopresis in children (November 29, p. 767).

I am not competent to discuss the psychological aspect of the matter, but would like to point out that there are children who exhibit encopresis because of faecal impaction of the rectum, a condition brought on by long-standing failure to empty the lower bowel satisfactorily. This is comparable to overflow incontinence of the bladder, and can be easily detected by rectal examination. I had several such cases, and found that the only satisfactory method of treatment, and one usually affording permanent relief, is digital removal of the faeces from the rectum.—I am, etc.,

Selly Oak Hospital,
Birmingham, Dec. 10.

A. M. NUSSEY.

Combined Intra-uterine and Extra-uterine Pregnancy

SIR,—Dr. R. B. Leech's interesting case reported in the *Journal* of December 6 (p. 805) reminds me of a case which came under my care while I was on the staff of a mission hospital in Northern Nigeria. My case, although not going on to term like Dr. Leech's, is nevertheless unusual enough, I think, to record.

In October, 1939, I was suddenly called to see a young Fulani woman of about 25 years of age who had been staying on the hospital compound looking after her son, who was receiving treatment for sleeping sickness. She had complained of sudden abdominal pain and then collapsed. On examination the abdomen was extremely tender and showed evidence of free fluid in the peritoneal cavity. There was a history of three months' amenorrhoea, and a diagnosis of ruptured ectopic gestation was made. At operation the peritoneal cavity contained free blood, the sac, situated in the right tube, having ruptured directly into the peritoneal cavity. The condition was dealt with along the usual lines. While performing the operation I particularly noticed that the uterus was enlarged considerably more than one would expect for a three-months pregnancy. All went well until the third day after the operation, when the woman complained of "labour-like" pains, and later in the day miscarried and produced twin males, each foetus being well formed and about the size of a three-months pregnancy. This was the patient's third pregnancy, and she afterwards made an uninterrupted recovery.

A case of triple pregnancy, one of which was extra-uterine and the other two intra-uterine, must surely be a rarity.—I am, etc.,

Palham Market, Norfolk, Dec. 9.

C. E. LANGLEY.

Nail Lacquer Dermatitis

SIR,—Your annotator (December 13, p. 855) states that "little has been heard in this country of dermatitis due to cosmetic preparations for the nails." During the past few weeks I have seen two cases in which sudden outbreaks of swelling and dermatitis of the eyelids, face, and neck have been associated with a sensitivity to a certain brand of nail polish. Positive patch tests have been obtained, and it is hoped to

obtain from the manufacturers samples of the constituents in order to determine the nature of the causative factor.

One lady had been resident in the country for many months. Having children to attend and housework to do she had not used nail polish except on two separate occasions many weeks apart, when the nails were lacquered the night before a proposed trip to London. On each occasion the patient awakened next morning with an intense rash over the eyelids, face, and neck, and herself volunteered the information that she thought the rash associated with the nail-lacquering technique. There was no rash on the hands.

If the co-operation of the manufacturers can be obtained I hope to make a further communication on this subject at a later date.—I am, etc.,

London, W 1, Dec. 13.

GEORGE BRAY.

Rehabilitation of the Injured

SIR,—All interested in the problems of the physically disabled must welcome the schemes initiated by the Ministry of Health and the Ministry of Labour and National Service which are referred to in your leading article of December 6 (p. 812). In doing so, however, it is important to remember that we are still far from a "comprehensive national scheme of rehabilitation."

While the Ministry of Labour's plans for the training and resettlement of the disabled will, or can be made to, apply to all classes of disabled, the rehabilitation schemes inaugurated by the Ministry of Health are at present much narrower in their application. They exclude large sections of the accident-disabled—sufferers from traffic accidents, to mention only one—the disease-crippled (unless associated with war service), and children. For all these people it has become more, not less, difficult to obtain specialized treatment, owing to the wartime limitations on normal hospital services.

Those whose work brings them much into contact with the permanently disabled know what a high proportion might have been cured by treatment at an earlier stage and could still be greatly benefited given facilities which, for them, are not available—tragic evidence of the inadequacy of the orthopaedic services which existed before the war, even for children, and of the distance which must still be travelled before anything like a complete national rehabilitation service is achieved. I suggest that it never can be until the many aspects of this complex problem cease to be dealt with piecemeal by a number of different Departments and are instead co-ordinated under a single authority—a Rehabilitation Board—whose sole criterion would be the fact of disablement rather than its cause or the disabled's category.

Glad as we must be of the present advance, so long overdue, the ultimate objective should not be lost sight of. The nation cannot afford to waste its assets, least of all its man-power. What can be done to avoid this by treatment has long been demonstrated. How far training can be effective is becoming increasingly realized. For the past sixteen months men with a high degree of disablement have been training under the munitions training scheme of the Ministry of Labour, and are proving their capacity to work on equal terms with the able-bodied, even under the exacting conditions prevailing in wartime industry.—I am, etc.,

Exeter, Dec. 10.

GEORGINA BULLER.

Medical Man-power

SIR,—As one of the witnesses before the commission investigating medical man-power, I am able to throw some light on certain points raised in Mr. H. J. McCurich's letter (December 6, p. 826). The witnesses with whom I was associated had all been released from the Services to attend to urgent and essential duties among the civil population. They were thus able to give their evidence freely and, I think, fairly.

Where detachments of separate Services are stationed in close proximity it should obviously be possible for one medical officer to care for the medical needs of soldier, sailor, or airman, providing authority for this step could be obtained from the Departments concerned.

I am entirely in agreement with Mr. McCurich in his view that sanitary N.C.O.s could take over the greater part of the routine inspections in camps. In actual fact this progressive step had already been taken by the D.A.D.H. (M.O.H.) in the area where I was stationed. He usually sent his sanitary

sergeant to make a periodic inspection of barracks, and any further action depended on his report. O.C.s of regiments are extremely keen keeping sanitation up to a high standard, and it was rare to find any serious fault.

In recruiting depots where there are a large number of inoculations there seems no reason why trained nurses, male or female, should not be used under the supervision of a M.O. His suggestion that the office of D.A.D.M.S. should be taken over by lay personnel is a more revolutionary one and not likely to commend itself to the powers that be, but it is undoubtedly feasible. A D.A.D.M.S. is the personal private secretary of the A.D.M.S., and it has always seemed a great waste of a healthy young doctor to make him sit on an office stool wading through indents and answering questions which his chief clerk could do equally well. If it is not possible to introduce laymen or women there is no doubt that women doctors could adequately fill this post in suitable areas.

Junior medical officers in field ambulances might be replaced by officers trained in hygiene and in the treatment of casualties during evacuation to hospital. So much of the work of a field ambulance is similar to that of a routine duty of any company officer, and again it seems a pity that a skilled tradesman should be used for this purpose.

Lest it should be thought that this letter is directed entirely against extravagance in medical man-power in the Forces, it is only fair to say that in the larger cities, if the three main services—namely, public health, hospitals, and general practitioners—pooled their resources there could be a considerable saving of medical man-power, and, what is equally important, the public would not suffer.—I am, etc.,

Birmingham, Dec. 9

R. C. L'E. BURGESS.

The Nation's Teeth

SIR,—Referring to Captain G. E. King-Turner's letter on "The Nation's Dental Services" (December 6, p. 827), I beg to point out that, during this war crisis, an exceptional opportunity presents itself for a National Dental Survey which would confirm and accentuate the views expressed in that letter. There is something radically wrong with the nation's dental services; they are not getting positive results. As factory medical officer to the Ministry of Supply, with over twenty-five years' experience of physical examinations in H.M. Navy, I now examine weekly some 300 to 400 new entries of both sexes, drawn from every section of the community. While taking stock of the teeth in a general way, I have also found time to keep records of between five and six hundred—a comparatively small number to date owing to other duties. But from this summary survey one fact emerges clearly—namely, that, despite the treasure that is being expended yearly on school dental services and on dental research, the standard of the nation's teeth has depreciated considerably during the last twenty-five years.

Among the thousands examined here, five Asiatics presented themselves—four Indians and one Burmese. One of these men had had three teeth missing, the other 29 being perfect and free from blemish, and of the three extracted, one sound tooth had been extracted in error. The contrast between the Asiatic dental standard and our own might be described briefly as follows: The teeth were larger and stronger, apparently more fully developed; the arches were wide, making room for full development; uniformity and white ivory aroused one's wonder and envy. All the surgery staff were invited to inspect and admire the beauty of all five as a contrast to what we have become accustomed to.

In examinations of over 1,000 Indian and 1,000 Chinese labour recruits on the Singapore Base (1923 onwards) 87% of Indians and 67% of Chinese exhibited this standard of complete and perfect teeth, free from defect, every tooth doing its duty. A similar examination of the active service personnel of one of H.M. ships in 1921, representing a highly select and well-cared-for part of the general population, revealed only 2.75% of the standard of perfection, but even these lacked the uniformity and ivory-like whiteness of the Asiatic teeth.

I suggest that the opportunity is at hand, and that a National Dental Survey is one of the urgent needs of the moment in the interests of the nation's health.—I am, etc.,

D. H. C. GIVEN, M.D., D.P.H.
Surgeon Captain, R.N. (ret.)

Obituary

G. DE BEC TURTLE, M.D., M.R.C.P.

The passing of Godfrey de Bec Turtle removes another well-known medical man from the West End of London. Dr. Turtle was a man of many activities; at the time of his death on December 4 he was president of the Medical Defence Union, the Medical Sickness Assurance Society, and of the Clinical Section of the Royal Society of Medicine. He was also medical superintendent of the Luton and Dunstable Hospital, and it was in this hospital that he died after a very short illness.

He was an energetic and enthusiastic worker, and one who always believed in doing things in the right way no matter how much trouble it caused him. After an early medical education in Durham and King's College Hospital he held several house appointments, and became obstetric registrar and tutor to King's College Hospital. He practised for many years in the Hyde Park area, and was constantly to be seen exercising in the Park before breakfast; he always maintained that riding was the best exercise for a busy man, and he advised it for many of his patients.

It is impossible to cover all Turtle's activities, for they were legion. He was interested in the Post Office in the Paddington district, and was one of their district medical officers. He was an ardent supporter and a past president and treasurer of the Harveian Society of London, and the success of that society and its popularity are in great part due to his influence. He also found time to devote two mornings a week to the Public Dispensary, Drury Lane. He was consulting physician to Brentwood Hospital and to the Margaret Street Hospital for Consumption. He devoted much time and energy to the Royal Society of Medicine and was a most useful councillor, having filled the post of treasurer with distinction. Turtle was at his best at one of the social functions of the society, and was always keen to further the society's interest.

He leaves a widow, a son who is in the Royal Navy, and two daughters who are doing war work.

Medical missionary work in China has suffered a severe loss in the death of Dr. FRANCIS HENRY (ROBIN) MOSSE. The son of the Rev. E. H. Mosse, vicar of St. Paul's, Covent Garden, Dr. Mosse was educated at King's School, Canterbury, and Trinity College, Oxford. He studied medicine at King's College Hospital, and in 1913 qualified M.R.C.S., L.R.C.P. (Lond.). During the last war he served as temporary captain in the R.A.M.C. in Egypt and Palestine, and was with General Allenby's forces at the capture of Jerusalem. But Dr. Mosse's heart was set on medical missionary work, and in 1920, after taking the M.R.C.P., he sailed for China, under the S.P.G., to take up the post of physician to the Cheloo Christian University, Shantung, North China. There for twenty years Robin Mosse trained young Chinese men and women. "A picked group of the finest students in the world," he called them, and he counted himself "the happiest man in Asia" in being allowed to serve them in the name of Christ. He worked with them in refugee camps, in times of flood and famine, as well as in the lecture halls and wards of Cheloo Hospital. After the Japanese occupation of North China the majority of the 4,000 students at Cheloo trekked west to free China, but the hospital remained and Dr. Mosse stayed with it. Early this year he fell ill with tuberculous trouble, and was sent to the U.S.A. for treatment. He seemed to be making good progress, and his death, which followed an operation, was sudden and unexpected.

The death is announced of Dr. HENRY KING DAWSON, senior practitioner in the Ashted area of Surrey. He was educated for the medical profession at Newcastle-upon-Tyne, and graduated M.B., B.S. of Durham University in 1892, proceeding to the M.D. in 1896. During the South African War he served as a civil surgeon with the Gloucestershire Yeomanry, and later with the 9th Lancers and the Coldstream Guards. He began practice at Ashted in 1902. On the formation of the

Territorial Force Dr. Dawson received a commission in the R.A.M.C.(T.), and on the outbreak of war in 1914 was embodied for service and joined the 6th London Field Ambulance, of which he was later given command with the rank of lieutenant-colonel. For his services in France he was thrice mentioned in despatches and awarded the D.S.O. Returning to practice at Ashted he took part in many local activities, and during the present war was appointed medical officer in charge of the local mobile unit. He was on terms of friendship with all his colleagues, and until the passing of the National Insurance Act had been a staunch member of the B.M.A.

The Services

HONORARY PHYSICIAN TO THE KING

Colonel R. Sweet, D.S.O., I.M.S., has been appointed Honorary Physician to the King in succession to Major-General (local Lieut-General) W. H. Hamilton, C.B., C.I.E., C.B.E., D.S.O., late I.M.S., who has retired.

ARMY AWARD

The Commander-in-Chief, Middle East, General Sir Claude Auchinleck, has, by the authority of the King, approved the immediate award of the Military Cross to Captain John Bissill Haycock, R.A.M.C., for gallantry in action during recent operations in the Western Desert.

CASUALTIES IN THE MEDICAL SERVICES

INDIAN MEDICAL SERVICE

In an India Office Casualty List published on December 11 Colcael EDWARD GALWEY KENNEDY, I.M.S., is recorded as having died. He was educated at Queen's College, Cork, and graduated M.B., B.Ch., B.A.O., of the Royal University of Ireland in 1909. In the following year he entered the I.M.S. as lieutenant, became captain in 1913, major in 1922, and lieutenant-colonel in 1930. In 1937 he was promoted to colonel, and in the same year was appointed Deputy Director-General of the I.M.S. He had been a member of the British Medical Association since 1915.

Captain S. S. Apte and Captain Bazley Rabbi are included as "Died" in an India Office Casualty List published on December 11.

INDIAN MEDICAL DEPARTMENT

Captain R. H. F. Parkinson, D.C.M., is included as "Died" in an India Office Casualty List published on December 11.

Wounded

Assistant Surgeon K. C. Clarke.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a Coagregation on December 6 the following medical and surgical degrees were conferred by proxy:

M.D.—T. D. Day.

M.B., B.Chir.—R. E. M. Pilcher, R. E. W. B. Comerford.

UNIVERSITY OF EDINBURGH

At a graduation ceremonial on December 12 the following degrees and diplomas were conferred:

M.D.—Fanny B. Chisholm (*née* Mackintosh), C. A. Gleadhill, *A. M. Macdonald, Lieutenant, R.A.M.C., J. H. Patterson, Captain, R.A.M.C., J. A. Rhodes.

M.B., Ch.B.—I. R. W. Alexander, R. F. Antonio, B. A. Bembridge, G. D. Bonner, W. Boyd, A. K. Brown, L. F. Brown, W. J. J. Bryden, Rosemary E. Buchan, W. Campbell, J. McD. Corston, J. Devine, N. G. Douglas, N. K. Farley, W. D. Frew, E. R. L. Gregson, C. J. C. Hinrichs, Jean Leith, Anne W. Macdonald, D. Malcolm, A. M. Plant, D. Pottinger, S. I. Pugh, *Anne R. M'C. Ross (*née* Sellar), Margaret C. Tate, H. D. Thompson, D. R. Tipping, F. F. Viedge, A. L. Wallis, J. A. Watt, D. B. Wiseman.

DIPLOMA IN PUBLIC HEALTH.—†A. S. Quinta, T. M. Small, †Helena S. L. Taylor (*née* Leath-Thomson).

DIPLOMA IN MEDICAL RADIOLOGY.—R. A. McKail.

D.Sc.—In the Department of Pure Science: †C. E. van Rooyen, M.D., Major, R.A.M.C.

* Awarded gold medal for thesis.

† In absentia.

POLISH SCHOOL OF MEDICINE IN EDINBURGH

M.B., Ch.B.—W. K. Gatuszka, Jadwiga Mickiewicz, S. Schta, F. Solich.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At an ordinary meeting of the Council of the Royal College of Surgeons of England, held on December 11, with Sir Alfred Webb-Johnson, President, in the chair, Mr. Seymour Barling was reappointed representative of the College on the Court of Governors of Birmingham University, and Mr. L. E. C. Norbury was reappointed representative on the Central Council for District Nursing in London.

A Final Examination for the Fellowship will begin on Thursday, February 5, 1942.

Diplomas

Diplomas of Fellowship were granted to the following candidates:

E. O. Harris, H. E. Blake, P. M. G. Russell, V. A. J. Swain, T. L. S. Baynes, B. G. A. Lilwall, E. W. O. Adkins, G. A. Fairlie-Clarke, A. R. Leask, S. I. Green, H. J. Richards, J. Moroney, G. M. Müller, A. G. Apley, J. B. Kinmonth, D. A. J. Ebrill, H. E. Hobbs, W. H. Weston, E. E. T. Taylor, L. H. Aitken, H. B. Bactor, C. H. Cullen, S. Eisenhammer, J. D. Gray, C. G. D. Halstead, J. N. Nish, C. M. Ley, W. Parke, J. J. Richmond, W. E. Springford, N. Waddle.

Diplomas in Anaesthetics were granted, jointly with the Royal College of Physicians of London, to the following candidates:

J. B. Adams, J. H. Crawford, H. de L. N. Davis, D. C. Devitt, R. R. Dickson, J. K. A. Dorman, H. Edwards, H. R. W. Franklin, Yobiel M. Garland, E. F. Gleadow, T. C. Gray, P. S. A. Heyworth, W. Kupfermann, C. B. Lewis, A. M. McKinlay, J. V. Mitchell, L. G. Morrison, G. B. Oliver, J. Patterson, G. Quayle, G. M. Rose, Enid B. Roulston, R. D. Scott, R. P. W. Shackleton, A. A. Shein, Janet Todd, E. C. Whitehall-Cooke, Joyce Worthington, A. M. Young.

Medical Notes in Parliament

National Service Bill

On the second reading of the National Service Bill it was stated for the Government that one woman doctor would be present at the medical examination of women. It was also stated that no woman would be taken from, among other services, full-time Civil Defence work, nursing, and domestic work in hospitals, and teachers would not be disturbed.

During discussion on December 10, in Committee on the National Service Bill, of an amendment proposing not to compel women to undertake service with the Armed Forces, Mr. HENDERSON STEWART said the conditions in A.T.S. camps were bad and also the physical conditions of the girls in many cases. Mr. BEVIN replied that the physical conditions were capable of improvement. With the Service Ministers he was trying to arrive at a proper standard such as they had on the munitions side. The Cabinet agreed that as Minister of Labour he should create hostels near the camps. His Department had received allegations concerning one camp, but an independent investigation showed there was not a single case of venereal disease there. The proposed amendment was negatived.

Subsequently Major HADEN GUEST asked what provision Mr. Bevin would make for detailed hygienic and medical supervision in the new factories which he was providing. No machinery existed, and there was a shortage of medical manpower. Mr. MARTIN asked what measures the Minister intended to take to look after the health of the people who were called up. If women who were constricted became unfit, could they leave their employment on a medical certificate of their own doctor, or would they have to get a certificate from some medical board? Mr. BEVIN said that he could not deal with the nationalization of the medical services under this Bill. The Services were being constantly expanded on the health side, and he had made provision for compulsory medical service in industry. That innovation had expanded and now included nursing.

The clause imposing compulsory service for women was carried by 223 to 0.

The debate was resumed on December 11. On the clause extending the age of men's military service to 50 Mr. MAXTON moved to reduce the upper age to 45. He said there would be a higher rate of sickness, of breakdown, and of discharge in these grades, and either a huge bill to pay through the Ministry of Pensions or a widespread grievance through the country if these men were told their illnesses were those they might have got in civil life and were not attributable to or aggravated by war service. Sir WALTER GREGG said the Government could not accept this amendment. All these men would go through medical examinations, and their duties would depend on their medical grades. Mr. MAXTON'S amendment was withdrawn.

Sir HERBERT WILLIAMS moved an amendment to the clause dealing with persons sentenced for failure to attend medical examination. He proposed that where a person supplied a certificate of permanent ill-health and the attendance at the prescribed place would be detrimental to his health, the medical examination should take place at his home. He suggested that in such cases the man's doctor should send a certificate. Mr. BEVIN said he could not accept the amendment. At present if a person supplied a medical certificate that he was suffering from ill-health and that attendance for medical examination at the prescribed place would be detrimental to his health, that certificate was put before the chairman of the medical board, who might direct that the person should not be summoned to attend unless and until he was fit to go. As the medical board consisted of medical men the Ministry took their advice and acted on it. That was a reasonable precaution against injustice.

The amendment was withdrawn. The Committee stage was completed and the Bill was read a third time.

Having passed through all its stages in the House of Lords, the Bill received the Royal Assent on December 18.

Provision of Wartime Nurseries

On December 9 in the House of Lords Lord NATHAN called attention to the importance of providing an adequate number of wartime nurseries, especially in view of the large number of married women who would be directed into industry. He said that these nurseries must be provided not in hundreds but in thousands. He believed that 200,000 children at least would have to be provided for in such nurseries after every other resource had been exhausted. The Government's own figure for the average number of children in wartime nurseries was forty, which meant that 5,000 nurseries would have to be provided, as against the 500 now contemplated. There would have to be accommodation for the whole twenty-four hours for children whose mothers would work at night.

Lord SNELL said it was impossible to estimate the extent to which women's labour would be drawn upon, but the urgency appeared to be in those key industrial districts which might call for quite rapid development, and that included all the services for child welfare. The Government would have first to observe the rate of intake into industry and then try to provide for nurseries in sufficient numbers in accordance with that intake. It would be unwise to fix in advance any number, which would depend on the rate of intake and the efficacy of any alternative methods that might be tried. Instructions had been given to local authorities designed to ensure adequate preparation for the expected need and to be ready for quick development. The three Departments concerned—the Ministry of Health, the Ministry of Labour, and the Board of Education—were collaborating closely with a view to adequate treatment of this difficult and urgent subject, as were maternity and child welfare authorities and local education authorities.

At the end of November 194 nurseries were in operation, and 209 were approved but not yet in full operation, providing for something over 15,000 children. There were in active preparation a further 264, and the Government felt, with their present knowledge of the need, that this programme was, on the whole, a fairly satisfactory one. Of 125 nurseries approved in November, 33 were allocated to the Midland area based on Birmingham, 20 to the industrial districts of Lancashire, and 17 to the outer districts of London. A suitable staff must include a number of trained nurses, supported by a large number of girls and women for general purposes, and a scheme of train-

ing for such supplementary labour had been worked out. Special arrangements had been made to meet the need for equipment. A list of articles had been prepared, and orders for them had already been placed.

Leprosy in British West Indies

Mr. GEORGE HALL furnished Dr. Morgan on December 10 with the following table setting out the incidence of leprosy in the British West Indies:

Colony	New Cases	Total Cases	Population
Bahamas	1940 3	17	70,332
Barbados	1939 5	63	193,082
Jamaica	1939 Not stated	249	1,193,465
Turks and Caicos	1938 2	5	3,300
Antigua	1940 Not stated	6	36,073
St. Kitts	1939 3	59	37,994
Montserrat	1939 Not stated	Not stated	13,541
Virgin Islands	1940 Not stated	Not stated	6,135
Trinidad and Tobago	1939 77	377	473,455
St. Lucia	1939 5	29	69,737
St. Vincent	1940 Nil	18	61,421
Grenada	1939 Nil	12	90,085
Dominica	1940 3	17	52,738
Bermuda	— Nil	Nil	30,814
British Guiana	1939 45	363	341,237
British Honduras	— Not stated	Not stated	57,767

Mr. Hall added that Dr. Muir, medical secretary of the British Empire Leprosy Relief Association, was in Trinidad holding a temporary appointment as medical superintendent of the Leper Colony, and proposed during his stay to undertake a leprosy survey in the West Indian area. The matter was receiving the attention of the Comptroller for Development and Welfare in the West Indies, and measures were being taken to deal with this disease in all the Colonies concerned.

Medical Certificates

Answering Mr. Rostron Duckworth on December 10, Mr. ERNEST BROWN said he had been asked by the British Medical Association to consider, in consultation with other Government Departments, whether steps could be taken to reduce the demands made on the medical profession for certificates in connexion with war activities. A conference took place between representatives of the Departments and of the Association, at which the whole matter was explored. The matter was now being considered by the Departments individually with the object of reducing to a minimum the number of purposes for which medical certificates were to be required.

Committee on Nurses' Salaries

Mr. ERNEST BROWN, replying on December 11 to Miss Lloyd George, said the committee on the salaries of nurses had held its first meeting on November 27. He intended that in regard to sanatoria and tuberculosis hospitals the committee's scope should extend to nurses possessing or in training for the certificate of the Tuberculosis Association, and that it should also extend to health visitors. Before the scope was so extended some adjustments in the committee might be necessary; and he was consulting the appropriate associations. Mr. Brown added that he had decided to set up a separate committee to draw up agreed scales of salaries for midwives on a national basis. He was consulting the appropriate associations of employers and workers. Lord Rushcliffe was ready to act as chairman of the committee for midwives as well as that for nurses. Some nurses' and midwives' posts involved the practice of both nursing and midwifery, and Mr. Brown would request the committees to consult together before making recommendations in overlapping matters of that kind. Mr. Brown asked for further notice before answering whether the committee would consider residence, uniform, and superannuation.

Rest and Feeding Centres.—Miss HORSBROUGH stated, in reply to a question on December 9, that no general standard had been laid down for the amount of accommodation, including feeding facilities, to be provided in rest centres. This had to depend in each area on a combination of widely varying local conditions, and it had been left to each rest centre authority to decide, in consultation with the Department's Senior Regional Officer, what was necessary for its own area. As a rough guide, however, it had been suggested that rest centre accommodation should be provided in target towns and their suburbs for not less than 3% of the population.

No. 49

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended December 6.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland. A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	132	7	30	4	2	144	3	36	6	5
Deaths	—	—	—	—	—	—	—	—	—	—
Diphtheria	1,103	54	313	30	37	1,424	64	542	34	34
Deaths	27	1	9	2	—	35	—	11	—	1
Dysentery	165	3	73	—	—	92	2	50	—	—
Deaths	—	—	—	—	—	—	—	1	—	—
Encephalitis, lethargica ..	3	—	1	—	—	1	—	1	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Etiotic (typhoid and paratyphoid) fever ..	—	—	—	—	—	23	1	5	9	1
Deaths	—	—	—	—	—	—	—	—	—	—
Erysipelas	—	—	52	8	6	—	24	61	6	3
Deaths	1	—	—	—	—	—	—	1	—	—
Infective enteritis or shigellosis under 2 years	—	—	—	—	—	—	—	—	—	—
Deaths	25	1	15	2	3	41	1	9	6	3
Measles	667	55	27	75	4	14,147	325	397	—	9
Deaths	1	—	—	—	—	12	1	2	3	—
Ophthalmia neonatorum ..	83	2	14	—	2	80	—	9	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	5	—	3	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza? ..	979	52	13	3	13	782	37	12	—	10
Deaths (from influenza) ..	29	1	1	—	1	42	8	3	1	—
Pneumonia, primary	—	—	208	18	—	—	—	205	12	—
Deaths	—	83	11	5	—	—	50	17	—	8
Poli-encephalitis, acute ..	—	—	—	—	—	2	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Polymyositis, acute	14	—	1	2	—	18	—	2	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	—	10	2	—	2	2	17	2	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia	178	5	9	—	5	109	3	22	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,324	35	238	59	35	1,597	69	231	62	58
Deaths	—	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever?	17	4	—	9	5	—	—	—	—	—
Deaths	1	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough	1,725	209	52	48	19	2,421	17	226	—	23
Deaths	6	1	—	—	—	13	9	2	—	—
Deaths (0-1 year)	322	33	75	24	18	340	22	73	38	17
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still-births) ..	4,271	552	392	184	114	5,979	908	646	205	132
Annual death rate (per 1,000 persons living) ..	—	—	12.9	12.2	5	—	—	13.1	13.7	11.6
Live births	4,674	413	710	337	195	4,484	334	742	322	174
Annual rate per 1,000 persons living ..	—	—	14.4	22.4	5	—	—	15.0	21.5	15.2
Stillbirths	177	14	24	—	—	159	7	26	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	33	—	—	—	—	34	—	—

* In certain administrative areas only.
 † Includes primary form for England and Wales, London (administrative county), and Northern Ireland.
 ‡ Death from puerperal sepsis?
 § Includes paratyphoid A and B for Northern Ireland.
 ¶ Figures for evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

The feature of the returns for England and Wales during the week under review was the very large decrease in the notification of infectious diseases when compared with the preceding week. The largest decreases were those of scarlet fever 91, whooping-cough 234, measles 183, pneumonia 122, and dysentery 32. An increased incidence was recorded for diphtheria 56, puerperal pyrexia 54, and typhoid 10, these increases being due mainly to isolated and widely distributed cases. The only notable local rise was in Yorkshire, West Riding, where diphtheria was 31 cases in excess of the preceding week, due to the experience of the rural districts. The largest fall in the notifications of pneumonia occurred in Lancashire and Yorkshire, West Riding, where the totals were 38 and 48 below last week's figure. The most obvious deviations in the trend of scarlet fever were those of Lancashire, with 32 cases in defect, and Worcestershire, with 20 cases in excess, of the preceding week. The numbers of cases of measles in Staffordshire, Kent, and Herefordshire were 51, 27, and 39 below the totals of the previous week, but in Surrey, Reigate M.B., and Middlesex, Hendon M.B., there were increases of 37 and 21. The decreased incidence of whooping-cough was largest in Middlesex 52, Staffordshire 27, and Yorkshire, North Riding, 27, but—mainly because of outbreaks in Bognor Regis U.D. and Chichester R.D.—there was an increase of 35 cases in Sussex West.

A general decrease in the notifications of infectious diseases was also recorded in Scotland, although there was a relatively large increase, 19 cases, for dysentery.

The 75 cases of measles reported in Eire were an increase of 48 on the total of the previous week. Almost 90% of the cases were reported from two areas—Dublin 35 cases (an increase of 18) and Ballinasloe U.D., Co. Galway, 29 cases.

Dysentery

165 cases, a decrease of 32, were reported in England and Wales. Fresh outbreaks occurred in Nottinghamshire, East Retford R.D., 38 cases, and in Denbighshire, Denbigh M.B., 10 cases. Most of the remaining cases were recorded in Nottingham 38, Surrey 22, Lancashire 20, and Northumberland 10.

The chief centres of infection in Scotland were Renfrew County 11, Aberdeen County 15, and the burghs of Edinburgh 10 and Glasgow 15.

Quarterly Return of the Registrar-General for Scotland

The return for the September quarter of 1941 shows that on the whole Scotland enjoyed favourable health during this period. The civilian death rate was 11.6 per 1,000. The birth rate was 17.5 per 1,000—the highest recorded for any third quarter since 1932. Stillbirths registered during the quarter were equivalent to a rate of 37 per 1,000 total births and was the lowest recorded figure in Scotland for any quarter since registration began in 1939. The infant mortality rate of 63 per 1,000 live births was the highest rate since the third quarter of 1936, and was 6 higher than the rate for the corresponding quarter of 1940 and 4 above the average of the five years 1936-40. Maternal mortality of 4.8 per 1,000 live births was 0.1 below the average for the corresponding quarters of the five preceding years.

The death rate from all forms of tuberculosis was 73, and from respiratory tuberculosis 52 per 100,000. Compared with the average of the five preceding years these rates showed increases of 10 and 6 respectively.

254 deaths were attributed to the principal epidemic diseases; this total was 163 fewer than in the third quarter of 1940. The chief causes of death were diphtheria 88, whooping-cough 83, and cerebrospinal fever 38.

Quarterly Return of the Registrar-General for Northern Ireland

The births registered during the third quarter of 1941 represented a rate of 22.0 per 1,000, this rate being 2.5 above the rate for the September quarter of 1940 and 2.0 above the average of the corresponding quarters of the five years 1936-40.

The death rate of 11.6 per 1,000 was the same as the rate for the third quarter of 1940 and was 0.2 above the average for the five preceding third quarters. Infant mortality was 66 per 1,000 births registered, compared with a rate of 76 for the corresponding quarter of the previous year and an average of 61 for the corresponding quarters of the five preceding years.

Twenty-eight deaths were recorded from whooping-cough—3 above the five-year average for the third quarters, and the 30 deaths from diphtheria were 10 above the average. Deaths from pulmonary tuberculosis numbered 235, compared with an average of 197 for the five preceding third quarters.

Medical News

An open conference on the general topic of "Science and the War Effort" has been arranged by the Association of Scientific Workers and will be held in the Caxton Hall, Westminster, S.W., on Saturday and Sunday, January 10 and 11, 1942. The subjects to be discussed include university training of scientists and training of technical personnel; building, housing, and A.R.P.; food and agriculture; application of scientific knowledge to problems of industrial production and to Services problems, including consideration of industrial health and conditions of work. Those who wish to take part should communicate at once with the conference secretaries, Association of Scientific Workers, 30, Bedford Row, W.C.1 (telephone: Chancery 5201).

Recent events in the Far East lend a grim interest to the report of the Director of Medical Services for Hong Kong for 1940. Dr. P. S. Selwyn-Clarke, in his section on the Civilian Medical (Defence) Scheme, writes that considerable time was spent in bringing up to concert-pitch the auxiliary medical services, such as first-aid posts, casualty clearing hospitals, relief hospitals, etc., for which doctors, sisters, nurses, dispensers, dressers, were trained so as to be available in the event of hostilities breaking out locally. One of the major difficulties was the recruiting of auxiliaries for emergency work, and this was accentuated by the shortage of nurses, due among other things to the compulsory evacuation. The St. John Ambulance personnel, about 1,500 in number, for the manning of first-aid posts in emergency, also had intensive training. The health division of the medical department was reorganized during the year, and the health inspectors worked, for the first time in the history of the Colony, under the direct control of health officers instead of under lay authorities.

At the last council meeting of the Queen's Institute of District Nursing, with Sir William Hale-White, M.D., in the chair, it was announced that the British War Relief Society of the U.S.A. had made a grant of £2,000 to help nursing associations in coastal areas which had suffered from air raids. A gift of £1,200 had also been received through the same benevolent agency from Miss Moule, an American nurse, and a group of her friends, who asked that the money might be sent to the Queen's Institute to help the nurses. During the past year £2,981 was received from the National Gardens Scheme.

Dr. Morris Fishbein, Editor of the *Journal of the American Medical Association*, has joined the British American Ambulance Corps' committee in Chicago.

To commemorate the missionary work of Sir Wilfred Grenfell, M.D., F.R.C.S., in Labrador a special 5-cent postage stamp will be issued in the near future by the Post Office Department of Newfoundland.

A department of nutrition has been established at McGill University, Montreal, in charge of Dr. E. W. Crampton, assistant professor of animal nutrition at Macdonald College.

Sir Henry Morris-Jones, M.D., Liberal M.P. for Denbigh, has been appointed chairman of the Welsh Parliamentary Party.

Major Percy Cecil Parker Ingram, M.B., has been appointed a Deputy-Lieutenant for the County of Monmouth.

General Smuts has lent his support to a campaign launched by South African friends of the Soviet Union for the provision of medical aid for Russia.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Test for Urease Activity

Dr. J. F. MURPHY writes: Could any reader give me a simple and reliable test for urease activity in blood-urea estimation?

Immunization against Diphtheria

Dr. G. BAYNTON FORGE (Handley, Salisbury) writes: The articles on combined passive and active immunization against diphtheria (November 22, p. 717, and November 29, p. 759) are interesting. I wish to know if the injection of antitoxic serum with the toxoid will prevent the production of diphtheria carriers as will toxoid alone. Is six weeks' isolation for carriers sufficient? It works in closed communities, but what if these cases mixed with the unimmunized population? I have known diphtheria carriers to convey fatal diphtheria at the expiration of twelve months. In France I treated a Belgian soldier who was well into his second year as a carrier, verified by guinea-pig tests, and I left him still a carrier, but I read in the *Journal* some five years later that such cases could be quickly cured by an autogenous vaccine. The 50% increase in notifications of diphtheria in Wales in the past three months and the decline of 50% in the south-western counties for the corresponding period require explanation of the dissimilar effects of immunization. There may be other outside causes which are disregarded. A leading authority in the North considers defective drains to have no effect in spreading diphtheria; others in the South consider festering house refuse to be quite above suspicion as productive of diphtheria. I disagree. I have met many cases which could only be attributed to these two causes.

Income Tax

Partnership Liability

"Y.Z." was in partnership with "X." who left the practice and has not accounted for his share of the tax due for the last year of his partnership. He is abroad, and "Y.Z." is informed that he is liable for the whole tax.

"* In strict law this is apparently correct, as the assessment is presumably made on the firm and the partners are jointly and severally liable. In view of the hardship, however, arising in the circumstances mentioned by "Y.Z." we doubt whether the authorities would proceed to extreme measures, and advise "Y.Z." to put the facts before the Board of Inland Revenue and ask them to leave the matter in abeyance until "X." returns from service in the R.A.M.C. abroad and can be sued for his share.

LETTERS, NOTES, ETC.

Status of the Ship Surgeon

Dr. A. GARDNER writes: It has been pointed out to me by a colleague that my letter on the above subject (November 3, p. 671) is liable to be interpreted in a way that was not intended. If so, this is due to the fact that the letter as originally written was meant to cover points mentioned by two other correspondents on the subject. I should like to make it clear that, apart from the first three paragraphs, in which I am in agreement with Dr. James Prendergast, my letter is concerned with service at sea in normal times.

Over 30 members attended the annual general meeting of the Medical Golling Society at the Langham Hotel, W., with Mr. Harold Chapple in the chair. The motion that the society should carry on as usual was carried with acclamation, though it was agreed to postpone competitions for the present.

BRITISH MEDICAL JOURNAL

THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SUPPLEMENT

containing

War Notices

Notes on the Work of the Association

National Health Insurance Proceedings

General Medical Council

Postgraduate News

Meetings of Branches and Divisions

Service Appointments

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L

- Lanzbridge, Frank Fawcner, disciplinary case of, 115
LEAK, W. N.: State Medical Service, 26
LEES, D. Leonard: Domiciliary visits of public vaccinators in wartime, 15
Le Fleming, Sir Kaye, awarded Gold Medal of B.M.A., 75
Leish Division: Report of meeting, 84
Liverpool: Protection of practices scheme, 29
London: Meeting of N. London practitioners, 45
—Meeting of West Ham practitioners, 111
LYTH, J. C.: Doctors at first-aid posts, 72

M

- MCCLOSKEY, John A.: Medical certificates, 20
MCINNES, J. M.: State Medical Service, 63
MCKENZIE, E. K.: State Medical Service, 5
MACWILLIAM, E. U.: State Medical Service, 31—
Medicine, politics, and economics, 67
MILCOLMSON, Madeline and E. W.: Medical officer's conscientious objection, 92
MARNER, John J.: Medical certificates, 20
MARSH, Charles A.: Medical officer's conscientious objection, 92
MATTHEWS, Sidney: District medical officers' duties, 92
Medical care of population, 8
—certificates, 7, 20, 27, 34, 37
—planning: And State Medical Service, 35, 57; Discussion on, 49
—profession: Future of, 68—Organized representation: appeal for union, 69—National register, 85—"Present discontent," 92, 112—Remedying the "worst abuses," 111
—records as waste paper, 57
—service, national post-war, 10
Medicine: And finance after the war, 1—To-day and to-morrow, 1, 55—Politics and economics, 67
—preventive, health and, 73
Mental defect and Services, 94
Midwifery of general practice (R. A. Rateliff), 39
Milk, certificate for, 17, 33, 41, 73, 82, 104, 108
Mobile surgeries for bombed areas, 83
Mombasa Division: Report of meeting, 93
MONCRIEFF, L. A.: Decision on eligibility for further benefit, 14
MONRO, I. C.: State Medical Service, 78
MONTUSCH, E.: Group practice or bureaucratic medicine? 41
MOORE, J. H.: Future of medical profession, 68
—J. H. E.: State Medical Service, 26
Motor car: Repairs, 20, 34—Protection against frost, 108
MUSKO, T. A.: Mental defect, 94
Mythical maladies, 74

N

- NATSH, 1 Charlotte: Medical officer's conscientious objection, 92
National Eye Service: Income limits, 97
—War Formulary, 89
NEUSTATTER, W. Lindesay: State Medical Service, 56
New Zealand: Socialization of medical profession, 95
NIXON, J. A.: Chest wounds, 8—Gas casualties, 57
North of England Branch: Report of meetings, 8, 94, 99

O

- O'CONNOR, Donald: Payment of deputies and assistants, 68
O'DRISCOLL, Florence Joseph, disciplinary case of, 115
O'Leary, Jerome Thaddeus, disciplinary case of, 115
Ophthalmic surgeons, 44
Orr, H. Campbell: Medical officer's conscientious objection, 86
O'SULLIVAN, E. J.: State Medical Service, 59

OUTHWAITE, James E.: Capitation fee, 31
Oxford Division: Report of meeting, 58

P

- Partnerships, medical, in wartime, 110
PEARCE, J. Cuthbert: Panel doctor reports, 37
Petrol: For doctors, 5, 8, 18, 34, 40—For substitute cars, 81
POOLE, W. J.: State Medical Service, 13
PORTER, Frederick: State Medical Service, 13
Post Office medical officers' capitation fee, 80
Practices, capital value of, 7
—protection of, 33, 95—Liverpool scheme, 29
—"Present discontent," 92, 112
PRIDHAM, J. A.: Publicity for Insurance Acts Committee, 37
Private fees, increase in, 77
Public Medical Service: New income limit, 77
Purcell, Daniel Joseph, disciplinary case of, 115
PYBUS, S. Terry: Capitation fee, 98; correction, 116

R

- RATCHEL, R. A.: Midwifery of general practice, 39
Regional Medical Service: Analysis of 2,500 panel patients examined (J. F. Dwyer), 3
ROBINSON, Henry: Life assurance policies, immediate prospects, 14
ROT, C. Watney: State Medical Service, 89
—George C. F.: Equipment of air-raid "incident" doctors, 47
ROSE, F. M.: Inadequacy of capitation fee, 28
RYL, J. A.: Air-raid casualties, 85

S

- SAXTON, R. S.: State Medical Service, 27
SERVICES:
Air Force: R.A.P.M.S., 6, 14, 18, 38, 48, 58, 70, 74, 80, 83, 90, 94, 100, 112
Army:
A.M.S., 6, 11, 58, 73, 80, 83, 88, 90, 96, 99, 112
Burma Reserve of Officers, 48
Land Forces, Emergency Commissions, 6, 14, 18, 32, 38, 48, 58, 70, 74, 80, 83, 88, 90, 100
Militia, 48
R.A.M.C., 6, 14, 18, 32, 38, 48, 58, 70, 73, 80, 83, 88, 90, 94, 96, 99, 112
Regular Army Reserve of Officers, 32, 38, 58, 88, 96
Territorial Army, 6, 18, 32, 48, 58, 70, 73, 80, 88, 94, 99, 112
Colonial Medical Service, 18, 48, 58, 94, 100, 112
Deferred military service, 39
Home Guard: Course for medical officers, 29, 35, 48, 71, 104—Equipment at first-aid posts, 69—Rank of battalion medical officer, 104
Indian Medical Service, 6, 18, 48, 70, 74, 94, 100, 112
Mental defect and, 94
Navy: R.N.M.S., 6, 14, 18, 31, 33, 48, 58, 70, 73, 80, 83, 88, 90, 94, 96, 99, 112
Recruits, radiological examination of, 25
South African Medical Corps, 90
Students, medical, military training of, 44
Women, recruitment of, by War Office, 15

- SHEARLTON, R. P. W.: State Medical Service, 67
SHAW, James: Domiciliary visits of public vaccinators, 31
SHERRIDAN, E. L.: Planning for dental services, 25
Shumman, Harry Lee, disciplinary case of, 106
Shropshire and Mid-Wales Branch: Report of meeting, 90
SIMPSON, R. Gordon: Extension of health insurance, 43
STAYER, Robert: Panel doctor's advocates, 116
Society, Paddington Medical, Medicine to-morrow, 55
SOMERSET, W. R.: Medical certificates, 7

- Spackman, Eric Dickens, disciplinary case of, 114
Staffordshire, North, Division: Report of meeting, 99
STANDLEY, D. W.: Equipment of Home Guard first-aid posts, 69
STANLEY-JONES, D.: Capitation fee, 46
State Medical Service, 4, 7, 13, 15, 26, 31, 38, 42, 43, 47, 55, 67, 73, 78, 87, 89, 99—Institution taxation, 5—Medical planning and, 35, 57—An analogy, 36—Group practice or bureaucratic medicine? 41—Or socialized medicine? 41—General practice within, 45—Discussions on, 42, 58—What is not wanted, 56—Health and preventive medicine, 73
STEELE, Russell: State Medical Service, 63
STRANGE, E. H.: Certificates for change of work, 111
Students, medical, military training of, 44
Suffolk Division: Report of meeting, 99
Sussex, West, Division: Report of meeting, 74
SWAN, W. A. M.: The J.D., 57
Swansea Division: Gas casualties, 57—Air-raid casualties, 85
SWINDRIS, S. W.: Medical certificates, 27

T

- TREE, M.: "Present discontent," 92
TRENCH, John H.: "Pure despotism," 47
TRIDEMAN, R. S.: State Medical Service, 94
Tuberculosis: Notification of new cases, 91
TURTON, Philip: State Medical Service, 27

U

- Unemployment insurance and salaried hospital appointments, 5
United Provinces Branch: Report of meeting, 44

V

- Vaccinators, public, domiciliary visits of, 7, 13, 20, 31, 47

W

- Wales, South-West, Division: Air-raid casualties, 85
WAR:
Biological aspects of, 99
Committee, Central Medical War: War notices, 12, 15, 71, 85, 113
Conscientious objection: Borough Council's action, 77
Drugs, economy in, 91
Emergency Hospital Scheme: Accommodation and fees for paying patients, 19
—Medical Service, Class III practitioners, 9—Terms of service, 18—Radiologist's report, 71
Invasion, doctors and, 18, 29
Medical partnerships during, 110
National Register of medical personnel, 45
War and war service inquiries: Special medical certificates, 12

- WATSON, E. G.: "Liability" for health insurance, 79
West Ham: Meeting of practitioners, 111
Williams, Eric Dlewellyn, disciplinary case of, 115
WOLFE, L. S.: Bridging the gap, 108
Work, change of, certificates for, 111
Wray, S.: Change in health insurance criteria, 43—Remedying the "worst abuses," 111
WRIGHT, R. D. B.: Medical planning and State Medical Service, 57

Y

- Young John Mackay, disciplinary case of, 115

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY JULY 5 1941

Correspondence

Medicine and Finance after the War

SIR,—It is significant that of the eight letters in the *Supplement* of June 14 no fewer than seven—all important and well informed—deal with subjects which are engaging our attention, not because the subjects themselves present any difficulties, but because they are matters on which the "dead hand of finance" has cast its blight. Note the titles—"Increase in Private Fees," "Increased Health Insurance Benefits," "State Medical Service," "Free Choice of Doctors."

Every one of the writers, whether he knows it or not, is anxious to obtain (1) relief from economic distress or worry; (2) a medical service unhampered by economic limitations. To attempt to obtain this happy state thousands of medical men all over the country have thought, spoken, argued, written, formed committees, framed resolutions, and devised plans. They have spent an enormous amount of time, and mental and physical energy, in the past months "trying to arrive at a solution." And always they have come up against opposition of one sort and another which has been called "personal ambition," "Fascism," "an inopportune time," or some equally high-sounding phrase. A few moments' honest thought will reveal that each of these objections or barriers is merely a cloak for lack of money. The scheme is impracticable because we "cannot afford it." Mr. So-and-So opposes it because he fears "it will affect his income." A medical analogy is that of sciatica or sciatic neuritis. "Sciatica" is a descriptive term, a symptom. There is always a cause for which we have to seek. The causes are legion. The multifarious symptoms of "lack of money," on the other hand, are due to one and only one cause—*lack of money*. Once this lack is righted all schemes can be put into action at once and fully.

The lack of money is an artificial thing, as we all know now. Prior to this "war" the country could not find two or three millions pounds to put agriculture right. Now we can conjure up fourteen millions a day without any difficulty. So absurd is the situation that people have stopped saying, "Where is the money coming from?" They know. All the financial papers have explained over and over again that the Bank of England creates it. Why, at the start of London's War Weapons Week it was bluntly stated that little if any of the money subscribed it would be saved money. It would be money created for the purpose. The financial authorities have even gone so far as to say we are not asked to save money because the country needs it—only because they want us to stop spending.

The lack of money is selective whether in war or in peace. In wartime ordinary consumption must be cut, so it is right that the people—the consumers—should have less. But in peacetime lack of purchasing power by the consumer is a sheer anachronism. If they cannot purchase why bother to produce for purchase? It is lack of money by the consumer which is the flaw in the orthodox (namely, old-fashioned) financial system. It is this lack which is hindering medical development—which makes the time-wasting and energy-wasting medical planning schemes necessary.

Away with all this waste. Let us get back to first principles. Let us demand a sensible financial system. Let us devote all our energies to this and our problems can be solved at once. It will be said—and justly—that the selfishness of some people may jeopardize the schemes even then. Quite true. But the selfishness of a few people who control the Bank of England is sabotaging all schemes at present, including the war effort, as we see in "Treasury's Dead Hand is slowing down War Effort" in a national daily of June 3. It was

said by Edward Hulton in *Picture Post*: "Most of us accept that 'money' is but counters. . . . It is about time we began from the Treasury downwards to act on that belief."—I am, etc.,

Manchester, June 17.

W. SAYLE CREER.

Medicine To-day and To-morrow

SIR,—May I offer the following reflections on recent correspondence in the *Supplement*.

After ten years' struggle against the limitations and irritations of suburban general practice as it is conducted to-day I, like most of my colleagues and contemporaries, am all too often conscious of a sense of dissatisfaction and frustration. Many of us feel more and more that we are not getting a fair deal financially, and that much of our time, training, and skill is wasted; in fact there is little to encourage a young practitioner to live up to the high ideals with which he first embarks on his profession.

A properly organized national medical service would do a great deal towards the building of a very much better and healthier nation when this nightmare of war is over, but a State Medical Service run by civil servants will, if our present experience is any guide, lead only to still more widespread dissatisfaction among the profession. No group of men can be expected to give of their best while they labour under a sense of grievance and feel that they are unfairly treated, and the end-result would be a steady decline in our standards, and we should in time cease to be a "learned profession"; a cynic might well suggest that we are already on that downward path!

Though we can none of us hope to keep up our pre-war standards of living in such days as these, yet while aiming at a higher level of medical service so that the best men will be attracted to practise medicine and will be encouraged to give of their best, the conditions under which we serve must be satisfactory—and that must include a satisfactory economic standard. For this reason most of us will disagree with those few correspondents (is it just coincidence that they are apparently all from "reception areas" and are so perhaps not solely dependent on current professional earnings?) who deprecate any attempt to secure a fair income for the general practitioner. Actually our present net fees are less than pre-war fees if allowance is made for increased practice expenses, and even the recent increase in gross private fees does not balance the account.

As for the proposed extension of insurance benefit to a large group of "black-coated workers," if these patients, who at present pay fees which average four or five times the current capitation fee, are to be accepted at that same rate, we shall in effect be subsidizing out of our own pockets patients who are often very exacting in their demands upon us. If our representatives agree to these proposals they will be guilty of a gross betrayal of our interests, and will forfeit all claim to the confidence of general practitioners.

What we all long for is a well-organized health service in which we can all give of our best for the good of the nation's future health, and in return we ask for fair conditions and fair treatment. At present we get neither of these, but is it too much to hope for better things in the post-war future?—I am, etc.,

Coventry, June 17.

H. NORMAN GREGG.

MEDICAL PERSONNEL (PRIORITY) COMMITTEE

The Secretary of the Central Medical War Committee, Dr. G. C. Anderson, has been invited by the Minister of Health to attend the meetings of the Medical Personnel (Priority) Committee, the chairman of which is Mr. Geoffrey Shakespeare, M.P., in order that the committee may have the benefit of his advice and experience in the course of its discussions.

MORGAN - Oct. 1, - 1941. Vol. 40, Page 11420, M A M H, 1941

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY JULY 12 1941

ANALYSIS OF 2,500 PANEL PATIENTS EXAMINED UNDER THE REGIONAL MEDICAL SERVICE IN 1937-8

BY

J. F. DOW, M.D.

*Late Part-time Medical Officer, Regional Medical Service;
Staff Medical Officer, Westmorland County Council*

Up to the outbreak of war the Regional Medical Service reviewed a large number of panel patients, the object of this examination being: (1) to report on the progress or otherwise of the patient; (2) to confirm the diagnosis and perhaps assist the panel practitioner by some hint of treatment; and (3) to remove cases of malingering from the benefit list. It must be stressed that these cases were almost entirely referred by the approved society, and their selection depended on: (1) The certified cause of incapacity. A society was far more likely to refer a person if the certified cause of incapacity was stated to be a trivial one—such as dyspepsia or catarrh—than if it was a more serious ailment. (2) On the information the society had obtained from their sick visitor about the member's recovery or unwillingness for some reason to "sign off" the funds. This method of examination, while providing a check on the benefit expended, was also of value in limiting unnecessary absence from work, which may be a cause of some anxiety at the present time. It is also obvious that cases so selected cannot be a fair sample of the sickness in the district.

During the year 1937-8 statistics were kept of 2,500 consecutive cases examined at Regional Medical Centres. The area from which the patients were drawn was a northern one in which heavy engineering, industrial, and rural workers made up the majority of those examined. In all 757 men and 1,743 women were examined in the following age groups:

Age Group	Men	Women
16-25	95	474
26-35	106	451
36-45	121	337
46-55	195	243
56-65	240	233

It may be noted that while only 42% of the men were under the age of 45, no less than 72% of the women came in this category; this would seem to be of special importance in view of the large amount of female labour now employed. The occupations were as follows:

Men	Women
Labourers 276	Textile 850
Engineering 96	Domestic 146
Transport 87	Shop assistants 43
Textile 84	Clerks, typists 39
Shop assistants 36	Laundry workers 32
Ironers, etc. 33	Confectioners 13
Miners 31	Nurses 62
Clerks 24	
Various 79	

Disabilities causing Absence from Work

One of the difficulties of analysing cases of sickness in general practice is that the signs and symptoms in a large proportion are so ill defined that it is very difficult to classify them. Therefore, in the following list of disabilities the diagnosis is that which seems to me most appropriate after careful examination, and it must be admitted that another practitioner might pigeonhole them differently. Thus the class labelled "Various" includes a number of cases which might be

labelled "Debility," and which could be due to nervous depression, septic teeth, etc. The disabilities which were identified as the cause of absence from work were as follows:

Disabilities	Men		Women	
	Number	Percentage	Number	Percentage
1. Anaemia	10	1.2	226	13.0
2. Appendicitis	11	1.4	37	2.1
3. General debility	12	1.5	92	5.1
4. D.A.H.	45	5.9	42	2.4
5. Diabetes	14	1.8	13	0.7
6. Eye diseases	12	1.5	25	1.4
7. Digestive disturbance (non-malignant)	75	9.9	26	1.4
8. Graves's disease	—	—	17	1.1
9. Gynaecological conditions	—	—	48	2.7
10. Hernia	13	2.3	7	0.3
11. Hyperpiesis	37	4.8	23	1.3
12. Influenza	26	3.4	37	2.1
13. Neurasthenia	63	8.3	146	8.4
14. Chest diseases (non-tuberculous)	87	10.1	39	2.2
15. Nephritis	34	4.5	38	2.2
16. Organic nervous disease	25	3.4	31	1.7
17. Rheumatism, arthritis, etc.	85	10.1	131	7.5
18. Tuberculosis	32	4.2	76	4.3
19. Valvular disease of the heart	25	3.4	73	4.3
20. Varicose veins	3	0.4	33	1.8
21. Pregnancy	—	—	158	9.1
22. Malingering	20	2.6	115	6.6
23. Various	111	17.9	225	12.9
	757	100	1,743	100

Notes on Diseases

Anaemia.—It is at once obvious that this remains primarily a disease of women; no case was counted as one of anaemia where the haemoglobin was over 65%. Of the women with anaemia, 90% were under the age of 45 and 40% under 25; they were found specially among textile and domestic workers, and the condition was often the result of parturition. It is a curious fact that these cases were rarely accompanied by the textbook complication of gastric and duodenal ulcers, as might be expected.

Appendicitis.—There were more cases among women than among men, due, possibly, to the more common occurrence of constipation owing to sedentary work. Statistics were taken on the last 1,500 cases examined, and these showed that twenty-nine men (6%) and 117 women (11.5%) had had appendicectomy.

D.A.H.—The percentage of men suffering from this condition was twice that of women, due to more strenuous work.

Digestive Disturbances (Non-malignant).—These comprised gastric and duodenal ulcers, gastritis, etc., and they occurred seven times more often among men than among women, and were one of the three main causes of disability. The cases were distributed fairly equally among the occupations, but transport workers and labourers were especially affected. Hasty meals, heavy work, and the position of a driver in a transport vehicle can all be considered as contributing causes.

Chest Diseases (Non-tuberculous).—These again were twice as common among men as among women, and the same applied to nephritis and rheumatism. Exposure to weather will account for the preponderance of these three diseases.

Malingering.—The figures here applied to cases of genuine malingering and not to patients who had recovered from illnesses. The malingers had apparently never had any disability sufficient to prevent their working. The percentage among women was nearly three times that among men, and of the

115 women eighty-one were under the age of 35. A certain amount of this was found in persons who were in seasonal employment, but there were a considerable number who seemed to have ceased work deliberately and gone on to the panel for a holiday. These figures are undoubtedly very conservative, and, as stated, make no allowance for persons who had been ill and were reluctant to return to work.

Conclusions

It is, of course, of the utmost importance that in work for the national effort as few hours as possible should be lost. In the case of men it is clear that there is much preventable illness which is due to exposure or bad and hasty feeding. The last-named could be remedied by well-organized works canteens and the first by attention to exposure. Neurasthenia was also slightly more prevalent among men than women, and this was often due to long hours, especially in transport drivers.

As regards women, 25% of the disabilities are due to anaemia, neurasthenia, and malingering. Anaemia is certainly preventable by healthy supervision, but malingering presents a problem which may cause a serious loss of time now that women are more universally employed. With the cessation of the Regional Medical Service there can be little control, as the medical officers of industrial firms will find it very difficult to deal with such cases.

Correspondence

State Medical Service

SIR,—I have been following with great interest the correspondence in your columns for and against a State Medical Service. It is a question which has occupied my thoughts ever since I was first qualified. One or two points which I do not recollect as having been put forward as yet bear on the financial aspect from both the patient's point of view and the doctor's.

In order to provide a comprehensive service for everyone—and nothing else is worthy of consideration—much costly equipment will be required and proper facilities for using it. It is pertinent to ask where is all the capital coming from to provide this if not from the public as a corporate body—that is, the State? The finding of capital has been a bugbear to many men on starting in practice: as things are likely to be when the war is over, it is mighty difficult to see where the men with £4,000 or £5,000 available for the purchase of a practice are going to be found.

From the patient's point of view, he simply will not have the money to pay all the various specialists who may be required for the thorough investigation of his case. It is idle to pretend that any one man can now put himself forward as a proficient adviser in all illnesses and disabilities. If the patient is going to have access to proper treatment in proper surroundings whenever he is ill I, personally, cannot see how such a service can be provided except by the State.

As for free choice of doctor, I have always suspected that this slogan was raised as a special war cry by the opponents of change, the *laudatores temporis acti*. Our fathers and our grandfathers, with their impressive raiment and heavy gold watch chains, were probably in their time sufficient of a host in themselves. With the advance of medical and allied science to what it is at the present day I say, emphatically and challenging contradiction, that we of this year of grace are not: we should only be allowed to hunt in teams. That brings up the letter of Dr. Frewen Moor (*Supplement*, June 21, p. 84). May I speak a parable?

In a certain town where the doctors numbered less than twenty a scheme for the temporary amalgamation of all the practices on almost exactly the same lines as Dr. Frewen Moor suggests was considered shortly after the present war broke out. The idea was to safeguard the interests of the men who left the town on Service, to prevent the "pinching" of patients, and to effect economies in the buying of drugs, the employment of dispensers, and the closing of redundant surgeries. All very worthy objects. Meetings were held where all were invited to express their views and make suggestions. At the outset one single-handed practitioner signified his intention of remaining outside the scheme; the remainder were all in favour of it, in proving the manifold advantages the scheme presented. Accounts were taken and found correct, a final statement was drawn up, and all that remained to be

done was the formal witnessing of signatures, when one of the younger men suddenly decided that he would do better financially by staying out, so the whole edifice collapsed—torpedoed without warning. And this no doubt will be the fate of the majority of such schemes until a certain amount of compulsion is used. And by whom can such compulsion be exercised except by public opinion—again the State?

A vested financial interest in disease should surely now be regarded as a relic of barbarism, one of the worst of the legacies left to us by our predecessors. The present chaos in medical practice is due to the triumph of the commercial spirit over the idea of service—that is, the doing of the very best possible in all circumstances for the patient. Men are encouraged to take on ever so much more work than they can possibly do so that X and Y shall not do it: is this in the true interest of the patient? Many of us must have seen chronic invalids who have become so because some kind doctor with a good bedside manner—and a keen eye for the guineas—has encouraged them to be ill and to expect the constant attendance of a doctor. These are hard words, but will any gainsay them? That the very best and keenest work can be done without any commercial urge behind it is being shown every day and has been shown for centuries by the fighting Services and by the whole-time civilian medical services.

It is this spirit of service—the doing of a job well for the sake of the job itself and not from hope of pecuniary reward—which the medical schools ought to cultivate in their students. Commercial medicine is failing—has failed. Is it not time the public were given a chance to see what a profession prompted purely by ideals of service could do? I cannot very well sign my name to this letter for reasons which need no statement, so will sign myself once again

June 24.

LEXOTUS.

SIR,—The discussion upon the subject of a State Medical Service which you have permitted until this date has been full of interest, and especially so to some of us who, between national health insurance and the Highlands and Islands of Scotland Medical Service Fund, are for practical purposes a State service. Our private practice, although not negligible, is very small. So far as I can make out, all are quite comfortable and happy, and there is considerable competition when a vacancy occurs to get among us.

It does not help this discussion to have a man in the position of Dr. Frederick Porter writing (*Supplement*, June 21, p. 84) regarding the service to which the bulk of his colleagues belong that it was "a gross interference with the freedom of the individual, and would in no way benefit the general health of the worker . . . that it would lower the prestige of medical men and the practice of medicine to a commercial undertaking . . . that it lowered the standard of medical practice . . . that free choice of doctor only existed on paper."

I have worked under national health insurance from its beginning in a wide and large rural practice. For several years I have been chairman of both Insurance Committee and Panel Committee in this area, thus holding the confidence of both the lay and the medical side of the system. Unless I am a fool, I should know something about it and the truth or otherwise of the statements made by Dr. Porter. National health insurance has in this area been a great success, and the prestige of the medical men of the county of Ross and Cromarty never higher. We can visit our folk and prescribe for them, no matter what the cost, as much as we feel it our duty to do. We have the satisfaction of knowing that we do not overburden the poor. The insured are much better off than the non-insured. We have not thus to descend, as Dr. Frederick Porter would suggest, to "commercialism." We have not, in this area, ever had one of our colleagues fined for over-prescribing, and neither my Insurance Committee nor Panel Committee would permit such a thing so long as there was not silly extravagance, which there has not so far been. Whatever the opinion of the Department of Health may be, it does not interest us, and our freedom of practice has not only not been restricted but definitely increased. We can carry out the highest traditions of medical practice, and, although we could not grumble at a little more to our capitation grant, well, seeing that half of it would have to be returned in income tax, we are not grumbling very much, and are much better off than in 1911. In this area 14 patients who wish to change have no difficulty. I have lost of late every year, and am still crying, although that they got rid of me before I got rid of them.

CORRESPONDENCE

JULY 12, 1941

I have no difficulty in getting rid of those whom I cannot get on with and who upset me in my work. To succeed in medical practice there must be absolute trust and co-operation between physician and patient. If one cannot have this, then part. I would never attend those between whom and myself there is a barrier, even temperamental. It is not the public who are always to blame; I am often to blame, but the fact remains, and we must separate. I have never seen difficulty on either side.

"State Socialism," as Dr. Porter would have us call it: his never restricted our work in any direction if we as individuals are willing to carry out work in any way we fancy and which is for the benefit of the public. I do not think I have seen a Departmental official in my area for years. I have never known a legitimate request to be refused myself or any colleague. If you want anything from the Ministry of Health or the Treasury you must produce hard proved facts. When we produced these two years ago, we got what we wanted. We had the same experience before the Lord Dewar Committee. The returns we have to keep are very simple. We are paid under our capitation grant to keep notes—a fact not realized by many—and it would help us as a profession and as individuals if we kept them better.

I hope we have a State Medical Service, and, however it is planned, it should not be beyond our capacity to work out such a service to our own and to the public's advantage. As it is, to-day we and the public are far better off than before 1911, but both have a long way to go yet to attain perfection. It does not help either of us to write what is not true, or to talk of our own progress during these last thirty years, or to talk of "commercialism" when we know that we are all just as keen as cash as the village grocer.—I am, etc.

E K MACKENZIE

Tain, June 22.

Sir,—Dr. Frederick Porter (Supplement, June 21, p. 84) says: "For a patient to change his doctor requires so much red tape that patients would refuse to use it, which is the case." Every insurance doctor knows that this is not correct. There is no red tape involved, and patients do transfer freely and sometimes very surprisingly. I may say that I am not one of those in favour of a State Medical Service.—I am, etc.

SEYMOUR W. DAVIES.

Wirral, Cheshire, June 24.

State Medical Service: An Islington Resolution

Sir,—In view of the great interest displayed by the medical profession in (1) a State Medical Service and (2) the commission of the Medical Planning Commission, it may be instructive to give you an account of a meeting of general practitioners, mainly of the Islington area, but at which several doctors from adjoining boroughs were also present. This took place at the Royal Northern Hospital on June 24, and fifty-eight doctors were present though only forty-nine are recorded through an oversight.

A scheme for a State Medical Service was discussed at length, and a plan for putting it into operation was presented to the gathering. A good deal of criticism was expressed of the Planning Commission because general practitioners were not represented on it in proportion to their numbers in the medical profession. The following resolution was passed by 35 votes to 4:

"That this meeting of North London medical men, having discussed the question of a State Medical Service, is in favour of this, considering that it will be, first, in the interest of the public, and, secondly, in the interest of the medical profession. It is resolved that the success or failure of such a scheme depends on the adequate representation of the general practitioners of the country. We therefore demand that the general practitioners should by free election appoint their members to form a majority on a planning board for the institution of a State Medical Service."

A committee was elected to implement the decisions arrived at, and to link up with practitioners in other areas who hold similar views.

We are very interested in the manifesto by the "Younger Half" on Medical Planning Research (Journal, June 25, p. 976), in that it shows the great ferment working in the minds of medical men in the country generally.—We are, etc.,

B. HYNES } Hon. Secs.
P. INWALD }

On behalf of the Practitioner Co-ordinating Committee

London, N.19, July 1.

UNEMPLOYMENT INSURANCE AND SALARIED HOSPITAL APPOINTMENTS

In the Supplement of November 9, 1940 (p. 40), reference was made to a ruling by the Ministry of Labour that unemployment insurance contributions were payable in respect of medical practitioners holding salaried appointments at voluntary hospitals where the remuneration plus emoluments was at a rate not exceeding in value £420 a year. As a result of further correspondence with the Ministry the Secretary of the British Medical Association has received the following letter dated July 1, 1941:

"I am directed to refer to previous correspondence . . . regarding the position . . . of medical practitioners holding salaried appointments at voluntary hospitals. I am to state that the position has been reviewed and the Department is now of opinion, as advised, that doctors employed by hospitals and institutions are not normally employed under conditions which constitute employment under a contract of service. It is not, therefore, necessary to make special provision for exclusion from unemployment insurance of salaried doctors employed in voluntary hospitals, similar to the provision relating to salaried doctors employed by public or local authorities. Unemployment insurance contributions are not normally payable in respect of salaried doctors employed in any hospitals or institutions, and the opinion expressed in this Department's letter of October 29, 1940, should be regarded as reversed."

PETROL FOR DOCTORS

As a result of the strong representations made by the British Medical Association to the Petroleum Department, the arrangements for supplying petrol to medical practitioners have recently been more satisfactory. Delays have been reduced by the plan of "staggering" the rationing periods, whereby applications from doctors for supplementary allowances receive the undivided attention of the authorities at times other than those fixed for the receipt of applications from the rest of the motorist community. Comparatively few complaints have recently been received at the Head Office of the Association, although the medical liaison officers are still called upon to deal with many cases of difficulty. The Association is in communication with the Petroleum Department and will do its utmost to secure a remedy of any legitimate grievance brought to its notice.

Unfortunately, however, it is necessary to emphasize again the fact that the arrangements cannot work smoothly without the fullest co-operation of the profession. Often it is found that doctors who complain are themselves solely responsible for their difficulties. They have, for example, ignored the instructions about the date of application, or they have failed to give timely warning of their need for an allowance additional to the supplementary ration received, or they have simply demanded allowances which their own mileage figures show to be excessive without making the slightest attempt to explain or justify their claims.

The Association has recently explained to the Petroleum Department that very many doctors—particularly general practitioners in reception areas—are seriously overworked and have no time to use their cars for purely private purposes or to visit their patients except by car. An assurance has been requested and received that there is no intention to withhold from doctors petrol which they need for the discharge of essential services necessarily involving the use of a car.

Protests that doctors generally should be exempted from the "cut" being made in the supplementary allowances appear to be unreasonable. It is realized, however, that, owing to the special circumstances of the times, some doctors cannot appreciably reduce their consumption even during what are normally the slack months of the year. Any doctor who genuinely needs the same allowance as he has obtained during the winter will receive it, but it is fair that he should be asked to provide satisfactory evidence in support of his claim. It should be obvious that the fact that many people are still using petrol for illegitimate purposes does not justify a doctor in expecting to receive a specified amount on demand without showing that it is required for professional use, and it should not be necessary to add that the use of any petrol beyond the basic ration for holiday journeys is both wrong and illegal.

Complaints received show that a recent circular issued by the rationing authorities made the suggestion that doctors may be required to produce a log of all their journeys. Unfortunately this suggestion was made without prior consultation with the Association, which will do everything possible to

Finally, the Secretary of the Association appeals to all practitioners to avoid troubling unnecessarily the medical liaison officers, to whose good work much of the comparative success of the scheme is due. Complaints should be addressed to the Divisional Petroleum Officer, who will consult the liaison officer when necessary. If all applicants will observe the rules and show the consideration which they expect to receive difficulties will be relatively few in number and easy to deal with.

BIRTHS, MARRIAGES, AND DEATHS

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY JULY 19 1941

Correspondence

Capital Value of Practices

SIR.—The threat of confiscation of capital values of practices should not be allowed to prejudice medical men against a State Medical Service. Certainly full payment should be made for all practices if a State Medical Service is established. But equally certainly this payment should be made by those who would have paid for the practices but for the establishment of a State service—namely, the medical men themselves.

This manifestly equitable principle could be equitably applied. A doctor having a practice worth £2,000 might get a post in the Service, worth £2,000, or less, in which case he should be credited with the balance, or more, in which case the deficit should be debited in his account in the appropriate State fund. Salaried doctors could be similarly compensated for what they lose and made to pay for what they gain by manipulation of the books of the State fund.

This State fund would doubtless be the doctors' and doctors' dependants' pension fund. Its whole inception could be no more than a vast book-keeping transaction that hardly disturbed public or private finances. Doctors without capital would no doubt prefer to have reasonable deductions made from their salaries instead of having to provide unreasonable profits for agents, banks, and insurance companies.—I am, etc.,

Llanbadach, June 29.

WILLOUGHBY CLARK.

State Medical Service

SIR.—In all the letters as between the advantages of individual practice and a State Medical Service it is assumed that there is no alternative twixt the two. As a general practitioner of approaching thirty years' standing I find myself dissatisfied with competitive practice in that so much useful experience is wasted because it is so difficult to find the necessary time to correlate useful experiences with useful study. Such leisure as the G.P. gets is tired leisure. Also I am dissatisfied because of the impossibility of achieving security of livelihood against accident, sickness, and old age. It is unsatisfactory also because we as G.P.s lack the immediate necessary help that should always be available in our surgeries and also in the inadequate equipment at hand by means of which our work can be effectively expedited. We wither for want of means. And for these reasons most of the really responsible work of the profession has already left us. We have become a sideline from which serious responsibility has already been abstracted.

There is, of course, freedom of choice for patients to choose their own doctor. But freedom of choice implies inefficiency in our ranks. What knowledge does the man in the street possess to entitle him to be the chooser among us? We should be so trained and directed that we are all efficient; the profession should do the choosing, for we have the necessary knowledge to know whom to choose.

We are advised to "stick to our last." This implies that the pursuit of general practice should be a whole-time job, which, in fact, is what competitive practice turns out to be. But work should be for life and not life for work. It is this complete subordination of the personality to the job which turns citizens into robots—timid robots at that—who are afraid to take part in social pursuits for fear of losing patients thereby.

Is there then no alternative as between the pursuit of practice by the individual with all his limitations and a State service

with its possible subordinations? Of course there is. The object of the profession is to render service, and that in the highest degree. To that end we should work together and not pull apart. This is obvious enough, but what does not seem to be sufficiently obvious is that the buying and selling of practice goodwill is the first and most serious stumbling-block to co-operative effort. Can we not first rid ourselves of this evil thing that demands of young medicos already trained and ready for service that they shall pay for the right to work? And what right has any man to sell the affections and loyalty of his patients to another doctor?

First let us cast out this evil; then we shall see clearly how to organize ourselves in such a way as to offer the public a united and efficient service.—I am, etc.,

South Norwood Hill, July 1.

J. C. JONES.

Medical Certificates

SIR.—In all the correspondence that has recently appeared about medical certificates there is one aspect of the question to which little attention has been drawn, but which is becoming a very great nuisance to the general practitioner and especially to the panel doctor. I refer to the demands made by employers for medical certificates. Most firms demand these from any workman who is absent even for the shortest period, and if the disability lasts he has to provide weekly certificates and finally a certificate of fitness. In addition, in cases of workmen's compensation, workpeople are required to provide certificates forward to the insurance companies.

All these are demanded by the employer without offer of payment, and all one can get as a rule is 6d. per certificate from the workman. I understand that the Workmen's Compensation Act specifically states that, where an employer requires a certificate for purposes of compensation, the fee must be paid by the employer. I have repeatedly tried to extract a fee from the employer, but my successes have been very few, and if I refuse to furnish a certificate it is the workman who suffers because he gets no money. Surely it is possible to prevent what is nothing more or less than wholesale exploitation of the profession by employers throughout the country.—I am, etc.,

Wolverhampton, June 23.

W. R. SOMERSET.

Domiciliary Visits of Public Vaccinators in Wartime

SIR.—There is one aspect of a public vaccinator's duties which would seem to call for a wartime modification. For the benefit of those members of the profession who are not familiar with the duties of the public vaccinator, I would mention that a practitioner holding this appointment receives periodically from the local medical officer of health a list of those infants residing within the district who have reached the age of four months, and in respect of whom the M.O.H. has not received either a certificate of successful vaccination or a formal objection to vaccination. It is then the duty of the public vaccinator to visit the homes of these infants, and to offer to vaccinate the children in the prescribed manner.

In my own case I receive each month a list of some seventy to eighty such names, and to the parents of each child is sent a notice of my intention to call on a certain day in order to offer to vaccinate the child. On an average I visit seventeen homes a week to make the prescribed offer of vaccination, covering in the process a daily average of twelve miles. Although the vaccination visits are timed so as to fit in with my ordinary round

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SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY JULY 26 1941

INSURANCE CAPITATION FEE MEETING OF INSURANCE ACTS COMMITTEE

A meeting of the Insurance Acts Committee was held on July 10, with Dr. E. A. GREGG in the chair, when the time was almost wholly taken up with the discussion of an amended offer by the Minister of Health concerning the capitation fee and with business in anticipation of the forthcoming Panel Conference, which was fixed for July 31.

The Government Actuary, Mr. G. S. W. Epps, C.B., accompanied by Mr. H. H. George of the Ministry of Health, attended the meeting in order to give the committee information on the financial provisions underlying the new National Health Insurance Bill. A report by the Government Actuary on this subject (Cmd. 6290) had been issued that same morning. Mr. Epps explained that the cost of medical benefit did not depend upon whether the contribution income in a particular year was at a certain level, or was unduly influenced by unemployment. It was not a question of balancing the income and outgo of a particular year, but of arranging an insurance scheme involving a long-term contract—actually from the ages of 16 to 65—with the building up of a reserve in the earlier years of membership which was likely to be expended in the later years. The two problems in the new Bill were the increase of benefits by 3s. and the bringing into insurance of a relatively small number of people (with incomes between £250 and £420). Mr. Epps went on to say that the total provision for fixed charges on the finance of health insurance, which at present is 17s. 6d. per member, will, as from 1942, when the new arrangements obtain, be 20s. For what is known as the medical pool the previous figure of 13s. expended in medical benefit and administration will become 14s. 6d., and the other shilling of the added half-crown will be for the administration of sickness benefit, allowing a margin for contingencies. Last year the sum for administration of sickness benefit, which should have been 4s. 6d., had risen to 4s. 10d., and in view of various charges on the societies—he mentioned in particular the making up of salaries of employees called up for national service, increased remuneration of junior staff, and A.R.P. provision—it seemed likely that next year might see a 9d. addition to the 4s. 6d., leaving with the new allocation of 1s. a small margin.

He gave some figures as to the manner in which the original allocation of 13s. for the medical pool and the new allocation of 14s. 6d. were made up. The 13s. consisted of the following items:

	s.	d.
Practitioners' capitation fee	9	0
Mileage	..	4
Drugs	..	2 11
Insurance Committees' administration	..	6
Central administration	..	3

Last year the actual expenditure on drugs represented 5s. 6d. (the price was now going up owing to the effect of the purchase tax and other causes); Insurance Committees' administration costs were 6½d., and central administration costs 1½d., the reason for this last reduction being the cessation of the regional medical service, which cessation, of course, was only a temporary war-time measure. The total additional expenditure was thus 5½d., which meant a deficit at the end of the year of £300,000. The new allocation of 14s. 6d. was as follows:

	s.	d.
Practitioners' capitation fee	9	6
Mileage	..	4½
Drugs	..	3 7
Administration (local and central)	..	10

This left a margin of a fraction over twopenny. Asked whether if the capitation fee were raised to 9s. 9d. it would make the fund insolvent, Mr. Epps said that it would be a gamble on drugs not costing more than 3s. 7d., and on the saving of a farthing on administration.

The Government Actuary was thanked for his assistance, and in reply said that, of course, he was not concerned with policy but only with calculations.

Minister's Amended Offer

After the Actuary had retired Dr. Anderson reported that following upon the deputation to the Minister on June 30 an offer going rather further than his previous one had been received—namely, an increase of the capitation fee to 9s. 9d. The Minister's undertaking to have a complete review of the adequacy of the capitation fee immediately after the war still remained. It was explained that 5½d. of the additional 9d. was taken as meeting the increased practice expenses, and the remaining 3½d. was added in respect of the new group of insured persons of higher income, giving a sum which averaged out among those new entrants at £1 1s. 1½d. for each person. It was important to bear in mind that the question of the merits of the basic capitation fee was postponed, and that the figure now offered had in it no element relating to the increased cost of living.

The Committee had before it a large number of resolutions from Panel Committees and Divisions and due attention was given to each. In a long debate it was pointed out that even though the moneys in the pool were fully allocated there were other means by which the capitation fee could be brought up to a more reasonable figure, 2s. for example, an extra halfpenny on insurance stamps, which would hardly be felt at all by the contributor; a Treasury grant, or, according to a scheme propounded by the Cheshire Panel Committee, deferred bonds. One member of the Committee was disturbed at the suggestion that the new entrants, who were of older ages, should be rated at something over a guinea a year, because he thought that that argument might be applied the other way when dependants were considered, and practitioners might be expected to take them at 6s., the fee for all insured being averaged out at 7s. 6d. On the other hand, another member found it difficult to agree that if one group of insured persons was considered to be worth £1 1s. a head, another group should be considered as worth only 6s. He thought it more likely that a higher figure would be obtained for the latter group. It was agreed that the amended offer should be reported to the Conference, but not in the form of a recommendation, and also that the Minister should be urged to reconsider his decision not to reopen at the present time the question of the basic capitation fee.

A deputation headed by Dr. Gregg subsequently waited upon the Minister, who, however, declared himself unable to go further than his amended offer of 9s. 9d., a sum arrived at without reference to increased cost of living, coupled with his undertaking to have a reassessment of the basic fee immediately after the war.

E.M.S. PAYMENT OF CLASS III PRACTITIONERS

Ministry of Health Circular 2394 of May 30 introduced special arrangements for the remuneration of Emergency Medical Service Class III practitioners specially summoned out of the normal course to a hospital at which the sessional method of payment is in operation. It was agreed between the Ministry and the Advisory Emergency Medical Service Committee that the new arrangements should take effect from March 1 last. Practitioners who may be covered by the new arrangements in respect of Emergency Medical Service work done by them between March 1 and June 1 should submit a full statement of the circumstances to the Hospital or Group Officer, as the case may be, to whom the normal claims are submitted.

A NATIONAL POST-WAR MEDICAL SERVICE

[The West Somerset Medical Club, which was inaugurated in the winter of 1939-40, appointed a special committee in the autumn of 1940 to discuss and plan a scheme of post-war medical services. The following is substantially the report of the committee and represents the views of the members of the club. The report was received at B.M.A. House on March 29.]

There is general agreement that existing medical services are unsatisfactory in many directions and that extensive, indeed sweeping, alterations are essential. That being accepted, there appear to us to be only three alternatives. One is to keep the present system but to improve it; we do not think such tinkering is an adequate remedy. The second is a whole-time State Medical Service, by which we mean a medical service centrally administered and similar in scope and type to the medical services of the Navy and the Army. While the simplicity and security of such a service are attractive features we consider its defects far outweigh its advantages. Among these are the restriction of individual incentive and the loss of independence; the serious impairment of that unfettered relationship between doctor and patient which is the basis of satisfactory treatment; individual merit cannot be accurately assessed and must be to a highly undesirable extent at the mercy of the administrative machine; medical men have their choice of locality very imperfectly under their control; any such scheme is bound to be inelastic and fail to adjust itself to local needs, which vary considerably.

The third alternative is to try and evolve a new system on regional lines, and the following scheme is the one we advocate.

Domiciliary Medical Service on a Regional Basis

First Regional Boards would be set up which would be responsible for the control of the scheme, the State being the co-ordinating and regulating authority. The regions would be based on the areas of the existing larger health authorities; we do not favour the carving out of new regional areas either founded upon a wholesale amalgamation of existing counties or grouped round the larger hospitals.

So far as possible all classes of the community would be included in contributory schemes and the basis of separate payment for work done largely eliminated. For convenience we divide the different classes of the community as follows:

A. The present group of panel patients. The existing lines of the National Health Insurance Scheme would be retained but the present financial limit would be reconsidered. The functions of the Insurance Committees would be transferred to the Regional Board, that body administering all the different groups in our scheme.

B. The dependants of insured persons, who would be included as under A. For this class we suggest added contributions from the employed head of the family, an increased one from the State, and probably a subsidy from the funds of the Regional Board.

C. Other persons and their dependants of similar financial position to those in A and B but now uninsured. They would be included in the compulsory scheme financed on the lines of B.

D. Those patients who at present come under the Poor Law. Their medical care cannot be provided under a contributory scheme; it should be paid for by the responsible authority either by a fee per attendance or on a capitation basis and with free choice of doctor by the patient.

E. The rest of the community. They would be included in a compulsory scheme which would entitle them to free medical service. They would contribute in the form of a medical tax based on income and so to payment on a sliding scale, the money going to the Regional Board. This tax would only vary up to a fixed higher income limit; all above that limit would be equally assessed according to family. The remuneration to the doctors, while still on a capitation basis, would be considerably higher than for persons in Classes A, B, and C.

It is intended that the yield of the medical tax, while not conspicuously larger than the amount which might fall upon an individual householder in any year for medical care, should be materially greater than is adequate to supply the various medical services to the classes which contribute to it. In effect, therefore, the better-off classes would be helping to finance the groups below the health insurance limit. This is an inevitable feature of any scheme, including a State Medical Service; indeed, apart from actual State contributions financed from the nation, the higher fees now charged to wealthier patients are made necessary by the inadequate payments obtained from poorer patients.

Services Available to Patients

Since a complete medical service is our aim we consider, as a general principle, that the various auxiliary services necessary for adequate diagnosis and treatment should be part of the medical benefit given to the patient without special charge. Under existing panel contracts the services to be rendered are defined as "all proper and necessary medical services, other than those involving the application of special skill and experience of a degree or kind which general practitioners as a class cannot reasonably be expected to possess." This is a reasonable definition, although somewhat lacking in definiteness. Many individual practitioners will be able and willing to carry out work beyond these limitations and they should be encouraged to do so, subject to their being able to satisfy the Regional Board that they possess the necessary skill and experience. Such services would be the subject of extra remuneration. We look to men in this category to furnish some of the consultants of the future, and regard it as imperative that facilities should be made available for them to extend their experience through hospital clinical assistantships and in similar ways.

The ancillary services to be available without extra charge should include the following:

A Consultant Service.—This would normally be held at the consultant's clinic for patients sent by their doctor. A domiciliary service would be provided at the request of the patient's doctor when it was inexpedient to arrange for non-domiciliary consultations. Since some patients prefer, and even insist upon, the consultant of their choice, such consultations would not be excluded but would be the subject of a special charge to the patient, the fees received by the consultant being paid to the Regional Board. A similar principle would operate as regards hospital or other medical services.

Hospital Services.—These would include in-patient treatment if necessary, consultant advice, and such ancillary services as pathological and x-ray examinations, etc. Thus there would no longer be any need for hospital contributory schemes.

Maternity Services.—These, involving medical attendance, would be available without extra payments. Admission to maternity beds fall into two groups: (1) For some anticipated or actual abnormality requiring treatment in a maternity hospital or home; this is a public health liability and should be a charge on the health services, who decide as to the reality of the need. (2) For other than medical reasons—for example, the safety or convenience of the pregnant woman, and in such cases the patient would pay the extra cost. Maternity benefit should, in our opinion, be retained.

Mental Health.—Preventive work under the Mental Treatment Act, 1930, would be under the Regional Board, so far as mental disorder is preventable this work would be undertaken through experts attached to the general hospitals and equipped with sufficient hospital beds for investigation and treatment.

Domiciliary Nursing Services.—If necessary, and if such services are available. We regard an extension of their scope as essential.

Laboratory Services.—Mostly at the hospitals, but also as if available.

Dental Services.—To be included, if possible, but a special has not been worked out.

Consultant Homes and Residential Centres.—If these are available. It would be made an object of the Regional Boards to establish, if desired, in co-operation with other Regional Boards, and maintain such centres.

JULY 26, 1941

The Medical Services in the Scheme

Hospital Services.—Since contributory schemes would cease, patients' contributions would not be made, and voluntary subscriptions would inevitably be curtailed, the voluntary hospitals will have very little income. They must, therefore, look to the Regional Boards to finance and to control them. Municipal and Poor Law hospitals would also come under the Regional Boards. The actual committees of management under the Boards would, however, adequately represent all the interests concerned. Control by the Regional Board would enable all the hospitals in the area to be classified into central main hospitals, each provided with a full staff of consultants and well-equipped specialist department, and ancillary hospitals with less specialized staff and equipment. Co-ordination of beds and services of all the hospitals in the area would be essential. The only out-patients seen at the hospitals, apart from urgent cases, would be those referred by medical practitioners, if possible by previous notice so that a definite appointment could be made. Since geographical considerations prohibit regional areas from being completely self-contained some intercommunication of hospital beds and consultants would be necessary.

General Practitioners.—The scheme provides for payment along several lines. (a) Capitation payments per insured person in the groups A, B, and C. (b) Capitation payment on a higher basis for persons in the group paying the medical tax. (c) Additional payments for special services, which would include payments for attendance in connexion with confinements, payments to practitioners authorized to carry out additional responsibilities, payments per visit or on a capitation basis for the Poor Law patients, and payments for vaccination and other duties to be performed in agreement with and for the public health regional authority.

Consultants.—Consultants would only be appointed if they possessed the appropriate higher qualifications attached to their specialty, and also had special experience in it. A preliminary period in general practice would be highly desirable. Consultants would be appointed by the Regional Board and would be paid in part by a retaining fee and in part for work done. They would not be debarred from private practice, although it will be obvious that the scope for this would be limited. Their services would not be restricted to their parent hospital but made available through the Regional Board to all the hospitals within the area.

General

Every medical man should have held resident appointments for at least twelve months after qualification before starting in practice. If a practitioner wished to undertake midwifery under the Regional Board he should have practical experience beyond that required by the examining authorities. In addition the Regional Board would be required to demand evidence of adequate experience, subsequent to qualification, in approved obstetric department. Facilities for postgraduate study would normally be provided by the Regional Board both for general practitioners and for consultants.

All general practitioners would be entitled to a retiring pension at age 65, or at 60 at the option of the practitioner but naturally at a lower figure, the scheme to be financed by the Regional Board on the usual basis of equal contributions from participants and the Board. Early death, voluntary retirement, etc., would be dealt with on the lines of other contributory schemes. A retiring practitioner would be entitled to a lump-sum payment for the goodwill of his practice, the sum to be assessed by the Regional Board on a basis fixed by the Ministry of Health for the country. Before receipt he would be required to give his successor adequate "introduction." The incoming practitioner would pay over the same sum to lend money to the goodwill, and the latter would have power to repay from payments incoming practitioner, the money to be repaid from payments due to him from the Board. Machinery would be necessary to ensure that the views of a doctor as to his successor, or as to a partner, received due consideration by the Regional Board.

There would be pensions for consultants in the service of the Regional Board based on the above principles. Regional Boards with available funds would be empowered and encouraged to promote research in medical problems.

Controlling Authorities: The Regional Boards

The basis of the public health areas is well defined, and apart from the absorption of small authorities would probably be retained. An efficient scheme requires close association between Regional Boards and health authorities. We therefore reject the view that Regional Board areas should be formed in conformity with existing hospitals, and suggest that their areas should correspond with what are likely to be the main public health areas of the future—that is, counties and county boroughs. This may involve some amalgamation of the smaller counties. The procedure could not well be the same for all areas, but for most of them the close liaison necessary between the Regional Boards and the health authorities could be effected by making the county medical officer of health the chief medical officer of the Board. The medical officer of health of the component county boroughs would also be closely associated with their Regional Boards.

Regional Boards would include representatives of the various local authorities in the area and of the various interests involved, such as general medical practitioners, consultants, the hospitals, and the approved societies. There should also be a direct representative of the Ministry of Health. The functions of the Boards would be wide and would include control over the panel and consultative services and over the hospital services, voluntary and municipal, but excluding the special public health institutions such as isolation hospitals, sanatoria for tuberculosis, etc. Mental hospitals would probably be excluded. Since maternity hospitals are essentially curative they should be under the Regional Boards. Other functions of the Boards would be: compliance with the general requirements of the scheme for the whole country as supervised by the Ministry of Health; general financial control of the scheme within the limits imposed by the Ministry of Health; co-operation with the public health authorities and their services.

Each Board will need its own medical inspectorate, who should invariably be drawn from men with extensive experience of general practice. They would be an essential part of the machinery to ensure that the work of the doctors was up to standard, to investigate complaints from patients, to investigate complaints from doctors, and to act as medical referees.

The Ministry of Health

While the scheme would be administered regionally, the basic factors would be the same all over the country. The Ministry of Health would settle such fundamental matters as the basis of contributions from the various insured persons, the general conditions of service of medical men, the records to be kept and the returns to be made, standards of efficiency demanded, etc. We have not attempted to deal with financial and actuarial matters, but obviously they would require special consideration, and the Ministry of Health would be intimately concerned. In particular the Ministry would be responsible for the distribution of the Exchequer contributions, a development of existing arrangements. We also appreciate that the income of Regional Boards in relationship to their commitments would be unequal, and suggest that a partial remedy for this would be varying Exchequer grants according to need. The Ministry would also serve as a Court of Appeal from Regional Boards and supervise and control their efficiency.

Relationship to the Health Services

Curative and preventive work cannot be completely separated, so a close relationship between health authorities and Regional Boards is essential as regards both the areas included and personnel. It is equally desirable that the general practitioner should be acquainted with all public health activities. While practical difficulties materially limit his active participation, the proposed scheme implies much better co-operation and a limitation of some public health work. On the other hand, it is only possible in exceptional circumstances for general practitioners to undertake the charge of infant welfare clinics or be responsible for routine school medical inspection. Their assistance in midwifery and ante-natal work would continue to be of the utmost value.

WAR NOTICE

SUPPLEMENT NO. 1 TO THE
BRITISH MEDICAL JOURNAL

WAR NOTICE Medical Officers (Lieutenant-Colonels) in Charge of Divisions

The Central Medical War Committee is asked from time to time to nominate specialists as lieutenant-colonels in charge of medical or surgical divisions. Will any specialist in medicine or surgery who desires to have his name considered for a post of this nature please communicate at once with the Secretary of the Central Medical War Committee, B.M.A. House, Tavistock Square, London, W.C.1.

WAR AND WAR SERVICE INJURIES SPECIAL MEDICAL CERTIFICATES

The following memorandum is issued by the Ministry of Health for England and Wales, the Department of Health for Scotland, and the Ministry of Labour for Northern Ireland on behalf of the Ministry of Pensions, and is a revision of the Memorandum issued in September, 1939.

Under the Personal Injuries (Emergency Provisions) Act, 1939, payments known as "injury allowances" may be made to persons who are rendered incapable of work by war injury or war service injury.

Where the injury causes serious and prolonged disablement the injury allowance will be replaced in due course by a pension payable by the Ministry of Pensions.

1. Injury Allowances

"War injury" is defined in the Act as follows: "War injuries" means physical injuries (a) caused by (i) the discharge of any missile (including liquids and gas); or (ii) the use of any weapon, explosive, or other noxious thing; or (iii) the doing of any other injurious act; either by the enemy or in combating the enemy or in repelling an imagined attack by the enemy; or (b) caused by the impact on any person or property of any enemy aircraft, or any aircraft belonging to or held by any person on behalf of or for the benefit of His Majesty or any allied power, or any part of, or anything dropped from, any such aircraft.

"War service injury" is an injury sustained by a civil defence volunteer, and is defined as: Any physical injury which the Minister of Pensions certifies to have been shown to his satisfaction to have arisen out of and in the course of the performance by the volunteer of his duties as a member of the civil defence organization to which he belonged at the time when the injury was sustained, and (except in the case of a war injury) not to have arisen out of and in the course of his employment in any other capacity. It will be seen that war service injuries, unlike war injuries, are not confined to injuries caused by the enemy or in combating the enemy, but a civil defence volunteer may of course suffer a war injury while not on duty and be entitled to an injury allowance in respect of it.

It will also be noted that both war injury and war service injury, as defined above, mean physical injuries only. Injury to the brain or injury to the eyesight as a direct result of concussion, cases of shock originating from direct exposure to bomb explosion or blast in which the resulting incapacity for work starts from the time of the incident, collapse from heart failure as a direct result of an air attack, and similar casualties may be accepted as physical injuries. The definition does not cover neurasthenia and other similar sickness in which the symptoms are induced merely by apprehension and fears occasioned by enemy activity, and a war or war service injury certificate should not be issued in respect of a patient rendered incapable of work by such an illness. Such a patient, if an insured person, would be entitled to health insurance benefits in the ordinary way.

3. Position of Insured Persons under the National Health Insurance Acts

A person insured under the N.H.I. Acts who is rendered incapable of work by reason of war injury or war service injury is entitled to sickness or disablement benefit in respect of incapacity arising from that injury for a period of twenty-six weeks from the beginning of the week in which the injury was sustained, and a N.H.I. certificate on Form Med. 40 should not be issued for any period of incapacity for which a war injury or war service injury certificate is due. After the expiration of the twenty-six weeks medical sickness or disablement benefit may be payable.

4. Administration of Injury Allowances
Injury allowances are administered by the Assistance Board, agents of the Minister of Pensions, and claims are dealt with at the Area Offices of the Assistance Board. Persons making claims for injury allowances are required to produce medical certificates of incapacity for work. In the case of war injuries the first certificate must be the special war injury certificate described in paragraph 5 below, duly completed and signed, in the case of those under treatment as in-patients of a hospital, by a responsible officer of the hospital, or in other cases, including hospital out-patients, by the medical practitioner who is giving treatment. In the case of war service injuries the certificate may be either a special war injury certificate, adapted as explained in paragraph 5, or an ordinary medical certificate of incapacity for work such as doctors customarily issue to their private patients.

5. Certificates of War Injury

There are two forms of special war injury certificate—namely, a First Incapacity Certificate, supplied to hospitals and medical practitioners, and a Continuation Incapacity Certificate, issued subsequently by the Assistance Board to a person making a claim for an injury allowance for presentation to the hospital or medical practitioner for completion.

Applications for books of First Incapacity Certificates (or for copies of this memorandum) should be made, where required for the use of hospitals, to the Ministry of Health (London, S.W.14, Department of Health for Scotland (Edinburgh), Welsh Board of Health (Cardiff), or Ministry of Labour for Northern Ireland (Belfast), as the case may be; and, where required for the use of medical practitioners, to the Local Medical War Committee for the district concerned in England or Wales, the Department of Health for Scotland in Scotland, and the Ministry of Labour for Northern Ireland in Northern Ireland.

The form of war injury certificate does not discriminate between war injuries and war service injuries, but the certificates can be used for the latter purpose by substituting the words "war service injury" for the words "war injury" where the latter occur in the certificate in cases in which the insured person claims to be a civil defence volunteer who has been injured on duty.

Attention is directed to the following notes as to the completion of war injury certificates. If the patient is an in-patient of a hospital, certificate "B" of the forms should be completed by a responsible officer of the hospital, and the official hospital stamp should be affixed. In all other cases, including hospital out-patients, certificate "A" of the forms should be completed by the medical practitioner who examines the patient. In respect of each case only one First Incapacity Certificate should be issued. In the event, however, of a certificate being alleged to have been lost a further certificate may be issued, but must be clearly marked in ink "Duplicate." Certificates should not be used at first-aid posts, or for patients admitted to casualty receiving hospitals who are transferred to other hospitals after detention for a few hours only.

6. Periodical Certification

Normally a continuation certificate will be required at weekly intervals, but in the case of an in-patient of a hospital longer periods not exceeding four weeks may be covered by one certificate, and provision is made in certificate "B" of the forms for this period to be inserted by the certifying responsible officer of the hospital.

7. First Incapacity Certificate

(a) The surname and full Christian names of the patient and as precise information as possible as to the date and place of injury must be given in the space provided for at the head of the form. This part of the form should be completed by the patient or by the doctor or the appropriate officer of the hospital or other responsible person on the patient's behalf. It is important that the information should be given clearly and legibly.

(b) The description of the injury should be inserted by the medical practitioner after his examination of the patient. It will be of considerable assistance if the injury is described, where possible, according to the following codes:

- Code
- 1. First wound.
 - 2. Injury to eye.
 - 3. Injury to arm.
 - 4. Injury to leg.
 - 5. Injury to head.
 - 6. Injury to face.
 - 7. Injury to neck.
 - 8. Injury to chest.
 - 9. Injury to back.
 - 10. Injury to hand.
 - 11. Injury to foot.
 - 12. Injury to ear.
 - 13. Injury to nose.
 - 14. Injury to mouth.
 - 15. Injury to throat.
 - 16. Injury to larynx.
 - 17. Injury to trachea.
 - 18. Injury to bronchus.
 - 19. Injury to lungs.
 - 20. Injury to heart.
 - 21. Injury to stomach.
 - 22. Injury to intestines.
 - 23. Injury to bladder.
 - 24. Injury to rectum.
 - 25. Injury to prostate.
 - 26. Injury to penis.
 - 27. Injury to testis.
 - 28. Injury to ovary.
 - 29. Injury to uterus.
 - 30. Injury to vagina.
 - 31. Injury to cervix.
 - 32. Injury to fallopian tube.
 - 33. Injury to uterus.
 - 34. Injury to ovaries.
 - 35. Injury to uterus and ovaries.
 - 36. Injury to uterus and fallopian tube.
 - 37. Injury to uterus and ovaries and fallopian tube.
 - 38. Injury to uterus and ovaries and fallopian tube and cervix.
 - 39. Injury to uterus and ovaries and fallopian tube and cervix and fallopian tube.
 - 40. Injury to uterus and ovaries and fallopian tube and cervix and fallopian tube and uterus.
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Injuries of more than one part of the body should be described as "multiple" followed by an indication of the most serious injury—for example, "multiple injuries (head)." If the injury cannot readily be described under the above code (for example, in the case of an injury to the brain as a result of direct concussion (see para. 2)) as precise a statement as possible should be given of the injury.

8. Continuation Incapacity Certificate

These forms are issued by the appropriate Area Office of the Assistance Board whose stamp is shown thereon. This certificate is also to be used for signing off—that is, to show the date when the patient ceased to be incapable of work by reason of the war or war service injury. If the war or war service injury no longer incapacitates the patient for work but the patient yet remains incapable of work by reason of some other disability a war or war service injury certificate should not be given, and any certificate of incapacity for work which may be required should be given in the ordinary form appropriate to the case. In the case of persons insured under the N.H.I. Acts the appropriate form would be Form Med. 40.

9. Persons receiving War or War Service Injury while Incapable of Work by Reason of Some Other Disability

In such cases a war or war service injury certificate should not be issued until such time as the other disability ceases to be the cause of incapacity for work and it can be certified that the continued incapacity for work is caused by the war or war service injury.

10. Non-gainfully Occupied Persons

Injury allowances and disability pensions are now available for persons who are not gainfully occupied. The scales of compensation for this class are at lower rates than those applicable to gainfully occupied persons and civil defence volunteers. Most of the persons concerned will be housewives, and the certificate of incapacity in such cases should be based on the capacity of the injured woman to perform her ordinary household work.

The Minister of Pensions is grateful to the medical profession for their generous co-operation in the working of this scheme, and in particular for issuing and signing certificates without fee.

Correspondence

State Medical Service

SIR.—The correspondence on the proposed reformation of the profession continues with unabated interest. One is struck with the change of tone in the letters, either through a process of selection by you or the germinating of new thought on the subject. The letter of Mr. W. Sayle Creer (*Supplement*, July 5, p. 1) appeared to me an attempt to approach the matter practically at the root of the trouble. At the other extreme there is the idealist attitude represented in the recent letter of "Ignotus" (*Supplement*, July 12, p. 4).

I am afraid to offer any practical suggestions since the whole problem is so complex, but I feel that a few criticisms might be helpful. In this respect I would suggest that a solution of our problem lies somewhere between the ideas presented in the two letters to which I have referred. Thus Mr. Sayle Creer must look for a change of ideals as well, or as part of the solution of the financial aspect. "Ignotus," on the other hand, must not ignore finance. The profession can scarcely be run on the lines of a medical missionary society, however idealistic this may be. "Ignotus" appears to be over-concerned with those "bedside-manner guinea-chasing doctors" that Dr. A. J. Cronin provided with a somewhat unmerited prominence. I suggest that these insignificant members be forgotten at present and a little more attention given to the problems of the 2,500-panel 5s. per visit man, complete with mortgage and family. These men constitute a large and youthful section of the profession. Their mortgages have to be paid, and they hope to be able to provide their children with an education suitable to produce, in many cases, doctors with the ideals of "Ignotus." It cannot be done without money unless the State provides free public school education for the children of doctors as part of its scheme.

Yes, on the whole, I am afraid Mr. Sayle Creer has struck the more practical note. We "mortgage-carriers," "Ignotus" must realize, have plenty of the service ideal (we have no alternative). We have also too much work, no time to hold old ladies' hands, and a somewhat bleak outlook.—I am, etc.,

W. J. POOLE, M.B., Ch.B.

Donner, July 13.

SIR.—I trust you will allow me to encroach again on your valuable space to reply in particular to the letter of Dr. E. K. Mackenzie (*Supplement*, July 12, p. 4). I do not quite understand Dr. Mackenzie's reference to my entering this discussion, as I am a general practitioner like himself, and, although not on the panel, I attend a fair number of insured persons. I am also interested in the general trend of our evolution, and as a member of the Association have surely the right to express an opinion, although not perhaps from the altitude of Dr. Mackenzie's pedestal.

I should like to state that I have no doubt that Dr. Mackenzie has given a true statement, as he sees it, of the way in which medical treatment is carried out in his particular neighbourhood, under both the Highlands and Islands Medical Service and the National Health Insurance Act. There is no one who has a higher opinion of the work done by the country practitioner than I, and I write from personal knowledge and experience. There are men in the profession who would do good work under the most trying conditions of service, and this has always been the case and ever will be. Dr. Mackenzie, however, makes the mistake of arguing from the particular to the general, as conditions existing in country districts, where the population is distributed over wide areas, cannot be compared with those in large towns and cities, where the population is more densely packed and where one meets with more diverse idiosyncrasies. Mr. Lloyd George recognized that what suited one district might not suit another, and this is ostensibly true in regard to colliery districts, where club practice proved to be indispensable, and certain urban communities where it was not.

Without entering further into the pros and cons of national health insurance, it surely must be accepted that the idea of a State Medical Service has originated from the failure of national health insurance as a health measure, or why the demand for a change? It seems irrelevant whether or not the young practitioner will be able to secure, two years after graduation, £500 or £600 a year and a motor car, or that an eight-hours working day may be instituted. Dr. Mackenzie may think "we are all just as keen on cash as the village grocer," but there are many in the profession who value service before cash. A certain amount of cash security is necessary, but I am of the opinion that a certain amount of struggle in the early years of practice is good for the young practitioner and for the patients who may seek his guidance.

To me the salient question in the discussion of this problem is: Will the establishment of a State Medical Service improve the health and general welfare of the community, irrespective of any financial or other benefit to the profession?—I am, etc.,

Edinburgh, July 15.

FREDERICK PORTER.

New Entrants to Health Insurance

SIR.—If the Insurance Acts Committee is to enter upon negotiations with the Ministry, it is very much to be hoped that they will proceed with great caution and not jump to the conclusion that insurance practitioners will necessarily be willing to accept service for non-manual workers with an income over £250 per annum. It was the income-limit pledge which had a great deal to do with inducing the profession to accept service under the Act at its inception. For the Government to break that pledge now without so much as a word to those to whom the pledge was given is monstrous. We have grown accustomed to such conduct on the Continent, but we have been led to understand that we are fighting to abolish such perfidy. If the argument is put forward that since the agreement was made the value of the pound has so diminished that £420 is akin to £250 in 1913, it may well be countered by the fact that there has been no proportionate increase in the capitation fee. Furthermore, it must not be forgotten that in agreeing to the proposed new income limit big inroads would be made into the capital value of private practice, which would prejudice our claim to compensation should a State Medical Service supervene. Let us be careful that the allurements of an immediate increase in the capitation fee does not lead us to "sell the pass."

As to the basic capitation fee for those already entitled to medical benefit, there are ample grounds for asking, if not demanding, an increase. It would be a mistake to press for a revision based upon the increased cost of living while other professions are in like case to ourselves. It would be much

C. EDE.

L. A. MONCRIEFF.

H. A. Sec. Medical Insurance Agency

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Miss Marjorie M. Dobson has been promoted to the relative rank of 1st Lieutenant.

Graves - was July 9, 1941, at 1012 N. West Street, Cleveland, Ohio. The
Funeral of Mrs. Graves was held at 1012 N. West Street, Cleveland, Ohio,
on the afternoon of July 10, 1941. The funeral was held at 1012 N. West
Street at 1012 N. West Street, July 10.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 2 1941

WAR NOTICE

Domiciliary Visits of Public Vaccinators in Wartime

The following letter has been sent by the Central Medical War Committee to the Under Secretary of State for War:

DEAR SIR,—

The Central Medical War Committee has had under consideration the commissions now being offered to women medical practitioners recruited by the War Office.

It is noted that the emergency commissions offered to women differ from those offered to men in that they relate to the Women's Forces of the Crown, whereas those of men relate to the Land Forces of the Crown. The effect of this is, in so far as it relates to women practitioners serving with the Army, that they are not officers of the R.A.M.C. but are described as employed with the R.A.M.C. Furthermore the women receive only relative rank with the cumbersome description that it involves.

The view of the Central Medical War Committee is that women recruited for the duration of the war should enjoy the same rank, status, and title as are accorded to men so recruited.

The Central Medical War Committee would be grateful if the matter could be reconsidered, even if it involves modification of the Regulations made under the Emergency Powers (Defence) Act. If the creation of a women's branch of the R.A.M.C. would remove the anomalies the Central Medical War Committee would urge this course. There is involved a principle to which the medical profession attaches the greatest importance.

Yours faithfully,

(Sgd.) G. C. ANDERSON,

Secretary.

July 25, 1941.

Correspondence

Domiciliary Visits of Public Vaccinators in Wartime

SIR,—I am in agreement with the views of "Public Vaccinator" in his letter (*Supplement*, July 19, p. 9), but I do not think his proposal goes nearly far enough. The fact that about half the parents ignore his notice of intention to visit by being out when he calls makes me very dubious that they would take any more notice of his suggested card. While I have far fewer vaccinations to perform than he has, the majority have to be done at isolated farms and cottages, which usually means a special journey and often walking—an unjustifiable waste of time in wartime in a reception area.

As only about 60% of children are vaccinated in this district the Vaccination Acts are virtually a dead letter, and should, for the duration of the war, either be suspended or the onus placed on the parent to get the child vaccinated. This could be done either by the public vaccinator holding a clinic once a week at some convenient centre or by requiring the parent to bring the child to the surgery of the public vaccinator. If the country is short of petrol, as presumably it is, there is no possible justification for wasting it on domiciliary visits. I sincerely hope that the Association will take the matter up with the Ministry.—I am, etc.,

BRECON, July 19.

D. LEONARD LEES.

Capitation Fee

SIR,—The following resolution was passed with acclamation at a recent meeting held in Birmingham:

"The Local Medical and Panel Committees of Birmingham regard the increase on the capitation fee offered by the Government which now is to include non-manual and manual workers who are receiving a wage up to £420 per annum as wholly inadequate, and urge the Insurance Acts Committee to make strong representation to the

Minister of Health on that point, employing a legal expert outside the profession for the proper presentation of the case."

Many of the panel doctors in Birmingham consider we have been let down by our representatives on the Insurance Acts Committee, and ask why we are now only getting 9s. when in 1920 Dr. [now Lord] Addison, then Minister of Health, raised it to 11s. In 1921 Joynson Hicks made the absurd offer of 8s. 6d. for three years or 8s. for five years. Arbitration was demanded; the Minister of Health gave way under the threat of 98% of the profession resigning. A sad mess was made of the presentation of the case and the arbitrators only granted 9s. Dr. Addison knew the difficulties of the medical profession. He was a real friend of his medical colleagues, as my many interviews with him proved. I trust a bolder front will now be taken. The very least we should accept must be 11s., which, in the opinion of most panel doctors, is quite inadequate.—I am, etc.,

Birmingham, July 21.

F. A. L. BURGES.

New Entrants to Health Insurance

SIR,—The medical staff of the Falmouth Hospital have instructed me to send you a copy of a letter we have sent to the Medical Secretary of the B.M.A. We would be grateful if you could publish it, as we feel that it is a matter for the profession as a whole and that immediate action is necessary.

"The National Health Insurance Practitioners in the Falmouth and Penryn areas have instructed me to address to you their united concern at the proposal to increase the income limit in respect of national health insurance to £420 per annum. They feel that the present capitation rate, always too low, should already have been substantially increased to meet the obviously increased costs incurred in carrying on general practice in wartime, and when large numbers of the fit members of our panels have been removed from our lists owing to war service. This new proposal amounts frankly to the confiscation of part of our private practice without compensation, and unless the capitation rate for such persons is based at a much higher rate we are going to be financially worse off as regards both our capital and our income.

We look to you to safeguard our interests, and to beg for your assurance that you will fight on our behalf for a just settlement."

—I am, etc.,

R. A. CAMERON, M.B., Ch.B.

Hon. Sec. Medical Staff, Falmouth,
and District Hospital.

Falmouth, July 4.

State Medical Service

SIR,—“Let us clear our minds of cant, Sir,” said Dr. Johnson as a prelude to one of his verbal cudgellings of some unfortunate. And let us do the same thing in regard to this matter of a State Medical Service. Some of your correspondents lead one to think that the good of the patient is all that occupies their minds. If our Hippocratic Oath and the “other fellow” round the corner do not stimulate us to the proper amount of effort on behalf of our patients nothing else will. We want to think a little more about our own interests for a change, and not be afraid to do so. Our patients are “always with us,” and those whom we attend under some form of contract see to it that they get all, and often more than, they are entitled to. Who will look after our interests if we don’t ourselves? Politicians, for some reason, don’t love us. Whoever says a good word for us in Parliament unless he be a medical member? Every Minister of Health rebuts our just claim for an increased capitation fee and has done so for years.

As a profession we are hopeless in the matter of co-operation. In every district we are the sport and plaything of every dishonest person who likes to go round sampling us all in turn and paying none. Yet we won’t combine to rout the common enemy. Many doctors have no idea what an arduous business some of their profession have to make a living. They think

G. LLEWELLYN DAVIES.

Last, but not least, in any State Medical Service there will have to be a carefully chosen body of administrators (qualified men, of course, whose duties would be numerous and difficult. They would have to control and distribute according to the needs of the populace all members of such a State service; maintain medical discipline; adjudicate in all cases of dispute, both between doctors themselves and between doctors and patients;

S. H. FAIRBANKS,
Lieut.-Colonel, 10th R. A. M. C.

Individual Subscriptions

- [illegible]

deceased); J. P. Campbell, A. Gordon, H. Barbauld, E. Firth, R. B. Kennedy, J. C. Teasdale, S. Littlewood, C. W. Preston Hillary, J. H. Cox, J. D. Procter, S. B. Benton, C. Courts Wood, A. D. Frazer, L. O. Taylor, P. Kinmonth, W. Thompson, L. H. Bartram, Colonel G. H. Richard, Dr. C. Banks, Mr. S. A. S. Maken, Dr. Morton, D. C. Bates, W. S. Whimster, H. Johnston, D. Corrigan, Accidents, the Nottingham Public Medical Service.

183 104.—Bristol Medico-Chirurgical Society—per Mr. A. E. Hes.

D 251 & 7d.—Practitioners in Sheffield Division area—per Dr. N. Nunn:
Dr. F. N. Nunn £25 (Dead donation); Dr. H. Brown £10 10s.; Dr. L. Ward Kay
£10 10s.; Dr. J. Mackinnon and R. A. Stark £10 10s.; Dr. D. Adams £5 5s.;
Dr. E. J. Brks £5 s.; Mr. H. Calzer £5 5s.; Dr. J. Clark £5 5s.; Dr. B. Graham
£5 5s.; Drs. P. N. Grinling and H. C. Lawson £5 5s.; Dr. L. Mackenzie £5 5s.;
Dr. P. McElligott £5 5s.; Dr. J. Rennie £5 5s.; Dr. M. Reshtrook £5 5s.;
Dr. J. P. Thomson £5 5s.; Dr. J. Jordan Coleman £5 s.; Dr. C. O. Hudson
Dr. W. F. Skinner £5 s.; Dr. A. Young £5 s.; Dr. G. S. Farnham £5 s.; Dr. Blyth
£5 s.; Dr. J. W. Forster £5 s.; Dr. J. Gilmore £3 s.; Dr. J. Mackenzie £3 s.;
Dr. A. L. Barnett £2 2s.; Dr. G. F. Bradbury £2 2s.;
Dr. M. J. Ceary £2 2s.; Dr. S. K. Panniker £2 2s.; Dr. G. W. Rippon £2 2s.;
Dr. R. K. Robertson £2 2s.; Dr. H. H. Skelton £2 2s.; Dr. H. M. Turner £2 2s.;
Dr. E. K. Ryan £2 s.; Dr. K. C. Blyth £1 1s.; Dr. D. Chapman £1 1s.; Dr. H. M.
Cohen £1 1s.; Dr. H. Glynn £1 1s.; Dr. C. E. H. Hudson £1 1s.; Dr. E. W. Morris
£1 1s.; Prof. A. E. Naish £1 1s.; Dr. C. E. Pearson £1 1s.; Dr. A. T. F. O'Connell
£1 1s.; Dr. D. J. O'Sullivan £1 1s.; Dr. J. W. Wood £1 1s.; Dr. J. W. Wood £1 1s.;
Dr. J. Wrench £1 1s.; Dr. J. D. Young £1 1s.; Dr. M. G. Happey £1 1s.;
Dr. W. I. Oslove £1 s.; Dr. K. J. G. Milne 10s. 6d.; Dr. A. E. Goldie 10s.; Dr. F. H.
Waddy 10s.; Dr. D. Green £25 s.; Dr. D. Pindar £5 5s.; Dr. A. Stephen £5
5s.; Dr. G. T. Walker £5 s.; Dr. J. Adams £4 4s.; Dr. W. Donnelly £3 3s.; Drs. R. H.
and C. H. Greaves £3 3s.; Dr. M. J. Kennedy £3 3s.; Dr. C. S. O'Flynn £3 3s.;
Dr. J. F. O'Sullivan £3 s.; Dr. H. Wilbourn £3 3s.; Dr. J. G. Wood £3 3s.;
Dr. J. W. O'Hanlon £2 2s.; Dr. O'Hanlon £2 2s.; Dr. J. W. Anderson £1 10s.;
Dr. A. S. Nutt £1 1s.; Dr. S. T. Rutherford £1 1s.; Dr. D. Fletcher £1 1s. (The
sum of collection was £3 2s. 11d.)

5188 & 64.—Practitioners in Exeter Division—per Dr. J. D. Murray and
Dr. V. H. Westphal, Dr. W. A. Atchford, Dr. F. C. Baker, Dr. E. G. Battis-
combe, Dr. C. Beesley, Mr. Dykes Bower, Dr. A. A. Browning, Dr. G. Bunbury,
Dr. Nebitt Burns, Dr. R. Burns, Mrs. A. L. Candier (and donation); Colonel
E. H. Cascard, Dr. P. N. Cook, Dr. S. C. Darbyshire, Dr. T. C. Gipson, Dr. A. C.
Goodwin (and donation); Dr. R. Gray, Dr. S. Gray, Drs. Tracy Murray, and
Westoby, Dr. R. G. Wynne, Dr. A. Hollingsworth, Dr. M. M. L. Hutchinson,
Dr. J. H. Jones, Dr. J. H. Jones, Dr. J. H. Jones, Dr. J. H. Jones,
Edward Marston, Colonel R. J. Maughan, Dr. E. F. Morton, Dr. A. S. Miles,
Dr. B. Miles, Dr. B. J. Mullin, Mr. John Murray, Dr. W. A. Murray, Captain
R. S. Osborne, Dr. M. Y. Paret, Colonel C. E. Palmer, Dr. E. J. Partridge,
Dr. J. Russell, Dr. W. T. Scott, Dr. H. F. Semple, Drs. Smith, Evans, and
Gibbs, Colonel W. L. Smith, Mr. H. C. Snell, Drs. Traill, Siddebotham, and

D43 168--Reunite Division--per Dr. L. J. Barford : Mr. T. Anstey-Chave 23 ;
Dr. H. A. Baird 23 ; Squalor-Leader, H. S. Atkinson 53 ; Dr. L. B. Atwood
23 ; Dr. C. Beare 23 ; Dr. H. E. Billings 23 ; Dr. G. C. Blaney 23 ; Dr. H. W.
Bake 23 (Cnd donation) ; Dr. A. M. V. Bonahoe 23 (Cnd donation) ; Dr. C. B.
Cohen 23 ; Dr. C. S. Crichton 23 ; Mr. F. Curtis 23 2s. ; Dr. F. A. Dick 23 3s.
Cnd donation) ; Dr. L. Dulake 23 ; Dr. Nina Dulake 23 ; Dr. E. A. Dryon 23 ;
Dr. R. G. Fear 23 ; Dr. H. A. Fardon 23 ; Dr. H. J. Fardon 25 ; Dr. H. R.
Faulkner 23 ; Dr. J. Fox 23 ; Dr. H. E. Giblin 23 ; Dr. J. C. Harvey 23 3s. ; Dr. R.
W. W. Gerrard 23 ; Dr. H. E. Gilbert 23 ; Dr. J. C. Harvey 23 3s. ; Dr. R.
Hezer 23 ; Dr. R. Heber 23 ; Dr. R. W. Hodgson-Jones 23 3s. ; Dr. G. D. Laing
23 ; Mr. C. H. Laver 23 ; Dr. N. Lewis 23 ; Dr. T. Lindsay 23 ; Dr. M. M.
Muir 23 2s. ; Dr. D. Naillam 23 ; Dr. K. Muir 23 2s. ; Dr. H. W. Pearson 23
23 ; Dr. J. H. Pezz 23 ; Dr. R. R. Powell 23 ; Dr. T. R. F. Raw 23 ; Dr. D. A.
Roberts 23 ; Dr. M. A. Ross 23 ; Dr. J. Macdonald-Evans 23 ; Dr. B. B. Sayre
23 ; Dr. K. Watson 23 ; Dr. G. Whittington 23 ; Dr. C. F. Williamson 23
23 ; Dr. H. F. Wilson 23 (Cnd donation).

DIN 1a.—*Psaltriparus* in the area of Warwick and Lamington and Rugby.
Dridson 6; Dr. R. J. Cuyler; Dr. F. Clayton £2 2s.; Dr. A. Farquhar 10 10s.;
Dr. P. T. Sutcliffe 5s.; Dr. H. Ross £1 1s.; Dr. H. Hyatt 2s.; Dr. G. James
Hill 10s. 6d.; Dr. I. Fitzpatrick 1s. 1s.; Dr. C. Beale £50; Dr. A. J. G. Rame-
ley 1s. 1s.; Dr. V. J. G. Mulligan 3s. 3s.; Dr. S. D. Povey £2 2s.; Dr. W. J. S. G.
Fleming 1s. 1s.; Dr. J. G. Wardrop 5s.; Dr. H. J. Biddow 1s. 1s.; Dr. G. A.
Turkorch-Parker £2 2s.; Dr. Agnes Young 1s. 1s.; Dr. W. Trail Thomson
£10 10s.; Dr. F. D. M. Livingstone 2s. 2s.; Dr. C. H. Gregory 1s. 1s.; Dr. A.
M. G. Brown 10s. 10s.; Dr. G. M. 10s.; Dr. S. S. Monray and
McLaren 5s. 6s.; Dr. H. M. L. Crawford £10; Dr. R. J. Cuyler £2 2s. (The cost
of collection was £1 12s. 6d.)

1166 18s.—Practitioners in area of Hereford Division—per Dr. S. N. Corry
Dr. E. H. Burrows Jun. 55 5s.; Dr. O. J. C. Cotton 55 5s.; Dr. H. C. D. Miller
1s. 1d.; Dr. G. B. Adams 1s. 1d.; Dr. J. S. Clarke 5s.; Dr. S. W. Savage
1s. 1d.; Dr. James Edwards 1s. 1d.; Dr. J. S. Richardson 1s. 1d.; Dr. A. W.
Lazford 3s. 3s.; Anonymous 5s. 5s.; Dr. Vincent Smith 5s. 5s.; Dr. M. S.
Brown 55 5s.; Drs. Corry and Strange 110 10s.; Dr. H. G. Langdale-Smith
2s. 2s.; Dr. W. Hickson 2s. 2s.; Dr. W. Dryland 5s.; Dr. G. A. Betts 1s. 1s.
Dr. R. G. F. Thompson 52 2s.; Dr. R. C. H. Francis 15s.

74 17 7d.—Derby Division—per Dr. E. C. Dawson Dr. C. Kingston £3 3s.
Dr. H. L. Barker £1 2s.; Dr. E. A. Sadler £2 2s. (Cnd donation); Dr. G. Hobbes
55 5s. (Cnd donation); Dr. H. Barber £5; Dr. J. M. Robertson £3 2s. (Cnd donation);
25d M. C. Bell £5 5s.; Dr. A. M. Ramsay £1 1s.; Dr. E. L. R. Norton £1
Dr. H. L. Beckitt £2 2s.; Dr. M. Elsom £7 7s. (Cnd donation); Dr. W. H. Tunstall
Dr. E. L.; Dr. D. V. Hubble £1 1s. (Cnd donation); Dr. R. G. Cooke £2 2s.
Dr. E. L. Tunstall £2 2s. (Cnd donation); Mr. A. R. Lennie £2 2s.
Dr. B. Hlitch 10s.; Dr. R. Riddle £2 2s. (Cnd donation); Dr. G. L. H. H. H.
Dr. G. L. Meacham £2 2s.; Dr. G. E. Kidman £2s.; Dr. F. J. Stuart 10s.; Dr.
W. E. Haigh 10s.; Dr. V. J. Woodward £1 1s.; Dr. J. L. Anderson £2 2s.
Mr. W. G. Reese £1 1s.; Dr. A. R. McKail £1 1s.; Dr. A. M. MacCormick £2
Dr. H. King £1 1s.; Dr. J. B. Milton £2 2s.; Dr. S. Revels £1 1s.; Dr. R. F.
Ashley £2 2s.; Dr. J. Burns £2 2s.; Dr. A. Russell £3 3s. (The cost of
collection was £3 3s. 5d.)

671 14c.—Practitioners in Gloucester Branch—per Dr. C. D. Reavell (amount already sent \$102.25); Dr. H. Selby £2 2s.; Mr. J. S. Robinson \$10 10s.; Dr. N. S. Viner £2 2s.; Dr. H. Jackson £3 5s.; Dr. R. McIninn £2 2s.; Dr. W. M. B. Jones £2 2s.; Mr. R. Haines £2; Dr. E. B. Murrell £1 1s.; Dr. P. T. Macondall £2 2s.; Dr. R. R. Smith £2 2s.; Dr. C. Smith £3 5s.; Dr. W. Bryars £2 2s.; Dr. W. M. McFatan £2 2s.; Dr. C. Smith £2 2s.; Dr. W. A. Gifford £2 2s.; Dr. R. Shaffer £2 2s.; Dr. W. Arnott Dickson £2 2s.; Dr. A. Goldfoot £5 5s.; Dr. D. Glow £5 5s.; Dr. N. Pike £1 1s.; Dr. V. E. Colton £2 2s.; Lt.-Col. F. L. Stoddard £2 2s.; Dr. M. A. Harrison £1; Dr. L. Hughes £1 1s.; Dr. F. Stallman £2 2s.

163 5s.—Practitioners in North-East Ulster Division—per Dr. S. M. Bolton £5 5s.; Dr. E. P. Ritchie £5 5s.; Dr. J. M. Hunter £5 5s.; Mr. D. Healy £5; Dr. F. M. Boddie £1; Dr. T. Boyd £2 2s.; Dr. W. H. Ekin £1; Dr. W. A. Clarke £2 2s.; Dr. J. C. Mast Martin £10 10s.; Dr. W. Porter £5 5s.; Dr. I. S. Glagade £2 2s.

Dr. W. F. Evans £5 ; Dr. S. M. Bolton £5 5s. ; Dr. T. Adams £3 ; Dr. J. Campbell £1 ; Dr. W. H. Belford £1 1s. ; Dr. H. N. Kennedy £2 2s. ; Dr. D. Boylan £3 3s.

£30 9s.—Members of South Shields Panel Committee and practitioners in South Shields Division area—per Dr. J. I. Smith: Dr. R. M. Danks £5 5s.; Dr. A. S. Hannay £2 2s.; Dr. J. Lindsay £5 5s.; Dr. J. McHaffie £3 3s.; Dr. C. Marks £2 2s.; Dr. J. C. Norman and J. N. Swainston £5 5s.; Dr. D. F. O'Kelly £2 2s.; Dr. J. H. Phillips £2 2s.; Dr. J. I. Smith £3 3s.

£110s.—Per Dr. J. M. Johnstone, N. Staffs L.M.W.C. (amount already sent £764 13s.); Dr. M. K. Heron £2 2s.; Dr. B. Richardson £5s.; Dr. E. R. Bennion £1; Drs. F. L. Pickett and E. M. Paterson £5; Dr. E. M. Gray £3 4s.; Dr. V. R. Nicolson £2 2s.; Dr. R. J. Waugh £2 2s.; Dr. C. H. Rogers £1 1s.

£110 10s.—Practitioners in Greenwich and Deptford Division area—per Dr. W. Smith (amount already sent £17 15s.); Dr. H. C. McIlroy.

Bath Insurance Practitioners—per hon. sec., Bath Panel Committee (amount already sent £11 ls.).

£7 2s.—Practitioners in area of City of Aberdeen Division—per Dr. D. W. Berry, hon. sec. (amount already sent £142 13s.); Dr. M. Esslemont £5; Dr. M. H. Kennaway £2 2s.

Per Dr. Hollis, hon. sec., Leeds Panel Committee (amount already sent £265 5s.); Dr. M. F. Povey £5; Dr. A. J. Dunlop £2 2s.

£5 5s.—Practitioners in South-West Essex Division—per Dr. J. L. McKenzie Brown; Drs. Dykes and Voller.

Practitioners in the area of the Leigh Division—per Dr. J. H. Young (amount already sent £51 4s.): Dr. A. MacFaul.

£4 3s.—Per Dr. Mabel Ramsay, Plymouth (amount already sent £293 4s. 6d.)
Dr. S. Vosper £3 1s. (2nd donation); Dr. H. C. C. Reid £1 (10th donation),

£2 2s.—Cleveland Division—per Dr. G. H. Lowe (amount already sent £9 9s.)
Mr. F. S. Hubbersty.

£1 1s.—Practitioners in West Norfolk Division—per Mr. J. Lewin (amount already sent £154 5s.): Dr. P. G. E. Jolley.

Per Dr. P. W. Mathew, Eastbourne.

Practitioners in Outer Isles Division—per Dr. Macleod (amount already rec.
£36 14s.): Dr. S. Bartlett.

Practitioners in area of East Norfolk Division—per Dr. J. A. Eddy (amount already sent £82 8s.): Dr. V. Blake.

Local Medical and Panel Committees

£139 12s. 4d.—Cumberland.

163 2c. 3d.—Middletonian (4th donation).

£47 4s. 6d.—County of Ayr (2nd donation).

£31 13s. 6d.—Newsp. Mon.

Defence Bonds

Medical Staff, Harrow, and Wealdstone Hospital, £40.3% Defence Bonds (amount already sent £2).

The following donations have come in since the above was set in type:

Individual Subscriptions

£10 10s.—Prof. Lambert Rogers, Cardiff.

LS 54-Anonymous

12 24.—Dr. G. B. McHutchison, Johannesburg.

221.—Medical Committee of Bishop's Stortford Hospital: Drs. Coleman, Dipple, Gammie, Gimblett, Holmes, Klaber, Morns, Sharp, and Stanley.

£8 3s.—Practitioners in the area of the Cardiff Division—per Dr. F. Y. Pearson (amount already sent £363); Dr. T. Wallace £5; Dr. F. O'Regan £3 3s.

£5 5s.—Per Dr. J. M. Johnstone, N. Staffs L.M.W.C. (amount already sent £756 3s.); Dr. F. N. R. Price £3 3s.; Dr. J. M. Sheach £2 2s.

£2 2s.—Per Dr. Campbell Orr, S. Staffs L.M.W.C. (amount already sent £65 18s.); Dr. A. J. Watt.

Total: £29,690 12s. 2d. and £100 3¼% Conversion Stock, and

CERTIFICATE FOR EXTRA MILK

The Ministry of Food wishes to correct the impression, which may have been derived by some members of the medical profession, that the procedure under the Sale of Milk (Restriction) Order to enable patients suffering from certain diseases to obtain additional milk was based on advice received from the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council. The facts are that, while the diseases specified in the Order were those recommended by the Special Diets Committee, the procedure for bandling the medical certificates was designed by the Ministry itself. The arrangement by which the medical certificate passes direct from the doctor to the supplying dairyman without the intervention of the Food Office was designed to enable the extra milk to be obtained as quickly and simply as possible in the interests alike of the patient, the members of his household, and the attending doctor. The Ministry is aware that many doctors dislike the arrangement, and is discussing possible alternatives with the British Medical Association.

REGISTRATION OF DOCTORS' MAIDS

Many practitioners are experiencing difficulty in consequence of the Registration for Employment Order for women. When the scheme was first announced the Secretary of the British Medical Association approached the Ministry of Health to ascertain whether it was likely that doctors' receptionists and maids would be transferred to other duties. The Ministry's reply that the position of a registered person "will be considered in relation to the individual case, and that a person who has registered will not be considered for transfer to other work without an interview and without regard to the position which that interview discloses," was not satisfactory, but it was decided to wait until the interviewing had begun to see how the scheme was being administered. Letters now reaching the Secretary from practitioners in all parts of the country suggest that the nature and importance of the work of a doctor's maid are not fully understood by officials of Employment Exchanges. The following letter has therefore been sent to the Minister of Labour:

"I am receiving an increasing volume of correspondence from medical practitioners in all parts of the country concerning the transfer, under the Registration for Employment Order, of young women employed by medical practitioners as receptionists. In many practices the transfer of these women is causing great difficulty, and, while I do not wish to claim on behalf of the medical profession exemption for them as a group, I should like to request that individual cases should be given fuller consideration on their merits. Owing to the calling up of many medical practitioners for service with H.M. Forces the work of those who remain has proportionately increased, and the position will become still more acute as more practitioners are called up. The smooth running of a practice depends to a very large extent upon the work of the receptionist or of a maid who performs similar duties, and in the present difficult situation an experienced and efficient maid is more than ever necessary. I submit that these women are already doing work of real national importance. In some cases the officials at the Employment Exchanges have informed doctors' maids that their place must be taken by older women. This is not always practicable, and a supply of suitable older women appears not to be available. The letters I have received suggest that the nature and importance of the work of a doctor's maid or receptionist are not fully understood by the officials at many of the Employment Exchanges. The medical profession would be grateful if instructions could be issued that individual cases of doctors' maids should be given more consideration on their merits than they apparently receive at present."

E.M.S. : TERMS OF SERVICE

In January last the Ministry agreed to give not less than three months' notice of any proposed general variation in the terms of service of E.M.S. officers. In conformity with this agreement the Ministry intimated on June 12 that it did not at present contemplate any general variation in the terms of employment of Class I and Class II officers. The position of Class III officers was dealt with recently in Circular 2394.

PETROL FOR DOCTORS

The British Medical Association is still awaiting definite information from the Petroleum Department as to what will be required of medical practitioners by the proposed compulsory Order relating to logs of professional journeys. It is regretted that the promised explanation must again be postponed. A statement will be published in the Supplement when the information is available.

DOCTORS' MOVEMENTS IN AN INVASION

A number of inquiries have been received about the position of doctors seeking to visit their patients in the event of an invasion. The official attitude is that in the event of invasion it will rest with the Regional Commissioners in each Civil Defence Region to decide what arrangements are necessary to facilitate the movement on roads used by the military of private cars conveying doctors on urgent visits to their patients. All movements of vehicles other than those of the Services must be subject to the military necessities of the time and place concerned, but it is contemplated that even if doctors are unable to travel on roads required by the military it will be open to them to use other

routes for reaching those patients whom it is imperative, in their judgment, to visit. The special certificates of identity which have been provided for medical practitioners should facilitate their movement on the roads.

Medical Forces of H.M. Services
Appointments

ROYAL NAVY

Surgeon Vice-Admiral Sir P. T. Nicholls, K.C.B., has been placed on the Retired List.

ROYAL ARMY MEDICAL CORPS

Captains (Temporary Majors) M. J. Kohane and L. T. Furnivall to be Majors. Captain W. H. Harradine to be Major.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Major R. G. Addenbrooke, T.D., having attained the age limit, has relinquished his commission and retains his rank, *Superannuated for service with Edinburgh Continent, Senior Training Corps*. Captain J. G. McCrie to be Captain.

TERRITORIAL ARMY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS. Second Lieut. F. S. Fiddes from General List, Infantry, T.A.R.O., to be Lieutenant. (Submitted for notification in a Supplement to the London Gazette dated December 8, 1939.)

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

Captain E. Healey has resigned his commission. War Substantive Captain H. Hillyard has relinquished his commission on account of ill-health. Major W. B. Swete-Evans, from Temporary Commission, to be Lieutenant. Lieut. W. Halley has relinquished his commission on account of ill-health. L. C. McLachlin to be Lieutenant.

ROYAL AIR FORCE

Mrs. Jane G. E. Miller and Miss Elizabeth R. M. Wilson to be medical officers with the relative rank of Flying Officer.

ROYAL AIR FORCE VOLUNTEER RESERVE

F. Janus to be Squadron Leader. Flying Officers J. Jamieson, A. J. Nimmo, W. H. Peck, W. Schaefer, P. R. H. Grimaldi, G. N. L. Godber, and W. C. Hoffman to be War Substantive Flight Lieutenants. The commission of Flying Officer J. P. Griffiths is terminated on account of duty.

To be Flying Officers: F. K. Matheson, H. L. Campbell, A. I. Chigga-Sinclair, A. E. A. Cordin, W. K. Davies, J. K. Denham, W. F. Dickson, C. Eppel, A. H. Fairbank, M. E. Gordon, L. R. Holt, J. P. Keir, C. W. Lawson, W. I. Leslie, A. Livingston, J. McMillan, K. P. G. Meary, C. M. Miller, B. H. O'Dowd, G. C. Rae, H. L. Ross, A. A. Smith, D. Y. T. Smith.

INDIAN MEDICAL SERVICE

Lieut.-Colonel J. M. R. Hennessy has retired. Captains J. D. Grant and J. W. Bowden to be Majors.

EMERGENCY COMMISSIONS

E. Dunky to be Lieutenant.

COLONIAL MEDICAL SERVICE

H. R. Dive, M.C., M.R.C.S., L.R.C.P., D.T.M.&H., has been appointed Deputy Director of Medical Services, Malaya.

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following Final F.R.C.S. (Part I) Clinical urology at Colindale Hospital, on Thursdays, at 2.30 p.m.: August 14, 21, and 28. Also the following M.R.C.P. courses: (1) lectures at West End Hospital for Nervous Diseases, August 20 to September 12, Tuesday and Friday, at 3.30 p.m.; (2) heart diseases at Royal Chest Hospital, August 27 to September 17, Wednesday, at 3.30 p.m.; (3) chest and heart diseases at London Chest Hospital, September 2 to 26, Tuesday and Thursday, at 2 p.m.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, DUNCAN ROAD, W.-Daily, 10 a.m. to 4 p.m.; Medical Clinics, Surgical Clinics and Operations, Obstetrics and Gynaecology Clinics and Operations, Daily, 1.30 p.m. to 3.30 p.m. Demonstrations: Tues. 11 a.m., Pathology, Clin. Dr. R. L. Lister; Wed. 11.30 a.m., Clinical Pathology and reference (Medicine), Thurs. 2 p.m., Dermatology, Clin. Dr. R. L. Lister; 2 p.m., Reference and Demonstrations, Dr. Duncan White; Fri. 12.15 p.m., Clinical Pathology and reference (Surgery), 2 p.m., Clinical Pathology and reference (Obstetrics and Gynaecology), 3 p.m., Surgery, Clin. Dr. V. B. Green-Amcliffe.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL EDUCATION, 1, W. Gold Street, W.-Clinical Hospital, Thurs. 2.30 p.m., Clinical Urology.

APPOINTMENTS

EXAMINING FELLOWS: SURGERY: Dr. H. A. Gifford, M.R.C.S., L.R.C.P., at the Fitzroy Street (City) and F. M. Smith, M.R.C.S., L.R.C.P., at the Fitzroy Street (City). GENERAL: William, F.R.C.S., Clinical Director, Fitzroy Street (City) and Fitzroy Street (City). DENTAL: Dr. J. G. M.C.S., L.R.C.P., at the Fitzroy Street (City) and Fitzroy Street (City).

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 9 1941

EMERGENCY HOSPITAL SCHEME ACCOMMODATION AND FEES FOR PAYING PATIENTS

The following is the text of a circular (No. 2438) which has been sent by the Ministry of Health to all voluntary hospitals in the Emergency Hospital Scheme.

1. The Minister of Health has had under review the question of the use of private paying patients' accommodation in hospitals for the treatment of cases for whose free treatment the Minister has undertaken financial responsibility—that is, Service cases or civilian war injuries or war service injuries—and also the question of the charging of fees to any such patients for accommodation, treatment, or medical or nursing attendance in private patients' wards. As some hospitals appear to be in doubt as to their position in these respects under the Emergency Hospital Scheme, the Minister wishes to make that position clear for the future.

Treatment of Cases as Private Patients

2. It is to be emphasized that it has always been the intention of the Government that all necessary medical and hospital treatment for Service casualties and sick, for civilian war injuries, and for civilian war service injuries (Civil Defence personnel and Mercantile Marine) should be provided entirely without charge to the patient. The general arrangements made by the Ministry with all hospitals in the Scheme for the admission and treatment of the various classes of patients for whose treatment the Government accepts responsibility have been framed on that understanding.

3. The fact that this free and full service is provided cannot, of course, preclude a patient from electing not to take advantage of it, or from making his own private arrangements for treatment at his own cost as a private patient in any way he pleases (provided, in the case of Service patients, that the relevant Service regulations permit). It is essential, however, that before any patient or any responsible relative making the decision for him elects to do this, he must be clearly informed that full hospital treatment without cost is available through the Emergency Hospital Scheme, and that if he chooses not to take advantage of this and to make his own arrangements as a private patient he does so at his own expense and on his own responsibility.

4. To ensure that this is fully understood, the patient, or his responsible relative concerned, must in future be required in advance to sign a declaration in the form appended to this circular. He must have his attention particularly drawn to its contents, and the availability of free treatment must be fully explained to him.

Position of Private Patients' Accommodation in the Scheme

5. Subject to what is said below, private paying patients' accommodation in hospitals should in future be regarded as outside the Scheme. It should not be included, in making returns of bed-states or claims for bed-payments, as accommodation available for casualties. The practice of hospitals in the past has varied in this regard, and particular attention is therefore drawn to this ruling.

6. It is desirable, however, that hospitals likely to receive Service cases should have facilities for the separate accommodation of commissioned officers and those of similar ranking in the women's services. Hospitals may find it necessary also to accommodate some civilian war injuries or war service injuries separately from general casualty wards for medical reasons—that is, where separate accommodation is necessary for effective treatment of the particular case. For both these purposes a hospital may need to use rooms which are normally part of their private patients' accommodation. They may do so in the following way:

(1) In consultation with the Hospital Officer (or in the London Sectors the Group Officer) the hospital may decide to earmark for these purposes some of its existing private patients' accommodation.

(2) The accommodation so earmarked may then be regarded as available for casualties and included as such in returns and claims. The Minister will reimburse the actual cost of these beds as ascertained in the ordinary way from the "pay-bed" column on the inside of Form A.G. 136 or 138.

(3) The accommodation so earmarked must not be used for any case electing to make private arrangements for treatment at his own cost in accordance with the declaration form annexed.

(4) The accommodation so earmarked will be used for commissioned officers or similar women's rankings of the Services, or for any civilian war injury or war service injury cases for whose effective treatment accommodation separate from the general wards is found to be medically desirable; no charge, of course, of any kind may be made to such patients.

(5) With the consent of the Hospital Officer (or in the London Sectors the Group Officer) beds in the private patient accommodation so earmarked may be used from time to time, when no other private patients' accommodation is vacant, for ordinary civilian sick (as distinct from casualties or war service injuries) who want to be treated in the hospital as private patients, just as beds in the ordinary wards regarded as available for casualties can be so used in case of necessity—and the bed-state returns and claims should be adjusted in that event in the ordinary way.

(6) All remaining private patients' accommodation which is not so earmarked will, of course, be at the hospital's own disposal in the ordinary way, but will be outside the Emergency Hospital Scheme. It is this accommodation which must be used for any patients who elect to "contract out" of free treatment on the declaration form appended, and it will not rank for any reimbursement of costs by the Ministry.

Charging of Private Fees by Medical Officers in the E.M.S.

7. If a patient entitled to free treatment under the Emergency Hospital Scheme is treated in private patients' accommodation earmarked as available for casualties under the above arrangements, no question of payment by the patient of fees for medical or surgical attendance arises, any more than any question of payment for the private accommodation. These are the cases of commissioned officers or similar ranks in the women's services, or civilians transferred to that agreed accommodation because it is medically desirable for effective treatment. If, however, a patient elects to "contract out" of free treatment on the declaration form appended, and becomes a private paying patient, he is not treated in the "earmarked" accommodation and he is no longer entitled at the public expense to free medical or surgical attention in the hospital.

8. The question then arises as to how far private fees may be charged to "contracting out" patients by medical officers in the hospital who are enrolled in the Emergency Medical Service. The position of these officers is as follows. As officers enrolled as whole-time (Class I) members of the Emergency Medical Service are precluded by the terms of their contract from engaging in private practice, they are not entitled to fees from private patients. A Class II or Class III officer is not so precluded, and he may engage in private practice for fees so long as it is clearly understood that the Minister has the first call upon his services for the purposes for which he is engaged in the Emergency Medical Service.

9. The Minister will be glad if the contents of this circular are brought to the special notice of all those medical and other officers in hospitals likely to be concerned.

SERVICE CASUALTIES, INJURIES OR SICK; CIVILIAN WAR INJURIES
OR WAR SERVICE INJURIES

Declaration by patient or relative electing to arrange for private treatment.

I, (name), wish to arrange for private treatment as a paying patient for myself*/my (state relationship and name of patient) at the Hospital, as from (date).

I understand that full hospital treatment, including medical and nursing attendance, is available, if I wish, free of charge and at the expense of public funds.

I understand that my decision to arrange for private treatment means that I shall be responsible for any medical or surgical fees and accommodation and nursing costs which may be incurred by me, and that I shall have no claim against the Service Departments or the Ministry of Health in respect of any fees or costs so incurred.

Signature
Date

* Strike out whichever does not apply, according to whether the patient himself or a responsible relative is making the private arrangements.

Supplement to the
British Medical Journal

CAR REPAIRS

In recent months the British Medical Association has received many protests regarding the difficulties experienced by medical practitioners in England and Wales in obtaining essential spare parts for the repair of their cars. An inquiry on this subject was sent to the Ministry of Transport early in January, but it has proved very difficult to obtain any satisfactory reply from that Department. The Chief Medical Officer of the Ministry of Health has been good enough to investigate the position, and as a result of his inquiries the following information is now available.

The Minister of Transport considers that it is a matter of high priority in the present circumstances that the Ministry should

The Minister of Transport considers it impracticable to accord priority in the provision of spare parts and repair facilities to medical practitioners or to any other category of civilian motorists. Provision is made, however, to ensure that essential vehicles are immobilized as little as possible. A doctor who cannot obtain spare parts from his usual supplier should place an order direct with the manufacturer or his accredited agent, but if no promise of delivery can be given the doctor may apply to the Certifying Officer of the Ministry of Transport, c/o the Regional Transport Commissioner, giving full particulars of the parts required and the efforts that have been made to obtain them. The Certifying Officer will then do his best to help.

The areas of the Regional Transport Commission for England and Wales, like those of the Regional Transport Officers, are divided into three main areas.

The areas of the Regional Transport Commissioners in England and Wales, like those of the Divisional Petroleum Officers, are identical with the Civil Defence Regions, and applications to the Certifying Officer should be sent to the following addresses:

Northern
North-East
North-West
Yorkshire
London
South-East
South-West
Wales
Scotland
Northern Ireland

Northern	..	41-45, Grey Street, Newcastle-upon-Tyne, 1.
North-Eastern	..	44, The Headrow, Leeds, 1.
North Midland	..	Grosvenor House, Friar Lane, Nottingham
Eastern	..	Sussex House, Robson Street, Cambridge.
Metropolitan	..	Romney House, Tufton Street, London, S.W.1.
Southern	..	Chiltern Court, St. Peter's Avenue, Caversham, Reading.
South-Western	..	Beacon House, Queen's Road, Bristol, 8.
Wales	..	Graham Buildings, Newport Road, Cardiff.
Midland	..	York House, Gt. Charles Street, Birmingham.
North-Western	..	Arkwright House, Parsonage Gardens, Manchester, 3.
South-Eastern	..	Mount Ephraim House, Mount Ephraim, Tunbridge Wells.

Insurance Practitioners and Collective Bargaining

Str.—It must now be clear to everybody that there is something seriously at fault in our methods of collective bargaining. Time after time our negotiators meet the politicians and permanent officials. They meet them centrally; they meet them locally. They find them polite, but unimpressed and unimpress-

Under these circumstances it would seem that, so far as insurance practitioners are concerned, there is only one thing to be done. We must induce the Insurance Acts Committee to institute a thorough-going inquiry into the whole subject of collective bargaining. The expert advice of a political economist, preferably one with particular experience of trade union methods, should be obtained. The question whether it would be better to appoint our negotiators from a delegate conference rather than from a committee of representatives should be discussed passionately but carefully examined. When the report is issued insurance practitioners throughout the country should be given a full opportunity to discuss its findings and pass resolutions for future improvements in our machinery of bargaining.

Some may argue that this is a matter for the Medical Planning Commission. The problem, however, is domestic and urgent. The Commissioners would no doubt be kept in touch with the various decisions and findings as the inquiry proceeded. When their own draft or interim report is published appropriate reference to the L.A.C. inquiry would doubtless be made.—I am, etc.,
J. INGLES CAMERON,
Glasgow, July 22.

J. INGLIS CAMERON.

Domestic Visits of Public Vaccinators
 SIR.—The suggestion that all vaccinations should be done at the surgery may be possible in towns, but would not work in rural districts. Many of my patients live six miles away, and their mothers would certainly not bring them to me, with the result that they would not be vaccinated.—I am, etc.,
 South Godstone, July 27.
 H. E. GIBSON.

Medical Certificates

Str.—I, like Dr. W. R. Somerset (*Supplement*, July 19, p. 41), would welcome advice regarding medical certificates, especially under the Workmen's Compensation Act. The Act states that the workman in order to obtain compensation must give notice of the accident to his employer as soon as possible after its occurrence, and after notice the workman must, if required, submit himself for examination by a doctor provided and paid for by the employer. The employer is therefore responsible for procuring the certificate. The employer, taking the business view, adopts the least costly way and asks the patient to procure a certificate from his panel doctor; the patient is usually charged a small fee, and the doctor and employee are thus both exploited. So long as the employer gets a certificate which is accepted by the insurance company and costs him nothing he is satisfied. (I should be interested to know if the large insurance companies admit liability for a medical examination and certificate under the Act.)

In the past I have tried referring patients to the latter's

In the past I have tried referring the patient to the employer for the latter's authority to procure a medical certificate for which the employer will pay; this procedure was not successful and caused unpleasantness between doctor and patient. I would like some guidance as to the general mode of procedure. I think the trade union movement might be asked to take the matter up on behalf of workmen in general. The amount usually charged to the workman is small, but a penny is as important as a pound when a principle such as this has to be considered. If a verbal message to the employer does not fix the liability on the employer, surely the circumstances are important enough to justify a legal test case.—I am, etc.,

Liverpool, July 19.

JOHN J. MARRAS.

SIR,—Dr. W. R. Somerset (*Supplement*, July 19, p. 9) has raised in his letter the exploitation of the profession by certain employers who demand "a sight of" the panel certificate Form Med. 40 in cases of compensation. What Dr. Somerset says is very true, and it has been my pleasure recently to collect documentary evidence of this "dodge." I find it difficult to understand how it has come into practice, because the people who are putting it into effect are doing so without the slightest intention of cheating.

By accident I have recently obtained the support of the Transport and General Workers' Union on this matter, and indeed I understand the union is going to take some action. As a matter of interest I am sending a copy of Dr. Sorensen's letter to the Glasgow area secretary, Mr. Veitch. What is necessary is a cut-and-dried answer to the workers. To protect workers' interests, I am sending a copy of the letter to the Glasgow area secretary, Mr. Veitch.

What is necessary is a cut-and-dried method of certification to protect worker, employer, and doctor. Would anyone with any definite suggestion please communicate with me?

Glasgow, July 21

Glasgow, July 25

JOHN A. MURPHY.

[illegible]

Corrigendum
The heading to the War Notice in last week's Supplement to the
should have been "Women Medical Personnel Restricted by
War Office."

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 16 1941.

SPECIAL PANEL CONFERENCE

LIVELY DEBATE ON CAPITATION FEE

A special conference of representatives of Local Medical and Panel Committees was held in the Great Hall of British Medical Association House, London, on Thursday, July 31. Its purpose was to consider the Insurance Acts Committee's application for a revision of the capitation fee, and the reply of the Ministry of Health thereto; also the Government proposal to raise the national health insurance income limit for non-manual workers to £420 per annum. Almost every Panel Committee in Great Britain was represented, and there were more than seventy motions and amendments on the agenda concerning these two interrelated subjects. Dr. D. G. GREENFIELD was in the chair, and was supported by Dr. A. E. Gregg (chairman of the Insurance Acts Committee). Before the discussions began the representatives stood in silence as a token of mourning for the men and women of the medical profession who had died in the service of their country.

The CHAIRMAN expressed the hope that the Conference would not resolve itself into the voicing of familiar grievances, but would concentrate on the subject-matter of the negotiations between the Committee and the Ministry and the offer made by the latter. He proposed that the first part of the proceedings should be devoted to a general discussion, after which he would select two motions expressing opposing points of view for decision.

History of the Negotiations

Dr. GREGG said that in the ordinary course of events the Committee would have already presented its case for an increased basic capitation fee on the basis of the statistics it had acquired. In February last the Ministry was reminded that, as the Committee had previously stated in the autumn of 1939, had it not been for the war there would have been this application for a reconsideration of the capitation fee, and it was also intimated that it would shortly become necessary to ask for increased remuneration on the ground of rapidly rising costs of practice. The profound dissatisfaction of the profession with the capitation fee, now more inadequate than ever in view of the increase in living expenses, was emphasized; also the insufficiency of the Central Mileage Fund to meet the increased costs of travelling. The Ministry was told that in the opinion of the Committee the capitation fee should be increased immediately by at least 2s. The reply from Whitehall was to the effect that only 13s. per insured person was available for the provision and administration of medical benefit, and that the increase in practice expenses and mileage costs was very small in relation to the insurance part of a practice. Not satisfied with this reply, the Committee strongly pressed the question of increased costs of practice, while at the same time accepting the position that until other comparable sections of the community had their remuneration increased it would be difficult to press for an advance on the ground of increased cost of living. Evidence was given of increased practice expenses, showing a 5½d. increase per insured person.

It was at this juncture that the Committee learned of the proposal to raise the income limit for non-manual workers to £420 per annum. Eventually an offer was received of a 6d. addition to the capitation fee and an increase in the Central Mileage Fund at the rate of £22,575 per annum. At a deputation to the Minister the Committee presented three resolutions.

The first expressed dissatisfaction that the new group should have been included without consultation with the Committee as representing insurance practitioners; the second reminded the

Minister that the view had been put forward on behalf of practitioners that the most necessary extension was the inclusion of dependants; and the third asked that the matter of the basic fee should be reopened.

The Committee expressed dissatisfaction that the increase of 6d. was supposed to represent, in addition to compensation for increased costs of practice, a certain indeterminate amount to "round off" the inclusion of the new entrants. The Minister was pressed to give the figures on which his calculations were based, and as a result the Government Actuary attended the next meeting of the Committee (*Supplement*, July 26) and afforded some information. At the same time a final offer raising the fee to 9s. 9d. was received from the Minister. The deputation waited upon him a second time and urged him to reconsider his decision not to reopen the question of the basic fee. The deputation was definitely told that it was impossible for any more money to be made available beyond the 9s. 9d. It was given the firm promise that after the war the question of the capitation fee would be reopened "absolutely from the ground floor," without waiting for the report of the Government body now considering the social services generally; and finally it received the assurance that in the 9d. added to the capitation fee there was nothing which was related to the cost of living. It was for the Conference to decide whether it was prepared, in view of the national circumstances and of the Minister's undertaking, to accept the offer. ("No.") He begged them not to be hasty in rejection, but if the Conference did reject it some indication ought to be given to the Committee as to what further steps it should take.

Remuneration Never Adequate

Dr. G. DE SWIET (London) said that he represented a large section of insurance practitioners who were dissatisfied not only with the remuneration but with the way in which the whole problem had been handled in the past. The capitation fee never had been adequate, but whenever the rank and file wished to bring the matter to a head they were always met with the well-worn phrase that the time was not opportune. The present appeared to be a very opportune time for many other classes of the community to improve their incomes. In December, 1939, the London Panel Committee passed a resolution that an immediate application should be made for an increase in remuneration either basically or by way of bonus, or both. The arguments for that resolution were even more cogent to-day. They had been told that they must wait until other comparable classes got an increase, but this was to overlook the fact that insurance practitioners had always formed a special class inasmuch as, to begin with, they never had adequate remuneration. Public opinion was never mobilized on their behalf, and for this he blamed those responsible for the administration of the National Insurance Defence Trust, to which some of them had subscribed for a generation. Some of the quarter of a million collected should have been spent on paid advertisements in the daily press. What was needed was "a little less half-heartedness about it all."

Dr. L. W. HEFFERMAN (Swansea) said that the Minister appeared to have solved their problem by the simple acrobatic procedure of standing the 6d. upside down and making it 9d. His committee categorically rejected the offer of 9d. increase, but considered that the obvious financial hardships of the insurance practitioner should be lessened by the granting of a war bonus. The present was not the time to open the question of a basic capitation fee. It was the time to seek a war bonus, even though it was not higher than 9d. at first. If they agreed to an

increase of 9d. in the basic capitation fee they would be less likely ultimately to get that fee altered in their favour than if they had accepted a war bonus. In the last war they had a war bonus which was increased from time to time until the original 7s. 3d. stood at 11s. This war might last five years, income tax might go still higher, motor car tax might go up to 40s. per h.p., the price of petrol might be greatly increased. Therefore the war bonus which was first granted could be looked upon as a temporary measure, to be increased as circumstances justified it, and they were much more likely to obtain an increase in bonus than in basic fee. Once this increase in the fee was accepted, the Minister would not reopen the question during the war, to whatever extent costs might rise. He knew that the present Minister had given a guarantee of post-war reassessment. But Ministers came and Ministers went. The Insurance Acts Committee must also give an independent guarantee to practitioners that the basic capitation fee would be thrashed out after the war. He criticized the way in which the Insurance Acts Committee had "stage-managed this affair."

A REPRESENTATIVE asked at this point whether the Minister had ever promised not to increase the income limit without previous consultation with representatives of the profession, to which the CHAIRMAN replied, "I think the answer is 'No.'"

Neglect to Consult the Profession is Resented

Dr. G. E. ELKINGTON (Shropshire) said that the first business of the Conference should be to inform the Minister in definite terms that his recent action in introducing a Bill to raise the income limit of those entitled to medical benefit without first consulting with those who would have to do the work was bitterly resented. It had antagonized all insurance practitioners. What confidence could they have in the Minister's assurance that he would do this or that at a later date? It was clear that he attached but little value to the opinion of those who spoke for practitioners. He would not venture to treat any body of organized laymen in such an off-hand and derisory manner. In view of the national circumstances it would be impossible to carry their opposition to its logical conclusion of refusing service. Shropshire would prefer to go on treating those at present entitled to benefit at the current rate until the war was over rather than to compromise itself for a mere pittance.

Dr. J. G. F. HOSKEN (Gloucestershire) said that the Committee had not made it clear whether they had considered one predominant factor which had influenced the Ministry in the negotiations—namely, the phenomenal increase in the wages of munition workers. It was obvious that the Ministry was faced with a very difficult situation. When did a manual worker cease to be a manual worker? When that question arose there was only one person who could settle the matter, and that was the Minister of Health. It had been pointed out that half a million people would come in under the new income limit. But there might easily be another half million who would come in as a result of gradual increases of wages bringing them above £5 a week. No consideration seemed to have been given to new entrants coming in in that way. He regarded what had been done by the Ministry as a "bureaucratic ramp." This Bill was not what it appeared to be; it should be fought tooth and nail, even if only on the ground that it struck at practitioners on service, whose trustees the rest of them were.

Dr. R. W. RAE (Staffordshire) said that the medical services were the most important defence services of the country, and in these the general insurance practitioner was at the front continually. It was imperative in the national interest that the personnel of such a service should have fair conditions, not conditions of exploitation. Previous to the last Court of Inquiry, when an insurance doctor urged that with the increasing range of service and the generally high standard maintained some revision of the terms of service could not in elementary justice be longer delayed, a senior official—a regional medical officer—replied: "Twopence a week is what you are going to get. You must scale your work down to twopence a week, and if you want to do better work you must do it as a hobby." In the interests of the community as well as of the profession, the basic capitation fee, or rather the range of panel service and contract, should be readjusted.

A Question of Eligibility

Dr. J. C. PEARCE (Norfolk) said that this was an occasion for boldness, and he invited the Conference to consider three facts which bore on the situation. In the first place there had recently been a very exhaustive examination of the income of the whole community, including insured persons. Secondly, ever since the Insurance Act came in the Minister of Health had delegated the administration of that Act to the Approved Societies. Thirdly, there had been almost inexplicable haste on the part of the Minister to get this matter of the increased income limit settled. He suggested that there was evidence that many of the insured persons of the present day were ineligible owing to the fact that they were not within the income limit of £250. He asked them to throw their minds back to their own practices and consider the patients who had come to them twenty years ago as beginners and were now foremen and managers and so on, but were still insured persons. These in aggregate came to a very great number, and technically they were not eligible for insurance benefits. The Approved Societies were administered by excellent business men who could see the significance of this in a flash. They realized that if the evidence for this became available to the public these people would have to go, in which case the Societies would lose millions of money in weekly contributions, or else something would have to be done with the medical profession. In these circumstances the only thing was to raise the income limit, but the cards must not all be shown at once, otherwise the medical profession would have an unanswerable argument for an increased capitation fee. Therefore what was done was to suggest that the profession should become responsible for a new class of insured patients—those near the borders of the present income limit. Strings were pulled at the Ministry of Health, and the Minister, having slammed the door on the question of an increased capitation fee for practitioners, opened it again a little way and said, "We are proposing to put up the income limit, and if you agree to that we will have an investigation of the whole 'show' immediately after the war, and as a bribe I will give you an additional 6d." The Insurance Acts Committee looked coldly on this, and before the Conference was called the offer was raised to 9d., and at the same time the Bill to raise the income limit for non-manual workers was introduced into Parliament and passed its second reading. What cards did practitioners hold in their hands? First, there was the urgent need that this new legislation should carry the consent of the medical profession. Again, the Minister had his own axe to grind: he wanted popularity with the proletariat and to take another step in the direction of State medicine. What was on the other side? True, they had got their 9d., but there was nothing to prevent the Minister from taking the 9d. off again after the first quarter's pay. The Norfolk Panel Committee suggested that the Government's proposal to raise the income limit should be subject to the condition that the capitation fee was simultaneously increased to a rate of not less than 12s. per annum. This figure had been carefully thought out. One of the essential things to go for was a reapportionment of medical benefit out of contributions. As long as the total sum stood at 13s. the Government could not afford to give them more than 9s. Twelve shillings was not an unreasonable figure considering that in 1914 the fee was 7s. 3d., which would now be equivalent to 14s. 6d., but the 12s. did not represent a war bonus which could be taken off when the war was over.

Financial Position of Insurance Practitioners

Dr. GORDON WARD (Kent) said that he came from a village in which most of the coastal towns and of the large towns in the county were depopulated, and the question of 6d. and 9d. made a good deal of difference to practitioners. A number of evacuees had been treated, some of them at his including drugs, but others had no money and had to be treated free. Practitioners had had a spate of new certificates for first treatment of Home Guards, and many military cases had been referred to them—these were some of the extra patients which had been imposed upon them, and all the while they were suffering from the usual encroachments. The Minister of Health had said that he had been asked that for a long time and he had said that he would do it. That was true, and they did not want to see the government of practitioners, who, in addition to the fact that

pay for the clinics, forfeited the money which would otherwise have come to them for treating these people. The hospitals have under the E.M.S., and an E.M.S. official told him only a few days previously that it was their policy to oust the general practitioners from the hospitals. During the war much of his own private practice had been switched over to the insured part, because people who had been in comfortable circumstances were now doing quasi-Government jobs of one sort or another. The "black-coated medical profession" were harder hit than many of the people they had to attend on an insurance basis. Dr. Ward exhibited a chart showing curves from 1914 to 1941 for cost of living, capitation fee, and insurance practitioners' obligations. The work had increased by 100%, the cost of living by 100%, the fee by only 28%, and they were offered 9d. He called for the resignation of the Insurance Acts Committee (he called them "worms") unless they were prepared to fight.

Dr. P. C. MATTHEW (Cornwall) said that his committee, while dissatisfied with the basic rate, suggested that they should carry on at that rate during the war, accepting the Minister's offer of 6d. increase to cover acknowledged increases in practice expenses, but that his further offer of 3d. should not be accepted because it might prejudice their case afterwards.

A "Niggardly" Offer

Dr. A. W. WESTON (Dudley) said that on the statistical argument an offer of 9d. was quite ridiculous. If the Committee went back on its demand for 2s. it would be showing a weak hand. He also pointed out that practitioners originally had agreed to accept a certain number of people at a certain rate, and when to that class was added another the bargain was broken. The new entrants, who had previously been private patients, would expect as insured patients the same attention as in the past: they would expect a visit when they had a whitlow or a slight sore throat instead of attending at the surgery. The Government could go to Parliament and set up legislative machinery to bring into insurance persons with incomes up to £420, but they could not see their way to increase the amount available for practitioners because it meant asking Parliament for more money. He would sooner have nothing said about increased costs of practice, and regard it as a contribution to the war effort, than be put off with this niggardly amount. His committee suggested the absolute rejection of the offer of 9s. 9d. They agreed that the revision of the basic capitation fee should not be pressed at the moment.

Dr. HOWIE WOOD (Isle of Wight) said that this problem should be tackled under two heads—the first with regard to the new group of entrants, and the second, the existing insured population. With regard to the first his committee felt that the Government had not quite played the game with the medical profession in the way that this proposal had been sprung upon them without prior consultation. If this group was to be taken into National Health Insurance it meant a diminution of private practice and a suitable capitation fee should be paid for them; his committee suggested not less than £1 per head. As for the main body of insured persons, at no time did the medical profession consider that it had been adequately remunerated with a capitation fee of 9s. In his area at any rate it was felt that 9s. was an inadequate fee having regard to the amount and standard of work given by practitioners. Factors which justified increase in an upward direction were: (1) increased work, including an increased number of forms to be signed and so forth; (2) increased practice expenses; (3) the very important fact that the removals now taking place from their lists were good healthy lives, while the new entrants were many of them elderly and either required medical treatment within a few weeks of coming on to the list or were liable to do so during next winter. If this was an insurance scheme they were supposed to have some jam to go with the bread-and-butter, but the jam was leaving them. While they did not wish to hold a pistol to the head of the Government, they were entitled to expect recognition of the fact that they were doing a good job of work and had a right to an increase.

Dr. A. SMITH POOL (Glasgow) said that his committee felt that the Government offer should be refused. The Minister was taking advantage of the present emergency to introduce a new class of insured persons. This might be the thin end of the wedge of a State Medical Service based on national insurance

with all the disadvantages of lay control and bad working conditions—a twenty-four-hour service at the lowest possible remuneration. The Minister's offer of 9d. was an indication of the complete failure of the negotiating machinery to secure an increase of the basic capitation fee. By accepting 9d. they would be agreeing to the principle of the admission of new classes of insured persons without consultation with the profession. He asked them to contrast the position with that of salaried officials in industry. In the coal industry some of the larger companies had increased salaries above the £500 level by 10%. Even the British Medical Association had recommended an increase of private fees by 20%.

Dr. H. M. GOLDING (Bristol) said that Bristol was favourable to the acceptance of the Minister's offer of 9s. 9d. on conditions. One condition already accepted was that immediately after the war there should be a full inquiry into the basic fees. Bristol wanted the further condition that the award then made should be retrospective to January 1, 1942. This was on the same lines as deferred payments. It was also necessary to clarify the expression "after the war." Did it mean the signing of the armistice or the ratification of the peace treaty? A more definite term would be "at the conclusion of hostilities."

The "Worm" Turns

Dr. E. A. GREGG said that he would be the last to criticize any representative for speaking with vehemence, even though at times in that debate there had been more vehemence than thought. When he looked at the Insurance Acts Committee he was accustomed to say to himself: "These are the representatives of insurance practitioners whom those practitioners by their own choice have sent from the various localities to put forward their views." If they had chosen "worms," why had they chosen them? One speaker had said that the Insurance Acts Committee was recommending the Conference to accept something. That was entirely inaccurate; the Insurance Acts Committee had not recommended any course to the Conference. They had merely reported what they, the "worms," had succeeded in doing to the best of their modest ability. They had told the Minister of the difficulties and burdens of insurance practitioners, and while the Minister had stated that he could not as yet increase the basic fee, he had given them the assurance that the additional 9d. was not a war bonus so far as cost of living was concerned, and the Minister had been told by them that when the cost of living came to be considered in respect of any class of the community comparable with insurance practitioners "we will be there." As a result of statistical information which the Committee had accumulated—and they had figures which could not be gainsaid—the increased practice expenses at the present time represented 5½d. for each insured person. By virtue of the fact that the Minister was proposing to introduce a new class into insurance, he was offering them 3½d. more, making a capitation fee in relation to that new class which was quite considerable. He (Dr. Gregg) could not pretend that he was pleased at the way in which it had been done, and the Minister had been made acquainted with their feeling in the matter. Several members of the Conference had declared that they would not accept the offer. "Well and good, do not take it. It is for you to decide, and it is for your decision we have brought it forward to-day."

Motion for Acceptance under Protest

Dr. J. A. PRIDHAM (Dorset) moved:

That this Conference, in view of the national emergency now existing, cannot do otherwise than accept the Minister's offer of a capitation fee of 9s. 9d., but in doing so wishes to record an emphatic protest against

(1) The inadequacy of the offer, and

(2) The fact that a new group of insured persons has been admitted to insurance without previous consultation with the profession.

He said that this resolution was adopted unanimously after discussion at a well-attended meeting to which all insurance practitioners in his county had been summoned. It was not pressed upon them by the official representatives. They realized certain hard facts, the first of which was the existence

of a national emergency. The Minister had said that in making his offer he had not considered any rise in the cost of living. That was an issue they could not press at the moment. The Minister had refused to open up at the present time the question of the basic capitation fee. Was it to be supposed that if it was decided to open up that question they would get support from the rank and file? They would require a 90% response to be effective; they would not get it in Dorset, and he doubted whether the rest of the country would think differently. Would the present atmosphere be helpful to a reopening of the capitation fee question? He thought it would be the worst possible moment. At the same time Dorset believed the present offer to be inadequate, and also regretted that the new group were being admitted without previous consultation with the profession. He would also like the Committee to make sure that the Minister's promise to review the situation at the end of the war was binding on future Ministers.

The CHAIRMAN, in reply to a representative who asked why the Dorset motion had been given precedence, pointed out that seventy-four resolutions had been sent in, and these had been scrutinized by an Agenda Committee, which had selected two—the other was by Birmingham—expressing diametrically opposite points of view, so that by voting upon them the opinion of the Conference could be most conveniently crystallized.

Dr. J. KERR (Cheshire) said that his committee still adhered to a resolution it proposed at the Panel Conference in 1938 that the minimum capitation fee should be 15s. The arguments then put forward were even more cogent to-day. During the last twenty-eight years first the Insurance Commissioners and then the Ministry of Health had adopted a policy of peaceful penetration, with an annual output of new regulations and new responsibilities for practitioners, resulting in a greatly enhanced service, to which the present capitation fee bore no adequate relation. When the fee was first fixed in 1913 at 7s., with the "floating 6d.," it was the meanest and most stingy rate of remuneration paid for medical services, but the 7s. 3d. average of 1913 had now become after nearly thirty years only 9s. 9d. Insurance practitioners had always been the drudges of the medical service. The bureaucrats at the Ministry had shown little appreciation of the skill and judgment shown by those carrying out the insurance service. They did ask that the remuneration should bear some relation to their responsibilities. Cheshire had put forward a suggestion that in addition to the capitation fee there should be a system of deferred payment by means of bonds maturing after the war. His committee had greatly resented the action of the Ministry in not consulting the Committee before launching a scheme which might gravely disturb the financial stability of many practitioners.

Refusal of the Offer Urged

Dr. A. BEAUCHAMP (Birmingham), who had a motion on the paper that the Minister's offer be refused, said that he would prefer to speak and vote against the Dorset motion. The representative of Dorset had said that in view of the national emergency they could not do otherwise than accept the Minister's offer. Why? Were they quite sure that justice to the panel doctor—and that was all they asked for—would upset the war effort? The previous Sunday night a well-attended meeting of insurance practitioners was held in Birmingham, and the resolution to reject the offer was carried unanimously. Had there ever been a time when they could say to the Ministry, "We are not playing at your game"? At the present moment probably most insured persons, if practitioners refused insurance service, could afford to pay private fees; those who could not would have to be treated for nothing or taken into the Public Medical Service. He had always thought that there was an understanding, if not an agreement, that the Ministry should consult with representatives of the profession in such circumstances as had recently arisen. Apparently he was wrongly informed, but in all decency this should have been done. At the meeting in Birmingham he was asked what guarantee they had that the Minister would implement his promise after the war. He replied that he understood the Committee was satisfied on that point. The meeting was not reassured; they had not faith in the Insurance Acts Committee. He asked the Committee to regard this matter in all its implications. They were told there was no money with which to pay a higher capitation fee, yet from the report of the remarks of the Government Actuary at

the meeting of the Insurance Acts Committee in the current Supplement it appeared that money was being paid from the pool to enable Approved Societies to make war payments to their staffs and institute A.R.P. services. The increase of 9d. represented nothing like the increase of private fees recommended by the Association.

Dr. DANBY COGAN (Northampton) also urged rejection of the Minister's offer. He pointed out that three or four million first-class lives had been removed from the care of National Health Insurance by going into the Forces; they were replaced by a number of second-class lives; people who had been employed for a considerable time, women who had never been employed before and who were working long hours on a second-rate diet. Practitioners had dependants of members of the Forces on their hands; they did not grudge their attendance, but the long hours of service entailed by present-day practice ought to be remembered. In the black-out the doctor's duties were more arduous, and if next winter was anything like the last two a great many of the elder ones among them would never see the award of the increased capitation fee. Dr. F. N. C. COZENS (Kent) said that he was charged by his committee to ask the Conference to reject the Minister's terms. They were inadequate to the extent of an insult. Unless practitioners obtained 2s. increase he suggested that they should not co-operate in treating this new class of patients who had been foisted upon them.

A Summing-up

Dr. H. G. DAIN said that there had been a good deal of speaking on aspects of the problem which were not germane to their present consideration. Nobody objected more strongly than he to the way in which the Ministry had approached the matter and the scant courtesy it had shown to the Insurance Acts Committee. But he wanted to analyse the situation as it appeared to him. They should have been consulted with regard to the admission of another group of insured persons, and they had previously urged that the first group to be taken in should be the dependants of the present insured. But it was the business of the Government and Parliament to decide what sort of people should be provided with services of different kinds and what standards of income should be applied. The point at which practitioners came in was with regard to the conditions under which they rendered the service. The Committee had done what was possible by personal negotiation to get an increase in the monetary value of the Minister's offer. The offer included, first of all, everything that they had asked for in the matter of mileage and also in the matter of increased practice expenses. In addition a sum of 31d. had been given, spread over the whole insured population, which made a very substantial capitation fee for the new group now being admitted. He himself was all against the admission of the new group because it consisted of people who, he thought, should pay for their medical attendance in the ordinary way. But the offer was 9s. 9d., and the Conference had to consider whether it should be accepted. He believed that if they pressed for another 3d. or 6d. they would be standing in the way of the consideration of the capitation fee at the proper time. The Minister's offer to review the whole position at the end of the war had been made sufficiently publicly to be imposed on his successors without any difficulty. Hitherto in their negotiations they had always had to meet the argument that the amount of money available—namely, 13s.—did not admit of any raising of the capitation fee. This amount had now been raised to 14s. 6d., and although it did not appear that they were going to get more than 9d. of the additional amount, the Minister had said that he would undertake not only to have the capitation fee reconsidered at the end of the war, but to introduce a bill with the necessary clauses to give effect to any award which was then made. He hoped that the Conference would think that on the whole it was the wiser course to deal with the present offer as a matter of business in view of the circumstances of the time, without prejudicing the position in any way for the future.

Dr. J. BLOX (Gloucester) said that Gloucester was not prepared to accept the Government offer, and was also divided as to the way in which the Committee had handled the offer. It was another instance of "appeasement."

Dr. L. W. HERRING (Sussex) said that he was not prepared to refuse the offer on the ground of its inadequacy, and did not think the Committee to be unduly influenced by the fact that the

the financial hardships of insurance practitioners, meanwhile postponing until the end of the war the consideration of the basic capitation fee. The CHAIRMAN refused to accept this on the ground that it was not an amendment at all, but another motion altogether.

Decision of the Conference

The Dorset resolution accepting the Minister's offer under protest was put to the Conference, and on a show of hands was declared carried by 97 votes to 79. More than 20 members demanding a division, the names and votes of the members present were taken and recorded, and the result was as follows: in favour, 98; against, 79.

Dr. N. E. WATERFIELD (Surrey) moved, and it was agreed by the Conference, that there be added to the motion just carried:

"and their acceptance is without prejudice to the consideration of their claim to a satisfactory increase in the basic capitation fee, and without prejudice to their claim to a cost-of-living increase when such increase is given to comparable sections of the community."

War Bonus Advocated

Dr. G. DE SWIET (London) moved a rider to instruct the Committee to press immediately for a war bonus to meet the financial hardships of insurance practitioners. He said that there was evidently a large minority who were not satisfied with the acceptance of the mere 9d., and this rider would meet their case.

Dr. WATERFIELD (Surrey) and Dr. C. L. BATESON (London) protested that this rider was an attempt to reverse what the Conference had just decided. Dr. R. DAVIDSON (Nottingham) hoped that the 9d. would be referred to entirely as a war bonus. The question of varying rates of remuneration for attendance on different classes of the community brought in an important matter of principle, which could hardly be decided at the present time, and the immediate difficulty could be overcome by regarding the 9d. as a bonus. Dr. DE SWIET said there was no intention to go back on the decision of the Conference. The idea behind his rider was to encourage the Committee to go on endeavouring to get some improvement in the remuneration, whether by way of bonus or anything else.

The rider was lost.

Dr. F. M. ROSE (Preston) moved a resolution deploring the fact that the Committee in its negotiations with the Ministry had never yet obtained an adequate capitation fee. He said that in 1912 the capitation fee was 7s. with the "floating 6d.," averaging 7s. 3d. Its changes since then had been more or less parallel with the changes in cost of living, taking not the basic cost but the proportion which applied to the middle class. In 1941 the capitation fee was 9s., which was 24% above the fee in 1912, and the increase in the adjusted cost-of-living figure was similar. But the original 7s. was far too low. Had it been 10s.—a reasonable sum at that time—the fee now, with commensurate cost increases, would have been 15s.

The motion was agreed to, as also was a motion by Surrey, that in the event of a new class of entrants bringing the number on a practitioner's list to a point in excess of that at present allowed, such new entrants should not be taken into consideration in computing the total on the list for the purpose of limitation.

Another motion, in the name of Leeds, was carried, emphasizing the regret already expressed by the Committee that the higher income group rather than dependants of insured persons should have been included in the scheme.

A motion stood on the paper in the name of Denbighshire, but the representative was not present to move it, drawing attention to "certain valuable points" in the literature circulated by the Medical Practitioners' Union on the inadequacy of the capitation fee, and urging that the British Medical Association and the Union should collaborate in presenting a case to the Government. The CHAIRMAN formally moved this in the representative's absence, and it was negatived by a very large majority.

It was agreed to refer to the Committee for consideration a motion in the name of Leeds that the objective of the National Insurance Defence Trust—namely, two million pounds—should be increased as soon as possible.

Bristol desired the Conference, in agreeing to a postponement of a complete review of the basic insurance capitation fee until immediately after the war, to do so on the condition that the award then made should be retrospective to January 1, 1942. This was accepted as a reference to the Insurance Acts Committee. Dr. GREGG said that the Committee would do what it could, but the prospect of success was poor.

Dr. JULIUS LIPETZ (Edinburgh) summarized the sense of certain motions by Liverpool, Leeds, and Devonshire, by moving that the Conference affirm that the immediate necessities of national health and the war effort demanded the inclusion of dependants of the present class of insured persons; also that Panel Committees should call meetings of practitioners in the various areas to discuss this point. He said that the profession would be faced before long with some form of State Medical Service; if they left this to be imposed upon them from above, as the inclusion of the new group had been, they would be in a very uncomfortable position.

This was carried.

The final motion of the Conference, proposed by a representative, affirmed that the Insurance Acts Committee had the loyal support of the Conference and was carried *nem. con.*

The Conference lasted three and a half hours.

PLANNING FOR DENTAL SERVICES

In his address from the chair of the Dental Board at its recent session Mr. E. L. SHERIDAN, after referring to the appointment by the British Medical Association of a Medical Planning Commission, said that the British Dental Association, the Incorporated Dental Society, and the Public Dental Service Association had suggested that the Dental Board should take steps to set on foot an inquiry into the adequacy of dental services, the remedying of deficiencies, the constitution, powers, and duties of the Dental Board, and the practical working of the Dentists Acts in view of post-war conditions. Some of these questions were within the province of the Board, and others were outside. The Board agreed to inform the dental organizations that it was in sympathy with their desire to review every aspect of professional activity, but that certain of the matters did not fall within the statutory functions of the Board. It was added that the Board was occupied with schemes for dental education and research to come into force after the war, and would welcome any recommendations which might be brought before it as a result of the inquiry which the dental societies proposed.

The Board appointed a Clinical Investigation Committee, under the chairmanship of Prof. W. H. Gilmour, to lay down the lines for investigations which could advantageously be made the subject of clinical research with a view to the simplification of methods for the conservation of the teeth and the maintenance of the associated dental tissues in good health. Two grants each of £150 a year for five years were offered by the Board to the London Hospital Medical College in aid of the salaries of the demonstrators in operative dental surgery and clinical dental prosthetics in the London Hospital Dental School. The renewal of a grant of £500 a year and of two grants each of £250 a year for five years was offered to the University of Leeds in aid of the salaries of the professor of dental surgery and warden of the dental school, an assistant to the professor, and a whole-time demonstrator in prosthetic dentistry. The renewal of grants of £500 a year and £250 a year for five years was also offered to King's College, University of Durham, in aid of the salary of a professor of dental surgery and director of dental studies in the dental school at Newcastle and of a lecturer and tutor in dental mechanics and prosthetics in the same school.

The King Edward VII Welsh National Memorial Association has passed a resolution urging that all recruits should be radiologically examined and that medical boards should refer any recruits with a family history of tuberculosis to an officer of the association. This resolution reflects once more the growing concern among public health workers regarding the large number of men passed as fit for the Services who are subsequently discharged suffering from tuberculosis.

Correspondence

State Medical Service

SIR.—While a State Medical Service might suit me personally quite well, I feel sure that it would be to the disadvantage of the public and the profession in the long run, for I think that Government control would in time inevitably spoil that intimate relationship between doctor and patient which is essential to the best medical practice. I am not perturbed that the majority of the younger members of the profession seem to favour the idea and also those who are accustomed to institutional medicine. It is but natural that these should wish to reproduce the conditions in which they are brought up, and consider that centralized clinics, resembling in some way hospital out-patient departments, are the ideal. It is probable that in such surroundings the textbook diseases of their patients might be treated more thoroughly and conveniently than in their own consulting-rooms, but it is quite certain that they would never treat that disease from which such a large number of patients suffer and which they never disclose in unfamiliar surroundings or to one with whom they are not well acquainted. Actually it takes a man quite a long time in general practice to realize what his job is. He has been accustomed in hospital to see isolated examples of disease in standardized surroundings, rather like a "still" in a cinematograph film, important—indeed essential—for the meticulous study of the disease; but in general practice he sees the whole film with its changing background acting on the principal actor—the patient—moulding, modifying, revealing, or concealing the morbid processes at work. It is a much fuller picture than that seen in hospital, strange alike to the hospital teacher and his newly qualified students, and often confusing enough to one who has spent his life unravelling it. This is the G.P.'s battleground, and if we would fit him for it he certainly should have practitioners of mature experience to teach him. When that happens the younger element will no longer sigh for a State Medical Service; but once one is established we shall all sigh or cry in vain. We should not do away with what is good in the old order before we understand what it is or why it arose.

In the same way the results of the Gallup survey are important, but they should not be taken at their face value. What they show is a real dissatisfaction with medical practice as it is, but very few of those who expressed an opinion can have had a real comprehension of the issues at stake. In all probability it merely expressed a wish to escape doctors' bills and a feeling that the doctors would be all the better for being under more control. If the question had been whether they would like to be under the control of a State Medical Service the answers would probably have been significantly different, yet this control of the patient is possibly the most attractive thing in the eyes of the doctor.

So all is not well with general practice, and I think that the two worst things about it, which react equally badly on patients as well as doctors, are its commercialism and competition, which naturally tend to foster isolation, jealousy, criticism, and suspicion, instead of that feeling of brotherliness which should exist among members of a great profession. I think this could very largely be removed, with great benefit to the public as well as to the doctor, if the national health insurance authorities would refuse to acknowledge isolated doctors, and say that modern conditions sufficiently good attention to the insured population can only be afforded by a group of doctors—say, not fewer than eight, and preferably more in congested areas. This would inevitably lead all the doctors in any area to form a partnership for panel practice, and so, in practice, for all types. It would give panel patients in effect free choice of doctor in a way they do not have at present and would leave private practice practically undisturbed. It would mean that practice in every area would be carried on as a co-operative affair, which would evolve in the way best suited for that particular locality and avoid the regimentation that is almost inevitable in a State Medical Service. There would probably have to be special arrangements for the sparsely populated rural areas and undesirable residential districts such as mining villages. Perhaps the easiest way of rectifying this would be an increased capitation fee in districts which were found to be badly served, and in rural

areas boundaries might have to be drawn between practice groups.

Such a scheme would keep our fate largely in our own hands, allow us freedom of residence in whatever area we desired, and freedom, within wide limits, to choose associates in our life's work. It would ensure that continuity which is so desirable in family practice, and avoid the constant change of doctor as the latter ascended in the hierarchy envisaged in a State Medical Service. At the same time a group of eight doctors or more should be able to arrange among themselves for holidays, and include sufficient young ones to offset any disability of the older ones for night work, etc. It would also enable doctors in the group to specialize to some extent along their natural line of surgical, industrial, institutional, or other work; and, as nearly every group would contain within itself one or more doctors on the staff of the local hospitals, it would in practice open these hospitals to all the members of the group acting as their assistants or deputies. The main thing is that each group of doctors could be trusted to see that their colleagues developed in ways which were really beneficial to the activity of the group, as a whole and so to the benefit of the public at large; while centralized financial and clerking arrangements would relieve the doctors of much tedious bookkeeping, etc. They should be able between them to raise enough capital to equip their own special clinic for minor accidents or special investigations, leaving the really specialized work for patients to be sent to large hospitals, where such work will always be most satisfactorily performed. I think that a proper scheme for the community must certainly include dependants and pensioners, etc., as insured persons, and as a corollary of this it would be reasonable for the Government to insist that each group of practitioners did, in fact, provide adequate facilities for attendance and consultation, together with any necessary supervision to see that this was carried out.

If, unfortunately, a State service should be forced upon us and the question of remuneration come to the fore, I think it is a pity that several of your correspondents have suggested that Dr. Pybus's scale of salaries seems more than we can expect. If a State service is to be maintained by the contribution of the doctors as well as the rest of the community, it surely cannot be contended that this contribution should be less than that already paid to the doctors by the people at large. If, as some have suggested, consultants should be willing for the sake of the general good to forgo some of their princely incomes, I feel sure that the latter would do so more willingly if they knew that the surplus of their incomes was going to sweeten, as it would, the incomes of many of their poorly paid brethren. Only the income tax officials have all the figures required, but I fancy that the income of all practising doctors before the war would easily sustain those rates of remuneration suggested by Dr. Pybus.

As regards this question of finance, several doctors have expressed views on the real nature of money and the capacity of the State to pay what it likes, but I have seen no reference to the fundamental fact that the face value and real value of money are two very different things. What we work for is a standard of living rather than so much wealth, and doctors doing the same work in State service should be entitled to the same standard of life. This implies that the actual salary they receive must bear some relation to the number of dependants they have to support. It is of little value to a man at the age of 60 to be drawing £1,500 or £2,000 a year, while such an income would have been of enormous help to him and to the community when he had his children to support and educate. His basic salary might well increase as he grows older, but the actual money he draws should take account of his social and other responsibilities. In any scheme of payment for a State Medical Service we should at least insist that these basic facts should be considered. If we can establish such a scheme of remuneration for ourselves we shall, by giving a model to other State services, have perhaps in the long run done more for a contented and healthy population than all our purely medical efforts put together.—I am, etc.,

W. N. LEAK.

Winsford, Cheshire, July 31.

SIR.—I imagine your correspondents realize that all their letters in favour of a State Medical Service are joyfully studied by the Ministry of Health and then carefully filed. Before we sell our birthright by expressing ourselves in favour of a State service we ought to remember certain great disadvantages.

(1) *Salary and Pension.*—The Minister will no doubt be advised to offer a salary similar to that paid to officers performing analogous work in other Services such as the Army and Navy. This will probably be in the neighbourhood of £500 a year. The pension, always an attractive red herring, will not be more than half the salary, and has, of course, the serious drawback that it is only paid during the practitioner's lifetime and makes no provision for his wife and children should they survive him.

(2) *Promotion and Removals.*—Promotion and increased pay in the service will almost certainly involve transfers about the country. A Civil Servant usually moves every five years or so, and the removal allowance (as every Civil Servant knows) is never sufficient to cover all the expenses incurred. Frequent removals are a serious drawback to the practitioner, as they imply that a man spends his working life in a series of lodging houses none of which can ever be his settled home. It means the continual breaking up and renewing of all social contacts. It involves serious expense in educational arrangements for his children, as his salary will not be sufficient to permit a man to send his children (if any) to boarding schools or universities.

(3) *Personal Freedom.*—A doctor at present has considerable personal freedom to arrange his time to his own convenience. He fixes his own consulting hours, his own visiting hours, and his hours of leisure. He even fixes his own holidays. Under a State service his hours of work are fixed for him, and his holidays, though generous, will be allotted to him after senior officers have had their choice. His freedom will disappear, and he will even have to keep his bus tickets. I need say nothing about the loss of freedom in dealing with patients, because that is familiar to all.

The present Bill to extend the National Health Insurance Scheme to persons earning £8 a week is the preliminary towards a State service. If medical attendance is to be provided for this class at twopence a week then a State Medical Service is near at hand. The bluffing and dictating adopted by the Ministry show that they have studied the methods of the Continental dictators and are following their technique closely. To yield to their demands or to seek appeasement will never be a successful policy, for experience has shown that appeasement always paves the way to further demands on the victim. The senior officials at the Ministry as well as the Minister should also be reminded that to introduce a major change into N.H.I. is a serious breach of faith in that a solemn pledge was given by a former Minister that there would be no major change in the N.H.I. service without previous consultation with the medical profession. It is also indefensible to make this vast and unnecessary extension when half the medical profession are engaged in the Services and unable to voice their views. In fact, it is reminiscent of similar methods now being adopted in New Zealand. The whole idea appears to be of political or departmental origin rather than the result of popular demand. At this decisive hour the profession must speak with a united voice and demand that this revolutionary extension of N.H.I. with all its implications be postponed until after the war.—I am, etc.,

Leeds, July 26.

J. H. E. MOORE.

SIR.—Those advocates of a State Medical Service who regard it as an escape from all their troubles are deluding themselves even if they do not delude those whom they wish to convert to their way of thinking. As T. E. Lawrence in the preface of the Oxford text of the *Seven Pillars of Wisdom* confessed when he cried aloud: "Those who dream by night explore the dusty recesses of their minds and wake in the morning to find that all is vanity; but the dreamers of the day are dangerous men, for they may act their dream with open eyes and make it possible," so we, who have dwelt so long in a world inhabited by those who deceived themselves that all was well when it was not, are not to be deceived by these dusty dreamers who pretend to hold the key which will open the door to a new heaven or a new earth. Like Dr. Primrose when he was in prison and found as his companion in distress the confidence trickster who had cheated him at the market, we seem to have heard all this before.

There is another note of warning from a very different quarter—namely, the preface to this year's edition of *Crockford*, which is applicable to medical circles equally with clerical affairs. The editor remarked: "Plans for a 'new order' are naturally being framed in Church circles. They do not seem to differ

much in principle from those that are being pursued elsewhere. The simple word 'loot' describes them all."

Finally, I would urge those who toy with the idea of the advantages to be gained by selling themselves to the State to ponder over the pages of *The New Despotism*, by Lord Hewart. I offer one quotation (p. 50):

"It may be said that there is no substantial ground for the fear of unfairness or corruption in the Civil Service. As to unfairness, people who have had disputes with public officials may sometimes conceivably hold a contrary opinion. As to corruption, that is a vice from which the service is completely and undoubtedly free. It is of vital importance that it should so continue. But if there were any great extension of the system of giving uncontrolled and arbitrary powers to public officials, it is as certain as that night follows day that corruption might creep in. We might then be cursed with the corrupt bureaucrat. The bureaucratic despot we already have. To take a simple instance, the treatment of the panel doctors under the National Health Insurance Acts is pure despotism. The doctors are liable, at the mere discretion of the official who acts for the Minister of Health, to be ruined professionally by being struck off the panel, or, as a lesser punishment, to be fined to an arbitrary extent. In one instance a fine of £1,000 was imposed on two doctors who carried on business in partnership. 'Excessive prescribing,' an offence wholly unknown to the law, which consists in prescribing for the patient medicines that are either too expensive in quality or too liberal in quantity, is one of the things for which a doctor may be penalized. One might think that, for a person who is bound by law to insure and pay contributions under the Acts, the best medicine ought to be prescribed in illness. But apparently that is not always the view of the department. One might wonder whether, in this matter, the interests of the patients are adequately taken into consideration."

—I am, etc.,

Heanor, Notts, July 29.

PHILIP TURTON, M.D., D.P.H.

SIR.—In the *Supplement* of August 2 (p. 16) Lieut.-Colonel S. H. Fairrie states that there is no example or precedent upon which to build or plan a State Medical Service except those of the Naval, Military, and Colonial Medical Services. Examples of partial State Medical Services do exist in various parts of the world—for instance, in Tasmania and the Western Highlands and the Hebrides. These schemes deal with scattered rural communities.

There also exists a complete, and apparently highly successful, State Medical Service dealing with both rural and urban communities in the U.S.S.R. In view of the excellent results obtained there, both in raising the level of health, as shown by vital statistics, and in increasing the number of medical personnel (from approximately 1 per 10,000 of the population in 1913 to approximately 1 per 1,000 to-day), I would suggest that the Medical Planning Commission would do well to study the organization of the State Medical Services of the U.S.S.R.—I am, etc.,

Brighton, Aug. 6.

R. S. SAXTON.

Medical Certificates

SIR.—In his letter (*Supplement*, July 19, p. 9) Dr. W. R. Somerset states: "In addition, in cases of workmen's compensation, workpeople are required to provide certificates to forward to insurance companies." I write to point out that this is not so; any such demand from an employer or his insurance company is illegal. Some twenty-five years ago, feeling it unreasonable that a man who has suffered an accident should be required to pay for a description of his injuries, I took legal opinion. I was advised that the Act forbade an injured person being put to that expense. Since then I have written no workmen's compensation certificates and my patients have received compensation when due. This has caused some trouble in persuading patients and in educating employers, who were invariably unacquainted with the law, but it has had its advantages in knowing one was not helping in a fraud those who keep us.

The opinion I had obtained was reported to the local Division, who decided it was no business of theirs, and resolved that the charge in future should be half a crown in place of the shilling previously charged. Without unduly trespassing on your space, may I point out that such a spirit is perhaps not unrelated to the unfortunate fact that when we want something for ourselves, as we do now in connexion with national health insurance, friends are somewhat lacking?—I am, etc.,

Grimsbury, July 26.

S. W. SWINDELLS.

Inadequacy of the Capitation Fee

SIR,—While there is complete unanimity among panel practitioners that the present capitation fee is inadequate and that all past advances have been too small, there is a great deal of confused thinking on the subject. It is generally agreed that the figure fixed in 1912 was too small, and it is commonly thought that changes in the cost of living since have created a complete disparity between the original figure and the figure as it stood in September, 1939, in relation to the cost of living. Much criticism has been levelled at the Insurance Acts Committee and at the British Medical Association itself in their handling of negotiations with the Minister of Health. When the Minister has stated that there were no grounds for an advance based on the rise in the cost of living his statement was greeted with frank incredulity by the average panel practitioner. The question of increased scope of service under our contracts is another matter, and I propose to deal with it later.

But let us examine the facts concerning the relationship between the capitation fee and the cost of living. Let it be understood at the beginning that the basic figures as published monthly in the Ministry of Labour *Gazette* are not directly applicable to the position. The figures for middle-class cost of living bear a relationship to the basic figures which must be on a sliding scale depending on the size of the income. Recent figures published by the British Medical Association gave the ratio to the basic rate as twelve to twenty-six—that is, the middle-class increase as about 46% of the monthly figure published. In February, 1920, when the basic rate was 130 (above 1914), the Civil Servants had advances in salaries which amounted to 91.5% at £200, 63.6% at £500, 55.6% at £800, and 54.3% at £1,000. These are equal respectively to 70%, 49%, 43%, and 42% of the basic rate, 130. If, therefore, for round figures we regard the middle-class cost-of-living figure to be 50% of the basic rate we shall not be far out.

In 1912 the capitation fee was fixed at 7s. with a "floating 6d." which might be devoted wholly or partly to dispensing costs. In practice the capitation fee averaged about 7s. 3d. In the table below this figure is used as a basis, and all advances are calculated as a percentage of it. The annual cost-of-living figures shown are the average of the monthly figures published in the Ministry of Labour *Gazette* from January, 1920, down to the present. No figures are available before 1920. The figures shown are percentage advances on the 1914 basic figure. The last column shows the appropriate capitation fee had the cost-of-living figures for the middle classes been closely followed.

Year	Yearly Average of Monthly Cost-of- living Index	Middle-class Index 50% Basic Rate	Actual Capitation Fee	% Inc. Rise on 7s. 3d. 1912 Rate	Approp. Fee to Cost of Living
1920	148.75	74	11/-	52	12/7
1921	125.8	63	11/-	52	11/10
1922	82.58	41	9/6	31	10/3
1923	73.65	37	9/6	31	9/11
1924	74.75	37	9/-	24	9/11
1925	75.58	38	9/-	24	10/-
1926	72.25	36	9/-	24	9/10
1927	67.5	34	9/-	24	9/8
1928	65.6	33	9/-	24	9/7
1929	64.0	32	9/-	24	9/4
1930	57.8	29	9/-	24	9/-
1931	47.5	24	8/1.2	12	8/10
1932	43.8	22	8/1.2	12	8/8
1933	39.75	20	8/1.2	18	8/9
1934	41.2	21	8/6.6	18	8/9
1935	42.66	21	9/-	24	8/11
1936	46.75	23	9/-	24	9/2
1937	54.25	27	9/-	24	9/3
1938	56.25	28	9/-	24	9/4
1939	57.9	29	9/-	24	10/4
1940	83.75	42	9/-	24	10/10
1941 (1st half)	98.0	49	9/-	24	

It will be seen that in the years 1930-9 claims for increase in the capitation fee based on increase in the cost of living could not be justified. A case might have been made out in the previous decade, but the cost-of-living index was falling gradually to meet the panel fee, which nevertheless always lagged an appreciable distance behind. In point of fact, relatively the worst year was 1920, when Lord Addison, then Minister of Health, who has been commended by your correspondent Dr. Burges in your issue of August 2, awarded a panel fee of 11s.

The appropriate figure was 12s. 6d. The capitation fee remained at 7s. 3d. throughout the 1914-18 war, though the cost of living must have risen steeply. In 1918 and again in 1919 percentage increases were given, which were limited in scope and depended on the total net income earned. In our recent application for an advance the Minister has stated that only the lowest-paid groups have so far been given a wartime advance based on rises in the cost of living.

Every panel practitioner who has been in practice for fifteen years or over will appreciate that there has been an enlargement in the scope of work required under our contract. How large this is will be shown when the opportunity comes to present the case prepared by the Insurance Acts Committee to the Minister of Health. What we must not forget is that the original figure to which we have been tied was too low, and that increased services have made its inadequacy more marked; that much that is weak—and there are weaknesses—in the panel system arises from too low a capitation fee coupled with a relatively too high permitted maximum number of insured patients.

When the whole question is reopened with the Minister of Health our aim should be to establish a capitation fee based on the middle-class cost-of-living index (50% of the basic index), and with 10s. taken as the appropriate figure on which to calculate the increase. Calculated thus the appropriate rate for 1939 would have been 13s. and for 1941 15s. If this basis was established it should be possible, and would be eminently desirable, to reduce the permitted maximum number from 2,500 to 2,000. If dependants were brought into the scope of the national health insurance on the same basis, then a total of about 3,500 would be the appropriate maximum. Thus, our aim in striving for an adequate capitation fee should be not merely to obtain a bigger average income for the panel practitioner but also to improve the medical services and increase the time devoted to each individual panel patient.—I am, etc.,

F. M. ROSE,

Hon. Sec., Preston Division, British Medical Association and Preston Panel Committee.

Aug. 8.

BRITISH MEDICAL ASSOCIATION

ANNUAL GENERAL MEETING

Notice is hereby given that the Annual General Meeting of the British Medical Association will be held in the Great Hall, British Medical Association House, on Thursday, September 11, at 12.30 p.m.

Business

1. Minutes of meeting held on October 28, 1940.
2. Appointment of Auditors.
3. Any other business.

G. C. ANDERSON,
Secretary.

Diary of Central Meetings

SEPTEMBER

- 11 Thurs. Executive Committee, 10 a.m.
Council, 11 a.m.
Special Meeting of Representatives of Home Divisions,
12 noon (continuing on following day).

Branch and Division Meetings to be Held

EDINBURGH AND SOUTH-EAST OF SCOTLAND BRANCH: SOUTH-EASTERN COUNTIES DIVISION.—At Royal Hotel, Galashiels, Sunday, August 24, 3 p.m. Agenda: Annual Report of Council; Meeting of Representatives in September; Medical Planning Commission; Report of meeting of Panel Committees' Representatives, etc.

WEEKLY POSTGRADUATE DIARY

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—*Colindale Hospital*, Thurs., F.R.C.S. (Final) Course in Urology.

VACANCIES

EXAMINING FACTORY SURGEONS.—The following vacant appointments are announced: (1) Clyde, Kildonan, and Loth. (2) Golspie and Rogart, (3) Lairg (Sutherlandshire), and (4) Sandwich (Kent). Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by August 19.

APPOINTMENTS

LINDSAY, James, M.D., Examining Factory Surgeon for the Royton District (Lancashire).

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 23 1941

PROTECTION OF PRACTICES SCHEME IN LIVERPOOL

The Liverpool Local Medical War Committee has sent us an account of the working of the Protection of Practices scheme in the committee's area and of the results obtained up to December 31, 1940.

The Local Emergency Committee [now the Local Medical War Committee] was elected at a meeting of all practitioners on October 5, 1938, and held its first session on November 11, 1938. It was constituted on lines suggested in the British Medical Association's memorandum, certain modifications being made in the representation to meet local requirements. The area of the Division comprises the county boroughs of Liverpool and Bootle, the boroughs of Crosby and Widnes, the urban districts of Litherland and Huyton-with-Roby, the rural district of Whiston, and the civil parishes of Tarbock, Halewood, and Hale. Three Insurance Committees were therefore concerned.

Much consideration was given to the form of agreement, and although the B.M.A.'s model, with certain modifications, was contemplated, it was ultimately decided to adopt, with suitable amendments, the form approved for the whole of Scotland. Nearly all the general practitioners in the area are participating in the arrangements, the total number of agreements signed being 359. In one instance a doctor wished to withdraw after he had signed the agreement, but the committee did not concur, and the doctor afterwards expressed his approval of the committee's decision.

A special feature of the agreement is that when a doctor in a single-handed practice proceeds on Service his practice at once comes under the communal arrangements; in the case of a partnership, however, the agreement only becomes effective when both or all partners have gone. The agreement provides that the committee shall fix a percentage deduction for administration. It was hoped that this might be a flat rate over all—insurance and private—fees, but all Insurance Committees have not agreed to make the deduction for transfer to this committee. The Liverpool Panel Committee contributed £100 towards the cost of inaugurating the scheme, and deductions at the nominal rate of 1% have been made from all private fees paid to absentee practitioners and from insurance fees paid to Liverpool absentee practitioners. Applications will have to be made direct to the practitioners in all other cases (Bootle and Lancashire), and in order to meet the annual costs of administration a revision in the amount to be deducted is necessary. The work entailed in administering the scheme is considerable. From inquiries that have been made it would appear that in other areas the deduction from private fees varies from 5% to 10%, and in one area, approximately equal to this Division, a deduction of three-fourths of 1% (15s.) was made from all insurance fees (absentee and acting practitioners)—now 12s. 6d.—the total cost of administration being about £750.

It should be pointed out that as regards insurance fees the amounts paid to single-handed practitioners represent one-half the percentage which the receipts of the practice bear to the whole of the Practitioners' Fund in respect of the year before the outbreak of war, the balance going into the "pool," in which all practitioners share. In a partnership a similar percentage is paid to the absentee practitioner and the balance to the remaining partner, provided that the total paid to the partner does not exceed the amount due in respect of a list representing 3,000 patients, any balance going into the "pool." Fifty-eight general practitioners who signed the agreement proceeded on Service; nine have returned to their practices (at December 1, 1940), and one has died.

Insured Patients

Total number of patients on absentee practitioners' lists (single-handed practices)	Doctors	Patients
January, 1940	(18)	21,400
January, 1941	(22)	18,183
Total number of patients on absentee practitioners' lists (partnership practices)	Doctors	Patients
January, 1940	(11)	18,703
January, 1941	(13)	14,356

Remuneration

The payments made to absentee practitioners for the last quarter of 1939 (October 1 to December 31) and the year 1940 for Liverpool, Bootle, and part of Lancashire, were:

	£	s.	d.
Single-handed practices	7,493	8	3
Partnership practices	10,074	12	4
	£17,568	0	7

* Of this total about two-thirds is for Liverpool.

Private Accounts

The number of accounts rendered to December 31, 1940, was 1,224, and receipts from private fees amounted to	1,404	15	7
There were 381 accounts outstanding at December 31, 1940, amounting to	294	2	6
	1,698	18	1
In addition, there has been paid to absentee practitioners for fees as district medical officers	281	5	0
	£1,980	3	1

Administration Accounts

Receipts		Payments	
1	payments	105	4 2
..	..	9	3 1
Contributions by Liverpool Panel Committee toward initial cost of setting up scheme	..	100	0 0
		£124	7 3
Payments			
Stationery, printing, and postages	..	109	4 5
Cheque books	..	2	10 0
Bank charges, less interest	..	1	3 6
		£112	17 11

It will be observed that as yet no fees for staff administration have been charged to the account. Finally, it should be stated that the scheme has worked quite smoothly, but the income from private fees is somewhat disappointing.

COURSE FOR HOME GUARD MEDICAL OFFICERS

At the request of the Central Medical War Committee the War Office has arranged a short course of instruction for Home Guard medical officers specially adapted to their Home Guard work. The course will be held at II Corps R.A.M.C. School, St. John's College, Cambridge, from Thursday, September 11, to Tuesday, September 16, 1941. It is open to all medical officers commissioned as such in the Home Guard, and those desiring to attend this course should communicate immediately with the Secretary of the Central Medical War Committee, B.M.A. House, Tavistock Square, W.C.1, and in any case before Wednesday, September 3. Officers attending will be asked to report to the Commandant at St. John's College, Cambridge, between 14.00 hours and 16.00 hours on Thursday, September 11. Uniforms should be worn. Officers will be accommodated in St. John's College, bed and blankets being provided, and will mess in the College Hall. The charge for messing will be 9s. 6d. per day. Officers should bring their civilian ration card, notebooks, and pencils. The course will disperse at 11.00 hours on Tuesday, September 16, 1941. Cheques will be accepted in settlement of messing account. A copy of the syllabus will be forwarded in due course to those intimating their desire to attend.

It is hoped that there will be a generous response to this opportunity. The course will be limited to thirty officers, and will not be held unless at least twenty intimate their desire to attend.

MEDICAL WAR RELIEF FUND

TWENTIETH LIST

Previously acknowledged £29,690 12s. 2d. and £100 3½%
Conversion Stock and £40 3% Defence Bonds

Individual Subscriptions

- £25.—S. D. M.
£21.—Anonymous
£4 6s.—Anonymous.
£3 3s.—Dr. J. F. E. Bloss, Sudan; Dr. J. G. Wardrop, Leamington Spa.
£3.—Captain G. S. Trower, R.A.M.C. (Prisoner of War).
£266.—Surrey Insurance Practitioners—per Dr. A. Lyndon (amount already sent £266 2s.).

£181 3s.—Practitioners in the area of Newcastle-upon-Tyne Division—per Mr. Weldon Watts (amount already sent £338 4s. 6d.): Dr. C. B. Bamford (2nd donation). Dr. R. Birk, Dr. K. Booth, Dr. J. A. Brand, Mr. John Brumwell, Dr. N. E. Brumwell, Dr. J. Clay, Dr. T. M. Clayton, Dr. R. J. Carr, Dr. J. A. Charles, Dr. T. Craig, Dr. R. Dagger, Dr. S. Whately Davidson, Dr. G. Davidson, Dr. K. Dick, Dr. W. H. Dickinson, Dr. D. A. Dixon, Dr. J. Farnitton, Dr. M. F. Fraser, Dr. J. W. Gibson, Dr. R. D. Gilchrist, Dr. M. Goldston, Dr. D. Grieve, Dr. G. Hall, Dr. I. Harris, Mr. W. J. Harrison, Dr. F. K. Herbert, Dr. M. A. Hewitson, Dr. R. S. Hindmarsh, Dr. W. Holmes, Dr. D. Hopkinson, Dr. J. M. Jamieson, Dr. H. Y. Kendal, Dr. J. D. Lickley, Dr. S. Livingston, Dr. J. Macfadyen, Mr. F. McGuckin, Dr. W. Mackenzie, Dr. H. D. MacPhail, Dr. A. A. Martin, Dr. E. J. Millar, Dr. D. R. Milligan, Dr. J. W. Morrison, Dr. J. L. Murray, Dr. H. Nicholson, Sir Thomas Oliver, Mr. A. T. Paterson, Dr. R. J. Perrine, Dr. H. R. A. Philp, Dr. G. B. Pictou, Dr. A. M. Pringle, Dr. I. D. Riley, Mr. J. C. T. Roberts, Dr. E. D. Smith, Dr. D. W. Sinton, Dr. W. G. A. Swan, Dr. L. Thompson, Dr. S. Thompson, Prof. J. D. Wardale, Dr. R. W. R. Watson, Mr. Weldon Watts, Mr. W. F. Wilson

£112 7s.—Practitioners in Bury Division—per Dr. A. Owen: Dr. L. Anderson £2 2s.; Dr. C. W. Boyter £1 1s.; Dr. H. G. Graham £2 2s.; Dr. F. M. Braithwaite £2 2s.; Dr. R. K. Clough £2 2s.; Dr. C. W. Crawshaw £2 2s.; Dr. G. Crawshaw £2 2s.; Dr. R. Crompton £2 2s.; Dr. L. M. Davies £2 2s.; Dr. J. Dewar £2 2s.; Dr. W. Edgill £2 2s.; Dr. D. A. Evans £2 2s.; Drs. E. D. and E. W. Falconer £5 5s.; Dr. W. P. Ferguson £2 2s.; Dr. I. G. L. Ford £2 2s.; Dr. E. J. Foulds £2 2s.; Dr. G. T. A. Hastings £2 2s.; Dr. W. S. Haydock £2 2s.; Dr. F. B. G. Holmes £2 2s.; Dr. I. M. Hughes £2 2s.; Dr. G. H. Hutchinson £2 2s.; Dr. R. P. Jack £2 2s.; Dr. H. R. Jeffery £2 2s.; Dr. F. P. Kay £2 2s.; Dr. M. J. Kenny £2 2s.; Dr. R. A. Kernohan £2 2s.; Dr. H. Lawrie £2 2s.; Dr. G. M. D. Lobban £2 2s.; Dr. J. S. B. Mackay £2 2s.; Dr. N. A. M. Mackinnon £2 2s.; Dr. J. D. McVean £2 2s.; Mr. W. M. Martin £2 2s.; Dr. J. B. Morton £2 2s.; Dr. W. Mutchison £2 2s.; Dr. R. A. Nathaniel £2 2s.; Dr. A. Owen £2 2s.; Dr. R. W. Parker £2 2s.; Dr. E. Purcell £2 2s.; Dr. J. H. Rowan £2 2s.; Dr. E. Sherratt-Davies £2 2s.; Dr. E. W. M. Shaw £2 2s.; Dr. N. Simpson £2 2s.; Dr. H. Smith £2 2s.; Mr. S. N. Taylor £2 2s.; Dr. D. H. D. Young £2 2s.; Dr. J. Ratcliffe £3 3s.; Bury Division £10 10s.; Dr. M. J. Maxwell £2 2s.

£88 11s.—Practitioners in Darlington Division area—per Dr. F. C. Pridham.

£50 2s. 9d.—Practitioners in Chelsea and Fulham Division—per Dr. J. A. Scott: Dr. L. Harris £3 3s.; Dr. J. Shafer £1 1s.; Dr. E. Macroy £3 3s.; Dr. M. A. Spring-Rice £1 1s.; Dr. M. Westby £1 1s.; Dr. M. L. Dobbie-Batman £1 1s.; Lieut.-Colonel W. E. A. Armstrong £3 3s.; Dr. J. Wilson Clyne £2 2s.; Dr. C. H. J. Fagan £1 1s.; Dr. A. R. Macdonald £3 3s.; Dr. P. Rothchild £3 3s.; Dr. H. M. Page £2 2s.; Dr. J. T. McCarthy £1 1s.; Dr. W. H. McKinstry £2 2s.; Dr. E. C. Crispin £3 3s.; Dr. V. D. C. Wakeford £5 5s.; Dr. C. D. Kennedy £1 1s.; Dr. D. C. Hanson £2 2s.; Dr. T. J. Tonkin £1 1s.; Dr. P. L. T. Bennett £1 1s.; Dr. M. Cutner £1 1s.; Dr. H. Waters £1 1s.; Dr. W. C. B. Meyer £5 5s.; Dr. J. A. Scott £2 2s. (The cost of collection was 19s. 3d.)

£50.—Medical Staff, Royal Bucks Hospital; Uganda Branch—per Dr. W. R. Billington.

£42 13s.—Practitioners in area of Huddersfield Division—per Dr. W. S. Dickson (amount already sent £130): Dr. J. A. Shaw £5 5s.; Dr. D. L. Cairns £5 5s.; Dr. Gamm £3 3s.; Dr. R. A. C. McIntosh £3 3s.; Dr. C. E. Mitchell £3 3s.; Dr. S. Prior £3 3s.; Dr. E. M. Sykes £3 3s.; Dr. W. C. Abell £2 2s.; Dr. G. Crompton £2 2s.; Dr. J. McE. Gibson £2 2s.; Dr. S. Hall £2 2s.; Dr. P. MacGill £2 2s.; Dr. H. Tomlin £2 2s.; Dr. C. E. H. Turner £2 2s.; Dr. S. H. Waddy £2 2s. (The cost of collection was 3s.)

£18 18s.—Practitioners in Sheffield Division area—per Dr. J. Nunan (amount already sent £261 6s. 7d.): Dr. A. W. Fawcett £3 3s.; Dr. R. L. P. Flint £3 3s.; Dr. T. H. Almond £2 2s.; Dr. Mary D. Boyd £2 2s.; Mr. J. T. Chesterman £2 2s.; Dr. I. J. McCormick £2 2s.; Dr. T. F. Murphy £2 2s.; Dr. W. J. Clancy £1 1s.; Dr. E. C. Eaves £1 1s.

£12 9s.—Practitioners in the North Middlesex Division area—per Dr. J. R. Richmond Ritchie (amount already sent £166 3s.): Dr. D. Evans £2 2s.; Dr. W. R. B. Dickinson £2 2s.; Mr. J. Lewis £1 1s.; Dr. W. G. Richards £3 3s.; Dr. H. Schafer £1 1s.; Dr. J. A. P. Scott £3 3s.

£8 8s.—Practitioners in Scunthorpe Division—per Dr. J. R. Baker (amount already sent £59 6s.). Dr. A. M. Macgregor £3 3s.; Mr. W. H. Bailey £5 5s.

£6 6s.—Per Dr. J. M. Johnstone, N. Staffs L.M.W.C. (amount already sent £791 8s.). Dr. R. M. Barrow £5 5s. (2nd donation); Dr. H. B. Blinks £1 1s.

£6.—Practitioners in Reigate Division—per Dr. L. J. Barford (amount already sent £143 16s.). Dr. B. J. F. Jackson-Taylor £3 3s.; Dr. S. Morton Mackenzie £3 3s.

£5 5s.—Northamptonshire Medical Charity—per Dr. D. G. Greenfield (amount already sent £478 11s. 6d.): Dr. W. M. Robson; Practitioners in the Bolton Division—per Dr. H. W. Bowyer (amount already sent £67 16s.); Dr. B. Thornley; Practitioners in the Shropshire and Mid-Wales Branch area—per Dr. G. Maciek (amount already sent £195 7s.). Dr. A. E. Nicholls.

£2 2s.—Practitioners in the area of the Marylebone Division—per Mr. F. MacG. Loughane (amount already sent £107 5s.). Dr. Agnes Savill.

£1 1s.—Practitioners in Buckinghamshire—per Dr. R. W. McConnel (amount already sent £288 12s.). Dr. H. C. Woodhouse.

Local Medical and Panel Committees

£105.—Cheshire.

£19 16s. 4d.—Dumbarton (2nd donation).

The following donations have come in since the above was set in type:

Individual Subscriptions

£10.—"Leicester."

£5 5s.—Dr. C. P. Miller, Cheam; Dr. F. R. Sturridge, London.
£2 2s.—F/O A. M. Ferens Batty, R.A.F.V.R.; Dr. S. A. B. Black, Nigeria; Dr. N. F. Lawers, Bideford.

£1 1s.—Dr. H. Siedman, Bushey Heath.

10s. 6d.—Dr. T. Benson Evans, Prestatyn (5th donation).

£352 3s.—Practitioners in the Swansea area—per Drs. T. Ben Thomas and T. W. Davies: Dr. E. W. M. H. Phillips £7 7s.; Dr. T. M. Anderson £5 5s.; Dr. E. D. Owen £5 5s.; Drs. M. and H. V. Davies, £5 5s.; Dr. A. F. S. Sladden £5 5s.; Dr. H. R. Frederick £5 5s.; Dr. U. Marks £5 5s.; Dr. T. J. Evans £5 5s.; Mrs. E. K. R. Thomas £5 5s.; Mr. H. W. Gabe £5 5s.; Colonel C. L. Isaac £5 5s.; Mr. C. P. Robinson £5 5s.; Drs. D. Rees and R. J. Isaac £5 5s.; Dr. J. Bowen-Jones £5 5s.; Dr. W. W. Hellyer £5 5s.; Mr. J. Crowther £5 5s.; Dr. W. E. Rees £5 5s.; Dr. I. Jones £5 5s.; Dr. H. J. Davies £5 5s.; Dr. J. L. Davies £5 5s.; Dr. I. Davies £5 5s.; Mr. H. E. Quick £5 5s.; Dr. C. Davies £5 5s.; Dr. T. W. David £5 5s.; Mr. W. J. Richards £5 5s.; Dr. D. H. Isaac £5 5s.; Dr. T. Imrie £5 5s.; Mr. W. F. Brook £5 5s.; Dr. R. P. Jones £4 4s.; Dr. J. Williamson £3 3s.; Mr. W. H. O. Woods £3 3s.; Dr. L. J. Jones £3 3s.; Dr. P. O. Davies £3 3s.; Dr. T. J. Hargess £3 3s.; Dr. D. R. Lewis £3 3s.; Dr. H. Owen £3 3s.; Dr. D. B. Harrington £3 3s.; Dr. W. MacLennan £3 3s.; Dr. L. Watkins £3 3s.; Dr. T. G. Jenkins £3 3s.; Dr. A. J. Amor £3 3s.; Dr. J. Kyle, £3 3s.; Drs. L. F. Marks and Parker £3 3s.; Dr. W. H. Thomas £3 3s.; Dr. M. Goldberg £3 3s.; Dr. W. H. Jones £3 3s.; Dr. W. M. Maclean £3 3s.; Dr. L. W. Helferman £3 3s.; Dr. C. G. Gooding £3 3s.; Dr. M. Owen £3 3s.; Dr. W. Taylor £3 3s.; Dr. J. Shibo £3 3s.; Dr. P. J. Ryan £3 3s.; Dr. W. L. George £3 3s.; Dr. T. McClure £3 3s.; Dr. F. G. Thomas £3 3s.; Dr. F. M. L. Jones £3 3s.; Dr. D. J. Hughes £2 2s.; Dr. R. J. Isaac £2 2s.; Dr. J. Lloyd £2 2s.; Dr. F. H. K. Knight £2 2s.; Dr. T. W. Davies £2 2s.; Dr. G. Jones £2 2s.; Dr. T. B. Thomas £2 2s.; Dr. I. O. Martin £2 2s.; Dr. S. I. Williams £2 2s.; Dr. A. Madel £2 2s.; Dr. J. D. Robertson £2 2s.; Dr. W. V. Howells £2 2s.; Dr. C. James £2 2s.; Dr. D. W. F. Jones £2 2s.; Dr. T. Davies £2 2s.; Dr. N. J. Moulson £2 2s.; Dr. J. A. Noot £2 2s.; Dr. H. S. Davies £2 2s.; Dr. J. Evans £2 2s.; Dr. D. Hughes £2 2s.; Dr. I. P. G. Howells £2 2s.; Dr. R. J. Smith £2 2s.; Dr. S. Gordon £2 2s.; Dr. H. W. Howell £2 2s.; Dr. D. B. Phillips £2 2s.; Dr. W. E. Thomas £2 2s.; Dr. T. J. Walters £2 2s.; Dr. E. Aslett £2 2s.; Dr. C. E. Kimster £2 2s.; Dr. J. M. Morris £2 2s.; Dr. J. Lloyd £2 2s.; Dr. S. A. Gailley £2 2s.; Dr. G. Jones £2 2s.; Dr. H. Peters £2 2s.; Dr. R. Jamieson £2 2s.; Dr. T. D. Llewellyn £2 2s.; Dr. J. C. Drury £1 1s.; Dr. M. T. Rutchings £1 1s.; Dr. F. Kelleman £1 1s.; Dr. M. Evans £1 1s.; Dr. A. Staples £1 1s.; Dr. M. Williams £1 1s.; Dr. G. Evans £1 1s.; Dr. G. J. Frazer £1 1s.; Dr. A. Evans £1 1s.; Dr. D. R. Edwards £1 1s.; Dr. J. Kerr £1 1s.; Dr. N. Evans £1 1s.; Mr. M. J. Powell £1 1s.; Dr. G. H. Garfield £1 1s.; Dr. G. Ellis £1 1s.; Dr. A. E. M. Herbert £1 1s.; Dr. C. A. Stephens £1 1s.; Dr. M. Brighton £1 1s.; Dr. T. H. Davies £1 1s.; Dr. E. R. Poner £10s.; Dr. H. R. Tighe £10s.; Dr. S. McClure £3 3s.; Dr. T. C. Nott £2 2s.; Dr. E. Coyne £2 2s.; Dr. P. Jones £1 1s.

£293 5s. 11d.—Malaya Branch.

£37 3s. 9d.—Hong Kong and South China Branch.

£33 10s.—Practitioners in the area of the Cardiff Division—per Dr. F. Y. Pearson (amount already sent £371 3s.): Dr. C. A. Probert £2 2s.; Dr. N. L. Probert £2 2s.; Dr. F. L. Sessions £1 1s.; Dr. W. D. Lovelock-Jones £2 2s.; Dr. J. G. Wilson £1 1s.; Dr. T. J. Hennelly £3 3s.; Dr. I. A. Thomas £1 1s.; Dr. J. Ashby £10 10s.; Mr. D. Ioan-Jones £10 10s.

£26 16s.—Practitioners in Exeter Division—per Dr. J. D. R. Murray and Dr. N. Y. Paget (amount already sent £186 0s. 6d.; Mr. H. Andrew (2nd donation). Dr. J. Kingston Frost, Dr. M. Kaye, Dr. D. J. L. Routh, Dr. R. Shove.

£19 19s.—Practitioners in area of Belfast Division—per Dr. S. R. Hunter (amount already sent £347 19s.): Mr. R. J. McConnell £5 5s.; Dr. G. Hamilton £5 5s.; Dr. D. C. Lennie £3 3s.; Dr. H. Wilson £2 2s.; Dr. W. Rutherford £2 2s.; Dr. W. H. Hood £2 2s.

£15 5s.—Croydon Division—per Dr. S. A. Forbes (amount already sent £150 15s.): Dr. W. V. Braddon £5 5s.; Mr. V. Wilkinson £2 2s.; Dr. C. I. Stockley £5 5s.; Dr. J. Newton Hudson £3 3s.

£11 11s.—Glasgow Division—per Dr. Jnglis Cameron (amount already sent £374 3s.): Dr. G. Young £5 5s.; Drs. R. Black and D. McFarlane £5 5s.; Dr. A. S. Barr £1 1s.

£1.—Practitioners in area of East Norfolk Division—per Dr. J. A. Eddy (amount already sent £83 9s.): Dr. C. H. W. Page.

The contributors to the £88 11s. from the Darlington Division were as follows: Dr. J. M. Ross £5 5s.; Dr. D. Stubbs £5 5s.; Dr. J. M. Scott £5 5s.; Dr. T. L. Wormald £3 3s.; Dr. C. J. Kirk £2 2s.; Dr. E. A. Hughes £2 2s.; Dr. H. C. Pearson £2 2s.; Dr. C. D. Wilson £2 2s.; Dr. W. C. Fothergill £2 2s.; Dr. R. A. Adamson £2 2s.; Dr. D. Stone £2 2s.; Dr. W. G. Annan £2 2s.; Dr. W. A. Jaques £2 2s.; Dr. W. G. White £2 2s.; Dr. W. McKie £2 2s.; Dr. I. Sinclair £2 2s.; Dr. A. D. Smith £2 2s.; Dr. M. Archdale £2 2s.; Dr. W. Pickles £2 2s.; Dr. A. Morrison £2 2s.; Dr. F. C. Pridham £2 2s.; Dr. D. Todd £2 2s.; Dr. Peill £10s.; Dr. J. Strachan £1 1s.; Dr. I. Brown £1 1s.; Dr. J. Higgins £1 1s.; Dr. K. Girgis £1 1s.; Dr. B. Freshwater £1 1s.; Dr. R. Lishman £1 1s.; Dr. P. W. C. Speirs £1 1s.; Dr. E. R. Dingle £1 1s.; Dr. A. Ingham £1 1s.; Dr. R. P. Rosser £1 1s.; Dr. G. A. Dawson £1 1s.; Dr. D. V. Walsh £1 1s.; Dr. C. B. Whitehead £1 1s.; Dr. P. A. M. Macgregor £10s. 6d.; Dr. J. Blair £10s. 6d.; Dr. B. Dawson £10s. 6d.; Major J. H. Graham £10s.; Anonymous £15 1s. 6d.

Local Medical and Panel Committees

£20.—Bury.

Total—£31,625 17s. 5d. and £100 3½% Conversion Stock and £40 3% Defence Bonds

Correction: The donation of £5 credited to Dr. J. G. Wardrop in the Nineteenth List under Warwick and Leamington and Rugby Divisions should have been credited to Dr. D. Wardrop.

It will be noticed that there is an anonymous contribution of £21. This came in the form of a Warrant as a "token payment in recognition of services to a member of my family" by three members of the medical profession in a rural area, whose names are mentioned in the note, which has apparently come from a lay person. The profession will appreciate not only the generous contribution made to the Fund but also the spirit which prompted the gift. This is the only means we have of acknowledging the contribution.

Correspondence

Capitation Fee

SIR.—I regret that the number of motions, the numerous speakers, and the course of the debate prevented me putting before the Conference of Delegates of Panel Committees a point which I had previously put to the West Riding Panel Committee. May I, Sir, through your kindness give it a belated but wider publicity?

At the moment the Government pays into a "pool," from which certain charges have to be met, the sum of 13s. From this the profession receives 9s.—that is, nine-thirteenths. It is proposed in the new Bill to pay into that pool the sum of 14s. 6d., for which sum 9s. 9d. will be paid to the profession. Now nine-thirteenths of 14s. 6d. comes to, roughly, 10.03s., which is rather more than 9s. 9d. So that the apparent increase of 9d. per head in the capitation fee is in reality a reduction in the proportion received by the profession from the "pool." In the district from which I come that is known as the "Irishman's rise."

It may be said that the 9d. is in fact all that can be obtained from the "pool." Against this is the fact that on June 30 a deputation from the I.A.C. (see their report) were told by the Minister "that according to present calculations there would not be sufficient money in the pool to pay the doctors a capitation fee of more than 9s. 6d." At that date the new Bill had not been suggested, so the "present calculation" must refer to a pool filled only with 13s. Observe, therefore, Sir, that it is possible to pay 9s. 6d. out of 13s. and only 9s. 9d. out of 14s. 6d.: the "Irishman's rise" more than ever.

It is a good rule that he who criticizes should have some constructive suggestions to make. I have two—the one radical, the other palliative. The only radical cure, so far as I can see, is a State Medical Service. If we must be slaves, better be slaves of the State than of the approved societies. The palliative cure is well described in that Book which formed the earliest reading for most of us and will, I hope, be the ultimate consideration of all of us. Therein, Sir, we find that the poor widow seeking justice found it with the help of neither logic nor evidence but simply by continuous pleading. We are none of us without some influence. Let us, I suggest, rather than rock the boat, quarrel with the rowers, or debate the exact point on which we shall land, join wholeheartedly together to make for land; in season and out of season present a united front and a united complaint, and mass in our favour that public opinion which has been and is the ultimate court of appeal in our country.—I am, etc.,

Yendra, Aug. 6.

JAMES E. OUTHWAITE.

State Medical Service

SIR.—Readers of Lieut.-Colonel S. H. Fairrie's letter (*Supplement*, August 2, p. 16) will have noticed that: (1) he concludes that the "idea of a State Medical Service . . . originated from within the ranks of the medical profession"; (2) he assumes that, as a result of the war, this country must of necessity enter a period of extreme financial stringency. In my opinion he has not proved his conclusion, and his assumption is without foundation.

In the first instance no consideration appears to have been given to the possible part played in the matter by the doctrinaire politician. Few of us would like to see medical policy made the plaything of party politics, but we must not for this reason allow ourselves to be blinded to the fact that party politics are already established in our midst. It may not be generally known, but it is nevertheless a fact, that there is in existence an association, with many national and international non-medical affiliations, whose primary object is "to work for a Socialized Medical Service." (I take it that "socialized" in this connexion is synonymous for "national" or "State.") Membership of the association is open to individuals included in one or more of seven categories provided they accept a particular political theory. The first category is "Registered or Qualified Medical Practitioners." I have in my possession documentary evidence which proves that propaganda in favour of a State Medical Service emanates from this association. Though I cannot say where the "idea of a State Medical Service originated," I am convinced that it was not within the ranks of the medical profession.

The assumption relating to finance is based on the almost universal delusion that a great war must of necessity be followed by a period of extreme financial difficulty. The fact is that great wars are usually followed by poverty and distress, but the nature of things does not make this sequence inevitable. If we allow it to happen again we shall only get what we deserve by failing to take the sane and feasible steps by which it can be avoided. It can easily be proved then (though there is not space to do it now) that an ever-increasing wealth of goods and services can be made available for distribution among the people of this country when the war comes to an end. There are two practicable methods by which this distribution can be made: (a) By means of a central planning authority which will decide, on the best authority of course, what is best for the people and will make distribution on those principles. "The standard of living" as compared with the present level would probably be high, but individual initiative and freedom of choice among the mass of the people would be reduced to a minimum. Among other things an adequate supply of standardized doctors (duly certified by the proper authority) would be distributed to a standardized people. So much for the authoritarian way. (b) The introduction of the second method would necessitate the making of certain simple adjustments in our money system. These are not of a kind which would lead to the impoverishment of any section of the community. Their chief side-issue would be to take irresponsible power out of the hands of small groups which now hold it. This threat to power maniacs is perfectly appreciated by them, and here is to be found the explanation of the colossal opposition which any suggestion for sane money reform calls forth. Once this opposition were overcome the financial adjustments necessary for the satisfactory distribution of goods and services could be put into practice without the least difficulty. If this method were adopted "freedom of choice" would extend very far beyond the bounds in which Mr. Brown is free to call in Dr. Jones or Dr. Smith.—I am, etc.,

Bexley, Kent, Aug. 4.

E. U. MACWILLIAM.

Domiciliary Visits of Public Vaccinators

SIR.—With regard to the correspondence on vaccination, the following series (not a heavy list) of last week's vaccination visits, fifteen in all, speak for themselves. (1) Vaccinated. (2) Out. (3) Vaccinated. (4) Postponed (conjunctivitis). (5) House unoccupied (mother gone to hospital, I am informed). (6) Vaccinated. (7) Vaccinated. (8) Vaccinated. (9) No reply (presumably "out"). (10) Vaccinated. (11) Out (left message to say "refusing" in any case). (12) Vaccinated. (13) Refused (no previous warning to that effect). (14) Out. (15) Refused (no previous warning to that effect).

It can be seen that eight visits (over 50%) have been futile. Those who refused have apparently not even troubled to sign the "conscientious clause," nor to warn the vaccination officer. It would appear that an immense amount of time and petrol could be saved if the vaccinator could attend a central clinic. Could he not attend for that purpose the infant welfare clinics for a short period while they are in session?—I am, etc.,

Smethwick, Aug. 2.

JAMES SHAW.

Medical Forces of H.M. Services Appointments

ROYAL NAVY

Surgeon Lieut.-Commander D. W. Pratt (Emergency) has been transferred to the Permanent List.

Acting Surgeon Lieut.-Commander J. Whittington to be Surgeon Lieutenant-Commander.

Surgeon Lieuts. W. H. C. Watson and J. M. Fitzpatrick to be Surgeon Lieutenant-Commanders.

ROYAL NAVAL VOLUNTEER RESERVE

Acting Surgeon Lieut.-Commander R. A. Mozz to be Surgeon Lieutenant-Commander.

Probationary Temporary Surgeon Lieuts. J. P. F. Hummel, F. P. S. Malone-Barrett, R. A. H. Simpson, D. McLean, C. Halsemaadren, G. R. Waterman, T. T. Davies, M. B. D. Welland, and C. H. Edwards to be Temporary Surgeon Lieutenants.

ARMY

Lieut.-General Sir William P. MacArthur, K.C.B., D.S.O., O.B.E., late R.A.M.C., has retired on retired pay.

Major-General R. W. D. Leslie, C.B., O.B.E., K.H.P., late R.A.M.C., has retired on retired pay.

Colonel A. Hood, C.B.E., late R.A.M.C., to be Lieut.-General.
Colonel (acting Major-General) P. S. Tomlinson, D.S.O., late R.A.M.C., to be Major-General.
Colonel (temporary Brigadier) C. M. Finny, O.B.E., K.H.S., late R.A.M.C., to be acting Major-General.
Lieut.-Colonels J. W. C. Stubbs, D.S.O., M.C., from R.A.M.C., and H. G. Winter, M.C., from R.A.M.C., to be Colonels.

ROYAL ARMY MEDICAL CORPS

Colonel T. S. Dudding, O.B.E., retired pay, late R.A.M.C., has reverted to the rank of Major at his own request whilst employed during the present emergency.
Lieut.-Colonel (temporary Colonel) J. G. Ronaldson, M.C., having attained the age for retirement, has retired, and remains employed.
Lieut.-Colonel H. V. Stanley, M.B.E., M.C., retired pay, has reverted to the rank of Major at his own request whilst employed during the present emergency.
Majors (temporary Lieut.-Colonels) W. Russell, M.C., and L. A. J. Graham to be Lieutenant-Colonels.
Major G. S. Douglas to be Lieutenant-Colonel.
Major R. T. Cox has retired on retired pay.
Captain C. E. Watson has retired, receiving a gratuity. (Substituted for the notification in the *London Gazette* of May 27, 1941.)
War Substantive Captain A. J. Ireland has resigned his commission.
Lieut. J. F. F. Garry has relinquished his commission on account of ill-health.

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Major W. R. O'Farrell, having attained the age limit of liability to recall, has ceased to belong to the Reserve of Officers.

SUPPLEMENTARY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS
War Substantive Captain F. A. Gaydon has ceased to belong to the Supplementary Reserve of Officers on account of ill-health.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Major W. A. Mackey, from supernumerary for service with the Medical Unit, Glasgow University Contingent, Senior Division, O.T.C., to be Major.
War Substantive Captains R. O. Barber and P. Wade have relinquished their commissions on account of ill-health.

Second Lieut. (War Substantive Lieut.) J. D. F. Norman, from Royal Artillery, Territorial Army, to be Lieutenant.

The notifications regarding transfer of the following officers from Territorial Army Reserve of Officers in the *London Gazette*, the dates of which are indicated in parentheses, have been cancelled: Captains (now Temporary Majors) G. N. Bailey and D. R. Hood, Captains R. Woodside and G. T. Pitts, and Lieut. (now War Substantive Captain, Temporary Major) J. A. Kerr (September 13, 1939); Major (now Temporary Lieut.-Colonel) A. O. Bekeun, O.B.E., Captains (now Temporary Majors) K. M. Morris, E. F. S. Morrison, and S. C. Swinburne, and Captains D. M. MacKenzie, T. H. Sansome, J. Kerr, J. H. B. Livingston, and J. O'Donnell (September 14, 1939); Lieut. (now War Substantive Captain) C. Stewart (September 22, 1939); Majors W. Brockbank and L. F. E. Jeffcoat (September 23, 1939); Lieut.-Colonel T. E. A. Carr, Majors (now Temporary Lieut.-Colonels) W. Barclay, M.C., and J. L. Menzies, M.C., Majors C. V. Greenhill and E. T. H. Lea, and Captains (now Temporary Majors) F. J. Whitelaw and H. P. Gabb, M.C. (September 26, 1939); Majors (now Temporary Lieut.-Colonels) S. S. Greaves, D.S.O., M.C., and A. M. Hughes, M.C., Major H. H. Fowler, and Captain (now Temporary Major) F. Evans, M.B.E. (September 30, 1939); Captain (now Temporary Major) G. Chesney and Lieut. (now War Substantive Captain) B. McK. Dick (October 3, 1939); Major (now Temporary Lieut.-Colonel) N. H. Haskins, M.C., Majors J. F. Fraser and H. Wilson, M.C., Captain (now War Substantive Major, Temporary Lieut.-Colonel) J. F. Ward, Captains (now Temporary Majors) M. E. D. Roberts and A. C. Sinclair, and Lieuts. (now War Substantive Captains, Temporary Majors) M. J. Bett and E. T. Colville (October 6, 1939); Lieut.-Colonels J. O. Thomas and J. S. M. Connell, Majors (now Temporary Lieut.-Colonels) G. V. Davies and J. G. Graham, Majors R. W. Fairbrother, A. M. Jones, and H. L. Sheehan, Captains (now Temporary Majors) C. E. Sykes, H. G. Dodd, and F. A. Smoritt, and Captains J. G. Morrin, A. W. Uloth, and A. N. Smith (October 10, 1939); Majors H. M. McE. Morris and F. H. Scotson (October 13, 1939); Major F. D. Marsh, M.C. (October 17, 1939); Major (now Temporary Lieut.-Colonel) C. B. Levick and Major A. C. M. Savage, T.D. (October 20, 1939); Captain (now Temporary Lieut.-Colonel) H. S. Allen (October 27, 1939); Lieut.-Colonel A. A. Egger, C.B.E. (November 1, 1939); Lieut.-Colonel (now Major) W. Bowater, M.C. (November 3, 1939); Captain (now Temporary Major) C. S. Swinburne, Captain D. E. Denny-Brown, and Lieut. (now War Substantive Captain) C. A. Croman (November 6, 1939); Lieut.-Colonels J. A. Stenhouse, T.D., and H. V. Walsh, T.D., Majors (now Temporary Lieut.-Colonels) H. Foston, M.C., and G. M. Heiron, Major C. J. Fox, and Captains (now Temporary Majors) H. B. Dodwell and R. E. Davie, M.C. (November 8, 1939); Major (now Temporary Lieut.-Colonel) G. W. Wigg, T.D., and Captain (now Temporary Major) H. G. Neill (November 15, 1939); Major H. J. Heathcote (November 17, 1939); and Captain (now Temporary Major) F. W. Bury (December 8, 1939).

TERRITORIAL ARMY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Captain S. Summerson, having attained the age limit, has relinquished his commission and retains his rank.

LAND FORCES: EMERGENCY COMMISSION

ROYAL ARMY MEDICAL CORPS

War Substantive Captains A. C. Jepson, A. B. Monk, and G. G. Michell have relinquished their commissions on account of ill-health.

The surnames of Lieuts. H. W. Cowen, B. S. Tulloch, and St. J. C. B. Serjeant are as now described and not as stated in *Supplements to the London Gazette* dated November 15, 1939, March 5, 1940, and February 7, 1941, respectively.

Lieut. R. A. Coughlan to take rank and precedence in his Corps and in the Army as if his appointment bore date May 14, 1941.

The initials of Lieut. A. J. M. Drennan are as now described and not as stated in a *Supplement to the London Gazette* dated June 6.

To be Lieutenants: C. F. N. Morgan, A. N. Barker, R. Bloom, A. G. C. Cox, T. J. Eason, F. A. Frank, P. H. Garrard, T. Gass, C. G. Gordon-Wilson, J. S. Lillierap, W. C. Maughan, S. M. Pruss, A. F. Ross, R. Sherrard, G. A. Simpson, J. W. Alden, J. N. Alexander, A. S. Burns, A. B. Cornick, J. A. Donaldson, H. R. Duval, G. P. Holderness, A. W. P. Johnson, G. B. Libbey, J. Macdonald, R. B. McMartin, A. Mack, W. C. Muir, B. A. Protheroe, T. W. L. Roberts, J. D. Robertson, D. L. Shaw, F. Shaw, L. Solomon, R. Steen, C. D. Stewart, W. F. J. Weston, J. L. Washington, D. J. Burgess, A. Mann, E. Bailey, A. F. Crook, S. V. Cullen, D. E. T. Donaldson, H. Duff, D. M. Fairley, J. T. M. Fenton-Fyfe, H. M. Fyvie, E. R. Hargreaves, A. Jeffrey, J. Kelvin, M. H. Lloyd, D. H. McCollum, T. Owen, B. C. Rowlands, S. K. Sen, J. W. A. Souter, D. E. Thompson, B. P. Tulley, K. R. Urquhart, C. D. Pike, S. W. A. Tarrow, W. S. Aird, H. Angelman, J. C. Birchall, J. Cowan, J. Henry, L. C. Hill, D. E. Jarman, J. C. Jeffrey, H. Josephs, P. F. Maguire, J. L. Maslin, W. J. E. Radford, L. G. R. Roberts, F. J. Rutter, C. V. P. Ryall, V. A. Abernethy, A. Barlow, R. F. M. Child, G. O. Cowdy, T. H. Parkman, L. Dexter, G. K. Lin, J. Metcalf, J. F. Poolman, P. Simon, D. P. Burkitt, A. R. R. Kent, D. G. C. Macdonald, H. L. C. Maitland, C. T. Barry, R. A. Morea, G. B. Murray, J. B. Roy, R. T. Simcox, K. Taiz, W. M. Turnbull, A. Limentani, I. R. Bindman.

J. H. Bruce, W. D. A. Callam, J. A. Carter, N. E. Delancy, N. Grellier, M. C. Hodgson, S. Livingstone, N. O. Paterson, A. E. Paxton, W. J. Peden, I. H. Premdas, D. Rumney, E. Smith, R. C. Southern, A. Stern, G. D. Walker.
The notification regarding Lieut. A. B. Cowley in the *Supplement to the London Gazette* dated June 27, 1941, is cancelled.
Dr. (Lieut.) J. R. M. Johnson has relinquished her appointments.

BRITISH MEDICAL ASSOCIATION

ANNUAL GENERAL MEETING

Notice is hereby given that the Annual General Meeting of the British Medical Association will be held in the Great Hall, British Medical Association House, on Thursday, September 11, at 12.30 p.m.

Business

1. Minutes of meeting held on October 28, 1940.
2. Appointment of Auditors.
3. To receive and approve the statement of accounts of the Association as published in the *Supplement to the British Medical Journal* of May 17, 1941.
4. Any other business.

G. C. ANDERSON,

Secretary.

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following M.R.C.P. courses: (1) neurology at West End Hospital for Nervous Diseases, August 26 to September 19, Tuesdays and Fridays, at 3.30 p.m.; (2) heart diseases at Royal Chest Hospital, August 27 to September 17, Wednesdays, at 3.30 p.m.; (3) chest and heart diseases at London Chest Hospital, September 2 to 25, Tuesdays and Thursdays, at 2 p.m. Also the following Final F.R.C.S. courses: (1) clinical course at St. Mary Islington Hospital, September 3 to 24, Wednesdays, at 2 p.m.; (2) clinical orthopaedics at Royal National Orthopaedic Hospital, Stanmore, September 6 to 27, Saturdays, at 2.15 p.m.; (3) comprehensive course at Royal Cancer Hospital, every morning, September 29 to October 17.

The Fellowship of Medicine announces the following postgraduate courses for Final F.R.C.S. candidates: clinical course at St. Mary Islington Hospital on Wednesdays at 2 p.m., from September 3 to 24; clinical orthopaedic course at the Royal National Orthopaedic Hospital on Saturdays at 2.15 p.m., from September 6 to 27; comprehensive revision course, every morning at 10 a.m., from September 29 to October 17.

A series of lectures on "War Surgery of the Extremities" will be given at the British Postgraduate Medical School from Monday to Friday, September 1 to 5 (both days inclusive), beginning at 10 a.m. daily. The fee for the course is £1 1s. Officers of the armed Forces and whole-time officers of the E.M.S. will be admitted free provided they have obtained necessary leave and registered their names before the commencement of the course. Applications for admission should be addressed to the Dean of the British Postgraduate Medical School, Ducane Road, W. Further war surgery courses will be held as follows: beginning Monday, September 15, "War Surgery of the Abdomen"; beginning Monday, September 29, "War Medicine."

WEEKLY POSTGRADUATE DIARY

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—*West End Hospital for Nervous Diseases*: Tues. and Fri., 3.30 p.m., M.R.C.P. Course in Neurology. *Royal Chest Hospital*, City Road, E.C.: Wed., 3.30 p.m., M.R.C.P. Course in Heart Diseases. *Brompton Hospital*, S.W.: Mon. and Thurs., 5 p.m., M.R.C.P. Course in Chest Diseases. *Colindale Hospital*, The Hyde, N.W.: Thurs., F.R.C.S. (Final) Course in Urology.

VACANCIES

EXAMINING FACTORY SURGEONS.—The appointment at Udlington (Lancaster) is vacant. Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by August 26.

EXAMINING FACTORY SURGEONS.—The following vacant appointments are announced: Maiden Newton (Dorsetshire); Alth (Perthshire). Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by September 2.

APPOINTMENTS

HEATHER, J. C., M.D., B.S., M.R.C.S., L.R.C.P., Examining Factory Surgeon for the Coventry East District (Warwickshire).

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post, Monday morning to ensure insertion in the current issue.

BIRTH

FORREST-HAY.—On August 8, at "The Riddings," Bewdley, Worcestershire, to Marjorie, wife of Captain Graham Forrest-Hay, R.A.M.C., W.S., a son. Both well.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 30 1941

RECENT B.M.A. ACTIVITIES

In the absence of a Supplementary Report of Council, members of the Association will be glad of a brief report on a number of points dealt with by the Association in recent months.

Protection of Practices Schemes

A. POSITION IN RELATION TO THE GOVERNMENT'S INTENTION TO INCLUDE WITHIN THE SCOPE OF NATIONAL HEALTH INSURANCE NON-MANUAL WORKERS WITH INCOMES UP TO £420 PER ANNUM

Committees administering Protection of Practices Schemes are being advised to give effect to the following recommendations after consultation with the clerk to the insurance committee for the area:

1. That where any new entrant to national health insurance (including the group brought into N.H.I. under the new legislation) applies to be placed on the list of an acting practitioner, it is the duty of that practitioner to ascertain the name of the practitioner formerly or normally consulted by the patient, and if that doctor is an absentee the acting practitioner may accept the patient only on behalf of the absentee. The patient would thus become a "temporary acceptance" on the acting practitioner's list, and if the name of the absentee is included in the list of the insurance committee for the area the fees for treatment would be distributed in accordance with the local scheme.

2. In order that non-insurance absentee practitioners may become entitled to the moneys for the treatment of those non-private patients who are new entrants to N.H.I., Local Medical War Committees should urge the legal personal representatives of the absentees to make application for the inclusion of the absentees' names in the list of the insurance committee for the area as from January 1, 1942.

B. EXTENSION OF PROTECTION OF PRACTICES SCHEMES

Committees administering these schemes have been asked to consider the adoption of a supplementary agreement which would afford protection under the terms of the local agreement to an acting practitioner who is killed or dies, who is permanently or temporarily incapacitated from performing the duties of his profession, or who, in consequence of damage or destruction of professional premises by enemy action, is temporarily unable to perform the duties of his profession. A model supplementary agreement has been supplied.

C. OBSERVANCE OF PROTECTION OF PRACTICE AGREEMENTS

The Council informed local committees administering the Protection of Practices Schemes that it was prepared, in a limited number of cases which were supported by the necessary evidence, to assume financial responsibility for the legal action necessary to enforce observance of the protection of practice agreement, provided the cases were approved by the Association's solicitors. A number of cases have been referred for legal action, and the necessary steps have been taken. In one case High Court proceedings were taken on the advice of the solicitor. In this instance an interim injunction was granted preventing the acting practitioner from dealing with moneys received by him on the absentee's behalf otherwise than in accordance with the scheme.

Sale of Milk (Restriction) Order

The *Supplement* to the *British Medical Journal* for June 14 contained correspondence which had passed between the Association and the Ministry of Food on the Sale of Milk (Restriction) Order. The Association considered that many of the features of the scheme were unsatisfactory and made representations and suggestions to the Ministry, more especially on the list of diseases for which extra milk might be obtained and the requirement that the medical certificate, which showed the nature of the

disease, should be given to the dairyman. The Ministry promised that the points raised by the Association should receive full consideration in the general revision of the scheme which was contemplated, and in the meantime made an arrangement under which the practitioner would send to the Food Office a list of the cases in which he had issued certificates, thus obviating the handing of a medical certificate to the dairyman. The Ministry has now sent for the Association's observations a revised scheme, which is a great improvement on the original. The list of diseases is divided into two parts, the first containing the more serious diseases for which extra milk is required and the second relating to temporary incapacity. The medical certificate is sent to the Food Office, which authorizes the supply of extra milk.

First-aid Posts

The Select Committee on National Expenditure recommended in its fourteenth report that certain economies should be effected in connexion with the duties of medical practitioners at first-aid posts and the remuneration paid to them. It recommended that: (a) The difference in the amount of attendance required of doctors at posts in more vulnerable and less vulnerable areas should be abolished. (b) Three attendances a week are unnecessary and once a month is not enough. (c) Training to maintain the efficiency of first-aid posts should be largely in the hands of a trained nurse. The doctor in charge should be relieved of all routine duties of administration. (d) The annual fee (£75 or 20 guineas) should be discontinued.

A letter was subsequently received from the Ministry of Health expressing its own views on these recommendations and asking for the observations of the Central Medical War Committee. The letter stated:

"As regards (a) the Minister is disposed to share the view of the committee that there is no longer any justification for the difference in the amount of attendance required of the doctors as between posts in vulnerable areas and those in non-vulnerable areas. This difference was brought about by Circular 1918 at a time shortly after the outbreak of war, when the posts in vulnerable areas required a considerable amount of concentrated work to bring them to a proper state of efficiency, not only because they were likely by reason of their situation to be called upon to deal with the effects of heavy air attacks, but because they were kept constantly in commission with whole-time personnel who consequently required fairly continuous supervision at that stage of the war. Now, however, the additional work of training and organization has largely been completed, and what is required is to maintain the efficiency of the post at an adequate level.

As regards (b) the Minister finds it difficult to lay down any general rules as to the amount of attendance required. He agrees that attendance three times a week is not necessary in the present circumstances and that attendance once a month would usually be inadequate, and he has come to the conclusion that within these limits it must be left to the medical advisers of the local authority, in consultation with the doctors concerned, to make such arrangements as the circumstances require. The Minister feels sure that he can rely on the doctors giving such attention to the work of training as is necessary to maintain the efficiency of a team in which they can justifiably feel a personal pride.

As regards (c) the Minister does not consider that the responsibility for training could be entirely delegated to the trained nurse if only for the reason that, as experience has shown, changes in the nature of the training may frequently have to be made to meet changing conditions of warfare. The nurse should assist, but the ultimate responsibility and supervision should remain with the doctor. Indeed the main duty of the doctor should be to keep the standard of training of the existing personnel to a proper level, to attend to the training of any new recruits to the post, and to ensure that these recruits are properly absorbed into the organization and that a proper team spirit is thus maintained. The routine duties of general administration and supervision of stores no longer require the personal supervision of the doctor appointed to the post, but could be undertaken by other personnel or by the appropriate officer of the scheme-making authority.

As regards (d) it will be apparent that if, as suggested above, the distinction between the vulnerable and non-vulnerable areas is abandoned, some adjustment of the fees will be necessary unless the profession are prepared to accept the suggestion of the committee and to make their services available without remuneration.

The Central Medical War Committee appointed a special committee to consider the matter, and this committee expressed the opinion that the recommendations of the Select Committee showed "a lack of understanding and appreciation of the nature and extent of the work of doctors in the organization and training of the personnel of first-aid posts in both vulnerable and non-vulnerable areas." A letter was sent to the Ministry of Health conveying the following recommendations:

(a) Under present conditions there should be no differentiation in the duties required of practitioners in charge of the posts in both vulnerable and non-vulnerable areas.

(b) The personnel of all first-aid posts in all areas should be kept fully trained. To ensure the efficient training of personnel, including new recruits, and the maintenance of team spirit and morale, the first-aid post medical officer should attend not less than three times a week.

(c) The responsibility for the training of the personnel should remain with the practitioner in charge of the post, who may at his discretion delegate certain functions under his immediate supervision. In the interests of efficiency and effective control the responsibility for general administration and supervision should also be retained in the hands of this practitioner.

(d) The payment of £75 per annum to the practitioners in charge of the posts in vulnerable areas should not be reduced but should be made applicable to all areas.

A deputation placed these resolutions and the arguments for them before officials of the Ministry of Health.

Medical Certificates

The Association is aware of the extra burden imposed on medical practitioners by requests for medical certificates for various purposes arising from wartime conditions, and the subject is being discussed with the Government Departments concerned. These certificates include those applied for by persons claiming to be unfit for transfer to work away from their homes; for persons entering factory employment; for appellants against fire-watching duty; and special certificates in connexion with air-raid injuries. The request for certificates for one-day absences from work in connexion with the attendance bonus scheme is particularly onerous, and the Council has issued the following letter to Divisions in colliery areas:

"The attention of the Association has been drawn to the requests now being made or about to be made, as a result of the operation of the Attendance Bonus and the Essential Work Order, for medical certificates for one-day absences from work. It is clearly impossible in the vast majority of cases for practitioners conscientiously to give such certificates based on ascertainable physical signs, and this request can only result in embarrassment to both doctors and miners without achieving the object for which it has been designed. In these circumstances the Association advises colliery practitioners to decline to undertake, as a general procedure, the issue of such certificates.

"It is suggested that Division executives and organizations of colliery surgeons should intimate this decision to local miners' and owners' organizations."

The whole question of the certificate burden and the lack of co-ordination between Government Departments in requiring medical certificates has been the subject of strong representations and is now under discussion between the Association and the Ministry of Health.

Industrial Health Committee

It is hoped that the report of the Committee on Industrial Health will be completed very shortly. Since the publication of the Annual Report the committee has issued to Divisions a circular suggesting that they should consider making contact with employers in the neighbourhood with a view to securing for general practitioners facilities for seeing something of factory life in action, and for making themselves acquainted with the work of their patients or of any one patient, so that this knowledge will help them to decide how far a patient's health is affected by his work and to advise and prescribe accordingly.

Fire-watching

The Association has discussed with the Ministry of Home Security the liability of medical practitioners to undertake fire-

watching duty. A full statement of the position was printed in the *Supplement* for May 10, 1941. Briefly, medical practitioners are exempt from registration and enrolment under the Civil Defence Duties (Compulsory Enrolment) Order, but they are liable under the Fire Prevention (Business Premises) Order. The Ministry of Home Security has been asked for a statement confirming that medical practitioners will be exempt from registration in connexion with the new fire guard.

Transfer of Doctors' Maids

Many practitioners are experiencing difficulty in consequence of the Registration for Employment Order for Women. When the scheme was first announced the Association approached the Ministry of Health to ascertain whether it was likely that doctors' receptionists and maids would be transferred to other duties. The Ministry's reply that no guarantee could be given and that each case would be decided by the interview was not satisfactory, but it was decided to wait until the interviewing had begun, to see how the scheme would work. From correspondence now being received from practitioners it would appear that the nature and importance of the work of a doctor's maid are not fully appreciated by the officials at the employment exchanges. A letter, which was printed in the *Supplement* of August 2, has, therefore, been sent to the Ministry of Labour asking that more consideration might be given to individual cases.

Medical Planning Commission

The Medical Planning Commission, the appointment of which was reported in paragraph 4 of the Annual Report, held its first meeting in May, and a full report of the proceedings was published in the *British Medical Journal* for May 17. The Commission increased the representation of general practice by adding four more general practitioners to its membership, and it appointed six committees—namely, a General Practice Committee, a Special Practice Committee, a Public Health Committee, a Hospitals Committee, a Teaching Hospital Committee, and a Co-ordination Committee. The subject committees have now begun their work by considering the general nature of the problems within their respective spheres.

Petrol

In view of complaints of difficulties caused by cuts in the supplementary allowances issued to medical practitioners representations have again been made to the Petroleum Department. The Department has given an assurance that there is no intention to withhold petrol required by doctors for the discharge of essential services necessarily involving the use of a car. Despite this assurance cases of difficulty still occur, and the position cannot be considered wholly satisfactory. The Association will continue to do everything possible, both in its negotiations with the Department and by investigating individual complaints through the medical liaison officers, to ensure that legitimate claims are reasonably considered and just grievances promptly remedied.

Considerable apprehension has been caused by the announcement of a proposed compulsory Order relating to a daily log of journeys undertaken by recipients of supplementary rations. When this announcement appeared a prompt protest was made by the Association on behalf of the profession. Discussions with the Petroleum Department are still proceeding, but it is hoped to publish a statement on the subject in the *Supplement* next week.

Car Repairs

Repeated representations have been made to the Ministry of Transport regarding the difficulties experienced by medical practitioners in obtaining spare parts and repair facilities for their cars. The institution of a system of priorities for essential road transport, including doctors' cars, has been fully considered by a special committee set up by the Ministry, but has been judged to be impracticable. Every effort will be made, however, to ensure that cars used for essential work will be immobilized as little as possible. Doctors who fail to secure the necessary facilities by their own efforts should apply to the Certifying Officer of the Ministry at the office of the Regional Transport Commissioner.

Lectures on Gas and Air-raid Casualties

The Association is co-operating with the Ministry of Health in arranging lectures on the diagnosis and treatment of gas casualties to supplement the printed information recently issued by the

Ministry to all practitioners in England and Wales. The number of experts on this subject being limited, it is necessary to confine these lectures, for the present at least, to the larger centres of population in the more vulnerable areas. The speakers are provided by the Ministry and the arrangements are made by the local Divisions of the Association, the cost of printing and posting the necessary notices being defrayed out of the funds of the Divisions.

Divisions in comparatively "unblitzed" areas have been authorized to arrange, if they so desire, lectures on air-raid casualty work by speakers with experience of "blitz" conditions. The Ministry of Health have offered to assist, through their regional hospital officers, in the selection of suitable lecturers. Printing and postage costs and any out-of-pocket expenses of the lecturers are borne by the Divisions.

Alien Practitioners

More than 400 alien practitioners have now been selected for approved civilian medical appointments under the Medical Register (Temporary Registration) Order, 1941. The posts secured by these practitioners are mainly of a comparatively junior nature in hospitals and institutions. The Central Medical War Committee has undertaken a laborious task in connexion with the administration of the Order. It serves as a co-ordinating agency, obtaining the necessary permits for individual practitioners from the Security Departments, submitting names of available candidates on request to employing authorities, and arranging for registration in the *Medical Register* to be effected when approved employment has been offered and accepted.

Discussions are proceeding at present regarding the advisability of amending the Order by extending the list of overseas territories to which it applies and adding to the categories of approved employment. It is thought that, in view of the extreme shortage of British practitioners available as locum tenens and assistants in general practice, it may be advisable, under carefully defined conditions, to permit temporarily registered practitioners to undertake this work for the duration of the present emergency only. There is no question of such practitioners being allowed to practise privately on their own account, to continue as registered medical practitioners after the war, or to undertake medical work in this country after the war.

Other Matters Recently or at Present under Consideration

These include: income limits for Hospital Contributory Schemes as a result of the raised income limit for insured persons; National Ophthalmic Treatment Board arrangements from January 1, 1942; Ministry of Pensions scales of remuneration; augmentation of salaries of district medical officers in reception areas; medical care of civilian population housed in huts; and the scale of remuneration under the National Deposit Friendly Society.

COURSE FOR HOME GUARD MEDICAL OFFICERS

At the request of the Central Medical War Committee the War Office has arranged a short course of instruction for Home Guard medical officers specially adapted to their Home Guard work. The course will be held at 11 Corps R.A.M.C. School, St. John's College, Cambridge, from Thursday, September 11, to Tuesday, September 16, 1941. It is open to all medical officers commissioned as such in the Home Guard, and those desiring to attend this course should communicate immediately with the Secretary of the Central Medical War Committee, B.M.A. House, Tavistock Square, W.C.1, and in any case before Wednesday, September 3. Officers attending will be asked to report to the Commandant at St. John's College, Cambridge, between 14.00 hours and 16.00 hours on Thursday, September 11. Uniforms should be worn. Officers will be accommodated in St. John's College, bed and blankets being provided, and will mess in the College Hall. The charge for messing will be 9s. 6d. per day. Officers should bring their civilian ration card, notebooks, and pencils. The course will disperse at 11.00 hours on Tuesday, September 16, 1941. Cheques will be accepted in settlement of messing account. A copy of the syllabus will be forwarded in due course to those intimating their desire to attend.

It is hoped that there will be a generous response to this opportunity. The course will be limited to thirty officers, and will not be held unless at least twenty intimate their desire to attend.

Correspondence

Medical Planning and a State Medical Service

SIR,—I imagine that by this time an official asterisk, with the intimation "This correspondence is now closed," may have put a summary closure to the many letters on this subject. But I can plead ignorance over here, as I have only recently seen the *Journals* for April and May, which were lent to me by a colleague isolated in the prairies like myself. I confess that the letters from your many correspondents on medical planning and the allied matter of a hypothetical State Medical Service have disturbed me a good deal. Unfortunately the copy outlining the proposed scheme put forward by Dr. Pybus was not among those handed over to me, so I am ignorant of its exact details, its merits, or its faults. But from perusal of the letters supporting or opposing his suggestions I have a fair idea of what those proposals were. And I must immediately align myself with the opponents of his scheme.

Much has been made in the correspondence about the age of the members of the Medical Planning Commission, their right to speak for younger men, and the wider question as to how much a State service would be welcomed by the public apart from the profession itself. I believe that, as a young member of the genus "medical practitioner," I have a right to give my views, as, indeed, what is decided or proposed will affect me and all my generation of practitioners all our days. So I shall say my say, and try not to make the matter too personal.

Before the war I was a partner in practice in a North of England country town, one of these ideal country towns where the other medical men—all nine of them—do not indulge in undignified rivalry and where all are admitted, if they so desire or are worthy, to the staff of the local country hospital. For my share in the practice I borrowed, and still owe, a considerable sum. And so, after four years, to August, 1939, when, as a member of the R.A.F.V.R., I was called up for service; and from there by way of a Bomber station at home to France and Dunkirk; by way of a tented existence in Yorkshire (with my hospital in an empty fish-and-chip shop) to an interlude in a north-western coastal town working in a large Service hospital; and, finally, after three transatlantic crossings, to the prairies of Canada in charge of a splendidly equipped Service hospital.

Thereafter, who knows? But when it is all over I hope to return to a life like that which I was called upon to leave for a while: trust, friendship, willingness, and an absence of rigid regulations and formality. And meantime, while I (as well as hundreds of others like myself) am absent the future of medical practice is being discussed and planned and plotted. I freely confess that I am not proud of living over here in comparative luxury and perfect safety while my family, my friends, and my colleagues at home have less easy paths to tread. But the choice was not mine. What I do suggest, however, is that this very debatable question of a State Medical Service, in fairness to those of us who are away, can only be decided in two or three ways. My first point is that those of us in the Services are likely to be affected as much as—or even more than—those in civilian practice by the results of the deliberations now in progress. We expect to return with thirty to forty years' medical work ahead of us. Surely we are entitled to say whether we agree or disagree with the commitments liable to be made in our name in our absence!

To my mind there are only two fair alternatives. One is to await the return of absent practitioners and let them have the major share in the construction of the life they are going to lead, the work they are going to do. The other is to circulate all the profession with a draft scheme for their approval or condemnation. If State medicine must come, then those already in a State service should be given the chance of assessing what their life will be like in an alternative service. First of all our patients should be given their choice as regards a form of State service. Then we should be given a fair deal, a fair explanation of what is proposed for our future and in the disposal of our past liabilities in all circumstances. We expect that fair deal while we are absent on active service. We rely upon the trustees who are left behind.—I am, etc.,

W. H. GOSSIP.

Squadron Leader, R.A.F.V.R.

Canada, July 26

State Medical Service

SIR,—The question no longer is, Are the medical profession in favour of a State service? but, rather, What kind of a State service are we prepared to accept if the public signify their desire for this type of service or are led to believe that a State Medical Service will be best for the health of the country? The more the profession air their views in your columns and also at medical meetings, the more likely we shall be ready to meet this complete change if or when it comes.

It seems important that such a service shall be administered, in the main, by the medical profession, and it would be a good thing that those doctors who show administrative capacity should be encouraged to improve their technique in order that we can meet and cope with the civil servants on their own ground. In the cities, clinics would be more adequately staffed and equipped than the present individual surgeries. There is also no doubt that we should all benefit by more supervision and discipline, which are almost entirely lacking in the present national health service. The correlation of all the medical services would also tend to prevent the present overlap between the public health and other services.

Two main arguments against a State service are: (1) loss of personal contact with patient; (2) loss of independence. Our independence has already been largely lost since the present war began, and providing we can offer to the Government a satisfactory State service we should still be able to keep enough independence to satisfy the most exacting. Apart from the country districts we no longer have the same control of our patients' medical duty, and I feel sure that the individuality of each doctor will continue to assert itself in whatever kind of service we are finally in.—I am, etc.,

Larkhill, Wilts. Aug. 16.

R. C. L. BURGESS.

SIR,—Dr. G. Llewellyn Davies's letter (*Supplement*, August 2, p. 15) is sensible and to the point. To-day general practice is as much a business as a profession, and it will be increasingly so, to the detriment of the medical art, so long as practitioners have to compete with one another in their efforts to provide adequately for their dependants and for retirement. We are trained to be professional gentlemen; we are compelled to be business men. Every doctor knows of cases in the profession where men, through diffidence in money matters or lack of business instinct, neglect the presentation and settlement of accounts and thereby create financial chaos for themselves. Do we do anything to help them or the others in the profession who for various reasons are unfortunate? By no means. Our present state of organization and co-operation (or lack of it) holds out no helping hand to the unlucky; and many a man in spite of sound professional ability is unlucky in the economics of his life's work.

Let us, as Dr. Davies says, have done with humbug and examine the problem in a clear light. The practice of medicine is one of the most important and most exacting of the services to the public, and as such the livelihood of those engaged in it should be guaranteed. That a man is lacking in business methods, deficient in "bedside manner," or has sunk his capital in a "rocky" practice is in no wise a reflection on his knowledge of the work he has been educated in. Nevertheless, the possession of these qualities and luck in "hitting on the right place" are more often the measure of worldly success than ability and endeavour to deserve well of the profession.

If a State Medical Service will remove these evils let us have

Most practitioners on giving the matter thought will, I am re, agree with Dr. Davies.—I am, etc.,

Strichen, Aberdeenshire, Aug. 3.

WILLIAM HARKINS.

State Medical Service: An Analogy

SIR,—I am astonished and dismayed by the complaisance with which the prospect of an all-embracing State Medical Service is regarded by many who have enjoyed the privilege of free practice. I cannot help believing that the State they envisage is not the State of experience but a "dream State"—a State that never was on sea or land.

In the last twenty-six years I have done medical work for the State in many departments—the R.A.M.C., the Ministry of Pensions, the Ministry of Health (as a panel practitioner), the Ministry of Labour (as a member of recruiting boards), the Post Office Medical Service—and have worked in what is next door to a State

service—the School Medical Service of London. I have also practised on my own account for twenty years. Unless I utterly deceive myself I have done far better clinical work and been of far more use to my fellow citizens as a family doctor working independently of any State Department and remunerated by fees agreed between me and my patients than I have done when the State has had a hand in the matter. It is not that I am not ready to give my best work to the State or that I find a salary or a capitation fee less conducive to effort than the "piece-work" plan of private practice, though, by and large, I think private patients reward us far more nearly according to our deserts than does the State, but it has been my constant experience that the State does not want my best work, does not really like it, and very frequently has stood between me and the doing of it.

In the course of practice we may find ourselves trying to serve and help a very irritating patient. He is elderly, conventional, vain, and very ill informed. He has no conception of the nature of clinical medicine and is quite unable to tell good work from bad; he is at once dictatorial and timid, for ever issuing instructions but unable to take a bold decision, morbidly careful of appearances and afraid of public or private criticism. He is blown about by every wind of doctrine and is constantly asking us to pursue vain and futile lines of investigation and treatment, mistaking theory for fact and gesture for deed. He insists on being treated for every little ailment by a team of specialists, the notion of personal responsibility being outside his scale of values. Sometimes he insists on paying us for doing nothing; sometimes he disputes our accounts for well-earned fees; and though well off he is constantly fretting about expense. It is, of course, quite impossible to give such a man the best or even good medical service. He does not understand it, dislikes it, and will not have it.

Now one such patient in a practice consisting in the main of decent, sensible folk whom we are free to treat *secundum artem* can be borne. He does not monopolize our time or energy, and can be trusted to change his medical adviser before he becomes quite intolerable. But suppose one day a fancy takes him and he comes, all smiles, with a proposal which he is sure is as much for our good as his. He invites two of us to become his whole-time medical staff. Our hours of work are to dovetail neatly so that we shall know precisely when we are and when we are not responsible for his health; our modest salary is to be paid regularly into our bank; there are to be holidays with pay, and when we are retired at 65 we may be sure of a little pension; his library and private laboratory are at our disposal; and we undertake to attend classes at a neighbouring medical school to keep us up to date. We are to attend him, and perhaps his immediate family, as and when required, carrying out such investigations and treatments as he may request (we can trust him, he says, to ask us for nothing unorthodox), and in specified circumstances we are to call in a consultant from the list with which he will supply us. We are not to practise on our own account. The contract is for life, and, indeed, he hopes that our sons will take it on from us when we, unfortunately, have to retire. This is the proposition, and it is useless to argue with him; we must take it or leave it. Knowing the self-deceived and muddle-headed old tyrant for what he is, can anyone who values his professional freedom, who reveres the art of medicine, and who sincerely wishes to give of his best to his fellow citizens hesitate one moment to refuse it?—I am, etc.,

Hampstead, Aug. 16.

LINDSEY W. BATTEN.

Payments to Insurance Practitioners

SIR,—The decision of the Panel Conference to accept the Ministry's offer of an inadequate capitation fee makes it essential that N.H.I. practitioners should receive, and be satisfied that they are receiving, the full capitation fee to which they are entitled.

In the *Journal* of August 9 (p. 215) Miss Horsburgh, on behalf of the Minister of Health, is quoted as having stated that the number of insured persons in Great Britain on December 31, 1939, was: men and boys 14,204,000, and women and girls 7,243,000—that is, a total of 21,447,000. At the rate of 9s. a head, the sum payable to N.H.I. practitioners should therefore have been approximately £9,650,000. In the *Journal* of August 16 (p. 252) Mr. Ernest Brown is quoted as having stated that a sum of £7,674,127 was paid in 1940 to doctors under contract with Insurance Committees in respect of treatment. How is this

difference of nearly £2,000,000 to be accounted for? Large numbers of insured men have, of course, joined the Services, and these must to some extent be offset by the large numbers of women and boys who have been taken into the war industries, as well as previously unemployed men whose entitlement to medical benefit had lapsed. I think that N.H.I. practitioners are entitled to a full explanation.—I am, etc.,

Manchester, Aug. 17.

ARNOLD GREGORY.

New Capitation Fee

SIR.—Great indignation is being expressed not only in Birmingham but everywhere. Appeasement will never get us anywhere; the profession must take off the gloves. "The time is not opportune." Will it ever be opportune? Never until the old heads on the Insurance Acts Committee are scrapped and we have younger representatives who come forward with tanks and brains. If there are any "worms" in the profession, and I doubt it, the worms are the members who never attend meetings and only grouse. Dr. Gregg hit the nail on the head: "If they have chosen worms, why have they chosen them?" I now appeal to the aged members and the Insurance Acts Committee to resign, and give way to new and, I trust, younger representatives who will have nothing to do with appeasement. "The King is dead; long live the King!"—I am, etc.,

Birmingham, Aug. 17.

F. A. L. BURGESS.

* The election of the Insurance Acts Committee will take place shortly.—ED., B.M.J.

Medical Certificates

SIR.—I am interested in the correspondence on the abuse of panel certificate. Some years ago I discovered that the Ministry of Health itself connives at this practice of inspecting certificates so that its employees do not have to procure private certificates. I took the matter up with the Ministry and through your columns, but attained to no satisfaction whatever. Now can any of your correspondents expect private employers play the game according to the rules when those who frame them treat them with contempt?—I am, etc.,

London, S.E., Aug. 9.

DONALD M. O'CONNOR.

New Entrants to Health Insurance

SIR.—I understand that in January, 1942, about 450,000 non-annual workers with incomes between £250 and £420 per annum will become compulsorily insured. Is any provision being made for the loss of these patients to the practices of doctors who may be away on military service? Would not the fairest way be to postpone the scheme coming into operation until after the war?—I am, etc.,

London, S.E.6, Aug. 9.

MALCOLM COWAN.

* The Secretary of the B.M.A. states that the point raised by Mr. Cowan is under consideration by the central Protection of Practices Committee, and it is hoped to make an early announcement on the subject.

Publicity for Insurance Acts Committee

SIR.—A Panel Conference met on July 31 to decide a question that affects every panel practitioner. How many of them know the result? I suggest that the Insurance Acts Committee should seriously consider the necessity of arranging for more publicity of its work. It has been negotiating with the Minister of Health since the beginning of the year, and a report was sent to panel committees last month, but it was not published in the *Journal*. The contents were disclosed to doctors in those areas where a general meeting of practitioners was convened, though probably only to those who attended the meeting. Representatives who went to the conference realized that opinion is divided and deeply disturbed, as is borne out by the small majority of only nineteen votes for the resolution that accepted the Government's offer.

If and when an account appears in the *Journal* members of the B.M.A. will have the information, but not that considerable number of non-members. A decision so important ought to be made known at once to all interested, and in my own area that has been done by the panel committee. Further, in order that doctors may form properly instructed opinions they must be

kept informed by the I.A.C. of what is happening. There are large numbers of doctors who know little or nothing of what is done on their behalf by the I.A.C. and do not even know that it is a committee which includes many members that do not belong to the B.M.A., and that in fact these latter could form a majority. Consequently both the I.A.C. and the B.M.A. come in for severe criticism.

The Medical Practitioners' Union send out circulars from time to time which go to all doctors, and which, besides containing statements of fact, also convey the opinions and policy of the union. To many doctors it must appear that this union is the only organization that is really interested in their welfare. I hope that members of the I.A.C. will ponder carefully this question of better publicity, and study what was said with obvious sincerity by speakers at the conference.—I am, etc.,

Weymouth, Aug. 10.

J. A. PRIDHAM.

* The Secretary of the B.M.A. states: Reports of meetings of the Insurance Acts Committee at the negotiations with the Ministry of Health have been discussed and appeared in the *Supplement to the Journal* of June 28 and July 26, and Panel Committees were informed at an early stage of the correspondence which passed between the committee and the Ministry.

"Pure Despotism"

SIR.—Most of us who have worked the national health insurance system since its inception will be inclined to smile at the description, quoted by Dr. Turton from Lord Hewart's *The New Despotism*, of the treatment of panel doctors under the N.H.I. Acts as "pure despotism." The notion that doctors are bullied by despotic officials or prevented by fines from prescribing adequate medicines is pure delusion. While his eminent and noble lordship was writing this nonsense, I and others were prescribing insulin at a cost of 25s. a week (in its early days) for panel patients. A working-class patient under N.H.I. benefit can have medicines which private patients of the same class could not possibly afford.

Of course, under any system of treatment, public or private, economic facts compel some limitation of the cost of treatment. It is unjustifiable to prescribe the elegant productions of commercial drug firms in private or panel practice if the same results can be got by non-proprietary drugs. Or, to take a simpler example, the standardized digitalis leaf tablet is cheap and, according to most cardiologists, as good a preparation as any for most heart cases, yet many practitioners habitually prescribe the more expensive and unnecessary digitalin.

But let us call another witness for Lord Hewart's charges from a very different quarter. In a Communist booklet (*Condition of Workers in Britain, Germany, and U.S.S.R.*, published 1939) Kuczynski, attacking the N.H.I., not because it is socialistic but because it is capitalistic, says: "A worker has to pay for medicine as a matter of course or because the insurance scheme does not provide as good a medicine as is demanded by his illness." The value of this assertion may be judged by further quotations from the same author. "Good physicians in the capitalist countries spend most of their time on rich patients and are often interested in poor patients mostly for the purpose of experimenting on them or if the sickness of the worker is of a rare or interesting kind." The humour of this will appeal most to the honorary surgeon of a voluntary hospital after three hours' intensive work in his outpatient department or operating theatre. Again, "the dream of most country doctors is to spend as much time as possible at the bedside of the gentry." It is to be feared that most country doctors find that there is much difference between the dream and the reality.—I am, etc.,

Bradford-on-Avon, Aug. 17.

T. T. APSIMON, M.B.

A Panel Doctor Repents

SIR.—*Mea culpa! Mea maxima culpa!* I pour ashes upon my head, for I have sat among the gods and have cried scorn upon the I.A.C. upon the stage. But I repent me of my hasty judgment, and am sorry for my bitter words, and will strive to make amends. I have indicted them of supineness, of want of courage, and even of levity towards the interests of their constituents.

Sir, I withdraw it all; for I have attended a panel conference, and it has been revealed to me that the I.A.C. has but faithfully reflected the opinion and the will of the majority of those who have elected them to their high office. At this conference I

found that out of forty-nine relevant propositions nineteen were definitely defeatist in character and calculated to increase the non-resistance party. Further, it appeared that no less than 55% of the delegates were themselves defeatists and voted accordingly.

I am driven, therefore, to the conclusion that the fault of the feeble representation of the views of so many of the profession is due to the fact that the panel practitioners themselves elect to their local committees defeatist representatives, whose motto, typical of their kind, is "Half a loaf is better than no bread." These local panel committees in their turn appoint a super-defeatist to be their delegate to the Conference, and frequently supply him with a defeatist proposition to support and promulgate there.

Sir, we know too well how a political autocrat deals with defeatists. He tramples them down into the mud. Our only hope for the future, then, lies with ourselves. We must choose stronger men to make up our local committees, who will see that their delegates at the Conference will reinforce the I.A.C. with the support of the whole profession when it takes a strong line with the Minister. Let us cease reviling the I.A.C. and make a more careful choice of our representatives at the next election to the Local Panel Committees.—I am, etc.,

Diss. Norfolk, Aug. 4.

J. CUTHBERT PEARCE.

Medical Forces of H.M. Services Appointments

ROYAL NAVY

ROYAL NAVAL VOLUNTEER RESERVE

W. Lennon to be Temporary Surgeon Lieutenant. Probationary Temporary Surgeon Lieuts. J. F. Donovan, A. L. Young, A. McE. Smith, W. St. C. Symmers, G. O. C. Davies-Webb, A. G. E. Pearce, R. G. W. Moore, E. Fowler, W. W. Tennant, W. B. Mumford, F. B. T. T. Drake, W. S. Johnston, and J. A. Fisher to be Temporary Surgeon Lieutenants.

ROYAL ARMY MEDICAL CORPS

War Substantive Captain F. J. Fell has relinquished his commission on account of ill-health, and resumes the rank of Lieutenant.

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Lieut. A. B. Cowley, from Royal Artillery, Reserve of Officers, to be Lieutenant.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

Major N. W. Kidston, from Territorial Army Reserve of Officers, R.A.M.C., General List, to be Lieutenant, and has relinquished the rank of Major. War Substantive Captain R. C. Tudway has relinquished his commission on account of ill-health.

Lieuts. G. D. Malcolm and P. J. O'Reilly have relinquished their commissions on account of ill-health.

ROYAL AIR FORCE

Group Captain F. N. B. Smart, R.A.F. (ret.), has relinquished, at his own request, the rank of Group Captain whilst being re-employed with the Royal Air Force and assumes the rank of Wing Commander. Flight Lieut. I. Mackay has been granted the war substantive rank of Squadron Leader.

Miss Agnes C. Gillan and Miss Alison M. Clark have been promoted to the relative rank of Flight Lieutenants.

Miss Emmie D. Fenwick has been granted the relative rank of War Substantive Flight Lieutenant.

Miss Marjorie M. Dobson has been promoted to the relative rank of Flight Lieutenant in the Royal Air Force, and not the Royal Air Force Volunteer Reserve as announced in the *Supplement* of July 26 (p. 14).

Miss Janet MacL. Mackay has been granted a commission, with the relative rank of Flying Officer.

ROYAL AIR FORCE RESERVE

Flight Lieut. R. G. James has been granted the war substantive rank of Squadron Leader.

AUXILIARY AIR FORCE

Flight Lieut. N. R. Smith has been granted the war substantive rank of Squadron Leader.

ROYAL AIR FORCE VOLUNTEER RESERVE

R. Howarth to be Squadron Leader. Flight Lieut. (temporary Squadron Leader) A. W. Badenoch has been granted the war substantive rank of Squadron Leader.

Flight Lieut. P. J. Nyhan has resigned his commission. Flight Lieut. W. McP. Cross has relinquished his commission on account of ill-health.

To be Flight Lieutenants: R. D. Henderson, I. D. Grant, A. G. Leigh, C. Reid, A. T. M. Roberts, and C. H. Stewart-Usa. The notification in the *London Gazette* of July 25 concerning Flight Lieut. W. MacP. Cross has been cancelled.

Flying Officers R. W. Lass, P. T. D. Lynch, R. O. Gillespie, S. J. Hadfield, J. G. Paton, T. Fenwick, I. W. Hockley, J. E. Horrocks, R. N. Houlding, R. O'Meara, C. E. Astley, T. L. Stoate, J. A. S. Green, T. M. Brand, L. H. Buckland, P. Murphy, D. O. Dickie, A. G. Marshall, J. O'Leary, D. S. Pattison, W. D. Doey, E. H. Jones, C. R. Savage, J. P. Bentley, R. Crawford, R. Cunningham-Jones, W. W. McGrath, T. Akroyd, H. W. Smithies, and T. Taylor to be War Substantive Flight Lieutenants.

Flying Officers (on probation) H. J. Knox and R. Oddie have been granted the war substantive rank of Flight Lieutenant.

BRITISH MEDICAL ASSOCIATION ANNUAL GENERAL MEETING

Notice is hereby given that the Annual General Meeting of the British Medical Association will be held in the Great Hall, British Medical Association House, on Thursday, September 11, at 12.30 p.m.

Business

1. Minutes of meeting held on October 28, 1940.
2. Appointment of Auditors.
3. To receive and approve the statement of accounts of the Association as published in the *Supplement* to the *British Medical Journal* of May 17, 1941.
4. Any other business.

G. C. ANDERSON,

Secretary.

MEETING OF REPRESENTATIVES

A special meeting of Representatives of Home Divisions of the British Medical Association will be held at B.M.A. House, Tavistock Square, W.C., on Thursday, September 11, at 12 noon, and will continue on the following day. The Executive Committee will meet at 10 a.m. and the Council at 11 a.m. on September 11.

Diary of Central Meetings

SEPTEMBER

- 10 Wed. Journal Board, 2.30 p.m.
11 Thurs. Executive Committee, 10 a.m.
Council, 11 a.m.
Special Meeting of Representatives of Home Divisions, 12 noon (continuing on following day).

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following postgraduate courses for Final F.R.C.S. candidates: (1) comprehensive revision course, every morning, 10 a.m. to 1 p.m., from September 29 to October 17; instruction will include clinical teaching in the wards and out-patient department, x-ray and museum demonstrations, lectures, tutorials, and written papers; (2) practical operative surgery on the cadaver, on Mondays, Thursdays, and Fridays, at 2 p.m., from October 6 onwards. Both these courses will be given at the Royal Cancer Hospital.

WEEKLY POSTGRADUATE DIARY

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—St. Mary Islington Hospital, Highgate Hill, N.: Wed., 2 p.m., Final F.R.C.S. Clinical Course. Royal National Orthopaedic Hospital, Stanmore: Sat., 2.15 p.m., Final F.R.C.S. Orthopaedic Course. London Chest Hospital, Victoria Park, E.: Tues. and Thurs., 2 p.m. to 4 p.m., M.R.C.P. Course in Chest and Heart Diseases. Brompton Hospital, S.W.: Mon. and Thurs., 5 p.m., M.R.C.P. Course in Chest Diseases. West End Hospital for Nervous Diseases: Tues. and Fri., 3.30 p.m., M.R.C.P. Course in Neurology. Royal Chest Hospital, City Road, E.C.: Wed., 3.30 to 5 p.m., M.R.C.P. Course in Heart Diseases.

BRITISH POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—Daily, 10 a.m. to 4 p.m., M.R.C.P. Course in Chest and Heart Diseases, Obstetrical and Gynaecological Operations, and Operations. Daily, 1.30 p.m., Postgraduate Course in Obstetrics and Gynaecology. Mon., Course on War Surgery of Extremities commences. Tues., 11 a.m., Paediatric Clinic, Dr. R. Lightwood. Wed., 11.30 a.m., Clinico-pathological Conference (Medical). Thurs., 2 p.m., Dermatological Clinic, Dr. R. T. Brain; 2 p.m., Dr. Duncan White. Fri., 12.15, Conference (Surgical); 2 p.m., Clinico-pathological Conference (Gynaecological); 3 p.m., Sterility Clinic, Mr. V. B. Green-Armytage.

VACANCIES

EXAMINING FACTORY SURGEON.—The appointment at Robertsbridge (Sussex) is vacant. Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by September 9.

APPOINTMENTS

EXAMINING FACTORY SURGEONS.—R. N. Bullock, M.B., Ch.B., for the Tipton District (Staffordshire); W. Eales, L.R.C.P.&S.Ed., for the Knowbury District (Shropshire); P. J. MacMahon, L.R.C.P.&S.I., for the Stillington District (Durham); J. F. L. Rose, M.D., L.M.S., for the Rainham District (Essex).

BIRTHS, MARRIAGES, AND DEATHS

DEATH

HERRIES.—On August 22, 1941, after a brief illness, Dr. Francis William Herries, aged 28, only son of Mr. Louis F. Guanzoli of Wimbledon.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 6 1941

THE MIDWIFERY OF A GENERAL PRACTICE

BY

R. A. RATCLIFF, M.D.

The following tables are taken from a detailed report on 603 midwifery cases attended by my two partners, L. C. W. Cane and S. C. Alcock, and myself during the five years 1935-9. The report was prepared in the manner suggested by the subcommittee of the Royal Society of Medicine (*Proc. roy. Soc. Med.*, 1927-8, 21, 1533), and it is interesting to compare the results with similar reports of lying-in hospitals.

Results

TABLE I.—Numerical Summary of All Cases

	No.	Booked	Emergency
Anterior position of vertex	317		
Posterior position of vertex	80		
Vertex—position unrecorded	153		
Breech presentation (excluding those preceded by version)	40		
Shoulder presentation	7		
Face and brow presentation	6		
	603	417	186
Twins	19	11	8
Accidental haemorrhage	2	2	—
Placenta praevia	9	1	8
Post-partum haemorrhage	13	6	7
Albuminuria	17	11	6
Eclampsia	2	1	1
Acute inversion of uterus	1	—	1
Prolapse of cord	5	1	4
Forceps operations	167	60	107
Version, internal	16	1	15
"	3	3	—
"	12	6	6
Puerperal psychosis	2	—	2
Extracutaneous section at term	4	4	—

Ratio Primip.
Multip. = 0.301

TABLE II.—Breech Presentation

Total No.	40
No. of babies dead or stillborn	9*
Corrected foetal mortality (4 out of 35)	11.4%
Primigravidae only :	
Total No.	17
No. of babies dead or stillborn	4†

* Includes 2 by drocephalus and 3 of 30 weeks' gestation.
† Includes 1 by drocephalus and 1 of 30 weeks' gestation.

TABLE III.—Forceps

	Booked	Emergency	Total
No. of cases	60	107	167
No. of foetal deaths	4	10	14
Foetal mortality	6.6%	9.3%	8.4%
Ruptured perineum and episiotomy	19	34	53
Maternal deaths	1*	1	2

* Died of pneumonia in hospital on the seventeenth day.

TABLE IV.—Internal Version

Indication	Booked		Emergency	
	No.	Infants Alive | Dead	No.	Infants Alive | Dead
Shoulder	1	1 | —	5	5 | —
Brow and face .. ..	—	— | —	4	4 | —
Placenta praevia .. ..	—	— | —	2	2 | —
" Failed forceps " .. ..	—	— | —	2*	— | —
Oxidized posterior .. ..	—	— | —	1†	1 | —
Contraction ring .. ..	—	— | —	1	1 | —

* 1 mother died from pulmonary embolism.
† 1 foet. precluded during rotation.

The foetal mortality in forceps cases is greater in those in nursing homes than at home, but I think this is a chance variation of no significance. No other difference is to be seen between the results in nursing homes and those at home.

Discussion

I find that we have not always noted the occurrence of morbidity when it has been no more than the degree of pyrexia laid down by the Royal College of Obstetricians and Gynaecologists. "Morbidity" is here to be interpreted as of a degree to cause some more enduring impression on the mind of the medical attendant, and all cases suffering from a pyrexial complication of more than three days' duration have been noted in our records.

There is a high incidence of all abnormalities, and this applies to forceps and version as well as to abnormal presentation. No estimate could be given of the number of normal cases to which these correspond: an uncertain proportion of the booked cases are booked because of expected abnormality or of previous abnormality. Emergency cases are those attended in response to midwives' requests for help, and are nearly all far advanced in labour when first seen—such patients are either in their own or nursing homes. But the results obtained in the treatment of abnormalities compare favourably with those of maternity hospitals.

Of many cases of abnormal labour the treatment is debatable, and there is room for much discussion whether the patient should be treated at home or, after delay and an ambulance ride, in hospital; in fact, there is no end to the questions that may require to be answered. Obstetrics can advance only by means of carefully kept statistics, by which we may criticize the value of old and new methods. Lying-in hospitals subject their results to such criticism, but I do not remember having seen such an analysis of results by general practitioners, and I therefore hope that these figures, though small by comparison, may be of value in answering the very important questions raised in the treatment of labour at home and in nursing homes by general practitioners.

DEFERRED MILITARY SERVICE

When the Central Medical War Committee recommends that the military service of a doctor of military age should be deferred, it does so on the understanding that the doctor will continue in his present appointment and will not apply for or accept any other employment without first getting the Committee's consent. In a circular on this matter to local and hospital authorities (Circular 24-0) the Ministry of Health points out that the practitioner is made aware of this condition at the time he is notified of the Committee's recommendation, and that the deferment is granted because of the work he is doing and not for any reasons of his personal suitability or otherwise for recruitment. Further, the Central Medical War Committee, with the Ministry's concurrence, has decided that in future any doctor who leaves such a post will be notified at once that it is proposed to recommend his recruitment, the Committee at the same time inviting the comments of the doctor's new employers and of the appropriate Local Medical War Committee. Hospital and public health authorities are therefore advised to satisfy themselves about the possible recruitment of any doctor of military age whom they propose to employ, and in case of doubt to get in touch with the Central Medical War Committee, B.M.A. House, Tavistock Square, W.C.1.

PETROL FOR DOCTORS

A circular recently issued by the petrol rationing authorities suggested that medical practitioners would in future be required to keep a log of their professional journeys. As this appeared to mean that details of each individual professional visit would have to be recorded, the Petroleum Department was promptly informed that, in the view of the British Medical Association, such a requirement was unreasonable. The matter has been discussed with officials of the Department, and it is clear that this unfortunate but necessary addition to the already heavy clerical work of the doctor will not be so onerous as was at first supposed.

The following statement on the subject has been included in a circular recently issued with the September-October supplementary allowances:

"Applicants who receive supplementary coupons in respect of private cars or motor cycles are reminded that they should keep a daily record of all journeys made. The record must show the places from and to which every journey was made, the business or professional purpose of the journey, and the mileage involved. Where, however, the car or motor cycle is used during any one day for the purpose of visiting, in connexion with the applicant's business or profession, different addresses all in the same district within a radius of fifteen miles from the start of the day's journeys, it is sufficient to record in respect of that day the number of addresses so visited, the approximate mileage covered, the district in which it was covered, and the purposes of the day's journeys. Applicants may be required to furnish a signed statement containing the above particulars in connexion with any future application for a supplementary allowance."

It will be seen that the majority of medical practitioners should be able to record the necessary details simply and briefly. For example, a general practitioner in the borough of St. Pancras will record the day's travelling in the following form: (1) Addresses visited: 20. (2) Approximate total mileage: 15. (3) District: St. Pancras. (4) Purpose: professional. In the case of a rural practitioner who may visit a number of villages in the course of the day a very brief description of the "district" will suffice. For instance, a doctor in Radlett whose round includes Shenley, Park Street, Aldenham, Elstree, and other villages may use the description, "Radlett and district." There is no need to describe in detail the "purposes" of the journeys; it is enough to state that they are professional.

The Association has tried to secure a further simplification of the log. It represented to the Petroleum Department that a doctor should be permitted to define the area of his practice at the beginning of the rationing period and to omit the daily description of the district. The Department declines to grant this further concession. It will be appreciated that the proposed compulsory Order will apply to all recipients of supplementary petrol, and that modifications to suit the convenience of particular professional groups are not easily arranged.

It will be noted that the summary of the day's travelling must include only journeys within a radius of fifteen miles from the start of the day's journeys. Longer journeys (with brief details of place visited, purpose of visit, and mileage) must be recorded separately in the daily log, but there is no question of petrol being refused for such journeys provided that they are necessary and that alternative methods of transport are impracticable.

While the need for this addition to the labours of overworked doctors is regretted, it is hoped that the evidence available in the log will make it easier in future to obtain from Divisional Petroleum Officers all the petrol that is genuinely claimed for professional use.

It appears that some Petroleum Officers are now requesting medical practitioners to produce a log for the July-August period. Those who have not kept a detailed record are advised to provide the best estimate they can and to explain that they have been awaiting precise instructions promised by their professional *Journal*. Owing to delays in the Petroleum Department it has not been possible to publish the above explanation earlier. It seems unreasonable to expect a daily record for July and August in the form to be laid down in an Order which is not yet in existence and which was referred to somewhat vaguely and prematurely in a circular issued at the end of June.

The Petroleum Department has declined to state specifically the purposes for which the basic ration may be used. The Minister, however, has recently referred to this ration as being "within the free use of the individual according to his conscience." Therefore, while no petrol should be consumed except to meet real needs, professional or domestic, it may be assumed that a doctor is not obliged to use any part of his basic ration in his professional work if he requires the whole ration for important domestic purposes.

THE MEDICAL ASSOCIATION OF EIRE (I.M.A. AND B.M.A.)

Cuman Dochtuiri Na h'Eireann

The following amendments to the By-laws have been approved by the Central Council:

1. Wherever the words "the Union" occur in the By-laws substitute therefor the words "the Association."
2. Correct printer's error in By-law 9 (a) (i) by reading "registration" for "resignation."
- 2A. Add Clause (v) to same By-law: Any member who holds an appointment as a commissioned medical officer in the Defence Forces of Eire shall pay an annual subscription of £2 2s.
3. To alter By-law 18 (a) permitting that a member having registered under a particular special Group shall remain a member of that Group until notification is received from such member, under his or her signature, of a wish either to resign from such Group or to transfer to some other Group. This will obviate the necessity at present existing of sending out these Group Forms annually.
4. To alter By-law 18 (d) so as to permit of Group Meetings being summoned by the President of the Union, the Chairman of the Group, or on the written request of any six members of the Group.
5. To redraft By-law 23 (b) as follows: Members of the Union elected by the several Branches to hold office for one year. Each Branch shall be entitled to elect one member. A Branch with more than fifty members shall be entitled to elect an additional member of Council for each additional fifty members or portion thereof, provided that such portion is not less than twenty-five. A voting paper containing the names of all candidates proposed shall be sent to every member of the Union whose subscription is not in arrears.
6. To amend By-law 23 (c) (iv) so as to give the Medical Officers of Voluntary Hospitals Group direct representation of four on the Central Council.
7. To correct misprint in word "Union" in By-law 24 (a), line 1.
8. To substitute word "appropriate" for word "proportionate" in By-law 24 (a) (v).
9. To substitute the word "three" for the word "five" in By-law 24 (c) (i).
10. To redraft paragraph two of By-law 42 to read as follows: "Each of them, the President and Vice-President, shall hold office until his successor be duly elected. Any casual vacancy in either such office may be filled by the Central Council."
11. To delete words "if any" in brackets in By-law 45.
12. To delete commas in By-law 46 (a) after words "except that" in line two and after word "September" in line three.
13. To delete the words "to report upon the duties devolving upon it or upon any scheme it may establish or propose," and substitute therefor the words "for such purposes as it thinks fit" in By-law 47.
14. To add the words "Honorary Secretary" after the words "President and Vice-President" in By-law 48.
15. To substitute the word "may" for the word "shall" in By-law 49 (a), line one, and substitute the word "consider" for the words "deal with" in line four.
16. To delete the words "by a postal vote" in By-law 49 (b) (i), line two, and substitute therefor the words "at the first meeting of the Group next following the Annual General Meeting," and delete remainder of Subsection 1.
17. To delete wording of By-law 49 (c) and substitute therefor the words "Each such Committee shall hold office until the close of the next Annual General Meeting."
18. To substitute the word "Group" for the word "Committee" in By-law 49 (d) and delete the words "of the members" in the last line, and add the word "Committee" after the word "Group" in last line.
19. To delete By-law 49 (e).

MEDICAL WAR RELIEF FUND

TWENTY-FIRST LIST

Previously acknowledged, £31,625 17s. 5d. and £100 3½%
Conversion Stock and £40 3% Defence Bonds

Individual Subscriptions

- £5 5s.—Dr. R. M. Alderton, Hong Kong; Dr. W. J. Duncan, F.M.S.
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£2 2s.—Per Dr. J. N. Johnstone, N. Staffs L.M.W.C. (amount already sent £77 14s.); Dr. J. G. Dathan (2nd donation).
£1 1s.—Per Dr. J. Hunter, City of Edinburgh Division (amount already sent £206 11s.); Dr. W. R. Mathewson.
Total—£31,989 14s. 5d. and £100 3½% Conversion Stock and £40 3% Defence Bonds

MEDICAL CERTIFICATES UNDER THE MILK
RESTRICTION ORDER

The Ministry of Food announces that the procedure under the Sale of Milk (Restriction) Order, 1941, for the issue of medical certificates authorizing the supply of additional milk to certain classes of invalids has been amended by an Order which came into force on August 27, 1941. Representations have been made to the Ministry on behalf of the medical profession that the existing procedure is inconsistent with established medical practice in that the disease or condition from which the patient suffers is divulged to the dairyman or other person into whose hands the certificate may pass. Under the amended arrangements the medical practitioner is asked to certify in item 2 of the certificate only that the patient is suffering from "a disease or condition specified in the First Schedule to the Sale of Milk (Restriction) Order." This arrangement has no bearing on the question of supplies to invalids under the new milk distribution scheme recently announced. Full information on this subject will be published shortly.

Correspondence

Group Practice or Bureaucratic Medicine?

SIR,—To the correspondence on State Medical Service (*Supplement*, August 16, p. 26) Dr. Leak contributes an interesting and valuable letter. As I have already advocated the substitution of group practice for individual practice (*Journal*, March 22, p. 458), I cannot but welcome his advocacy of the same cause, though to my mind the unit for grouping in the medical and health service is not the general practitioner, but the general practitioner together with all other "health workers" in the district—the public health officers, dentists, district nurses, midwives, social and welfare workers, and pharmacists. The group of general practitioners would form the leading body of the organization.

There is, however, a profound difference of opinion between Dr. Leak and myself as to what the function of these groups should be. He wants them to be the alternative to the State Medical Service, believing that this inevitably introduces bureaucratic control, and stamps out all personal relations between doctor and patient; and if he thinks—as do so many, notably Lieut.-Colonel Fairrie—that a State Medical Service can only be run on the lines of the Naval, Military, or Colonial Services, then he would be only too right in raising the loudest clamour of protest. All of us who are live men kick against being "bossed around" by officials and being ruled by regulations framed and issued by permanent office dwellers.

Without local groups we have the present anarchy, or will have bureaucracy. If the groups—each small area—work on their own as absolutely independent units all the faults of local government, with its separatism and parochialism, will be repeated over again. But Dr. Leak's groups of general practitioners could, instead of remaining isolated, become the units of the nationalized health service of the future. It is the pressure of events, not just the paper-consuming glut of the bureaucrat, which compels and forces upon all manifestations of life an ever-increasing and complex measure of organization. We must not be blind to it; we cannot afford to make vain pretence of ignoring it. The clock is moving in this direction, and though we smash all the clocks in the world the process will still go on.

This is the dilemma which is very truly exercising the minds of millions in the world to-day, and the answer cannot be produced in a letter. The solution, however, undoubtedly lies in a system of relations between local and regional, regional and national, organizations. The last are concerned with broad issues of policy, the regional with the more concrete problems of organization, and the local with the living practice and execution of the demands for which the system came into being. For these demands are, in ultimate, the demands of human beings living diversely, in different places and in differing environments.

The greatest elasticity and personal responsibility must be given to the local bodies to carry out national policy. The living cells of this society can, therefore, only be relatively small associations of socially conscious and live men. And to be alive, men must be free. Free, not to do as they like, but free in the sense that they recognize themselves to be, and are recognized to be, adult responsible men. By grouping general practitioners together we shall be training bodies of men in groups with a larger social conscience than that which is fostered by individual and isolated enterprise. We shall not only be doing immediate good to the public we serve and to ourselves, but will also be preparing the way for a truly democratic national health service, and bringing with it our own contribution to the new order.—I am, etc.,

London, Aug. 19.

E. MONTUSCHI.

State or Socialized Medicine?

SIR,—Dr. E. U. MacWilliam (*Supplement*, August 23, p. 31) refers to "an association . . . whose primary object is to work for a Socialized Medical Service," and he takes it "that 'socialized' in this connexion is synonymous for 'national' or 'State.'" He is convinced, however, that the idea of a State Medical Service did not originate within the ranks of the medical profession, and he implicates "the doctrinaire politician."

As the general secretary of the Socialist Medical Association, which some nine months ago provided Dr. MacWilliam with the

"documentary evidence" which he now makes the basis of his surmises, may I be permitted to clarify a few of the points raised in his letter? Membership of the S.M.A. is restricted to members of the medical and allied professions—for example, doctors, dentists, pharmacists, nurses, and students of these professions. The association's main object is to work for a socialized medical service, free and open to all, and to secure for the people the highest possible standard of health. The association believes that poverty, malnutrition, and disease can only be effectively dealt with in a socialized community—that is, one in which production is for use and not for private profit.

Politics and State medicine are in themselves neither good nor bad, in the same way that arsenic, which kills men and spirchaetes, has no innate goodness or badness. It is the use to which things are put that determines their positive or negative value. State medicine is the system in Hitlerite Germany, where it is used to support the Fascist theories of blood and the sterilization of political and racial "undesirables." It is also the system in the Soviet Union, where its use has resulted in a phenomenal decrease in the tuberculosis and infant mortality rates. The value of State medicine, in fact, depends essentially on the political system within which it functions. "Medicine is a social system," wrote Virchow, the pathologist, "and politics is nothing else but medicine on a large scale."

"State medicine," about which we have heard so much lately, will be little if any improvement on the present system or lack of system unless, parallel with the change in medical organization, there is a marked improvement in the environment such as will provide proper food, housing, and working conditions for all. "Socialized medicine" implies both these changes, and we believe that it can be the means of preserving the life and health of millions of people, who will assuredly be suboptimally healthy and develop preventable disease if the good old system, which breeds malnutrition, illness, and war, is allowed to reign unchanged.—I am, etc.,

Aug. 26.

ALECK BOURNE.

State Medical Service

SIR,—Dr. Pybus's scheme for a State Medical Service (*Supplement*, March 15, p. 29) has much to recommend it. There are three points which, after long and bitter and varied experience of medical service, seem to appear important. (1) Prevention and cure should be combined whenever possible. Therefore welfare centres and ante-natal clinics, domestic science classes, and gymnastics should form an integral part of the clinics. In fact, they should be health centres. (2) No one but the completely indigent should receive free treatment. Sickness, especially preventable sickness, should always be penalized, however nominal the penalty may be. This should be the rule, and of course there would be exceptions. (3) "Specialists" should be "debunked." A doctor's prestige should increase with his experience and skill in his own subject. The fact that his subject is an exceedingly limited one should not, *ipso facto*, increase his financial status or, necessarily, his impressiveness.—I am, etc.,

"OUTLANDER."

An Assistant Looks at General Practice

SIR,—In the discussion of any problem involving economic changes it is difficult for the individual to speak without emotional bias. Dispossession on the one hand and possession on the other are strong incentives to an advocacy of a communistic organization or the preservation of the *status quo*. Nevertheless, one must look for objective truths and try to sift "rationalization" from reason. I dare to say that dispossession is the emotional urge in my case, and I am prepared to be instructed where I may seem to err in reasoning in favour of a State Medical Service. Unless the sphere of medicine is the exclusive privilege of the rich, the present-day capitalization of general practice offers nothing to the young graduate who has just completed five or six years of a most exacting mental apprenticeship but, in the end, a long vista of repayments by instalment of capital, interest, life premiums, sickness and accident premiums, and guarantee premiums to the insurance companies. I have spent many years as assistant and also in practice on my own, and I have met many doctors whose hearts were heavy with their economic conditions,

which robbed them of moral dignity in their relationship with their patients. "You cannot call your soul your own," crystallizes the damaging effect of a system whereby hundreds or thousands of patients are "loaned" on mortgage like so much therapeutic stock.

The word "freedom" is so bandied about to-day that it is in danger of losing all meaning. Thus "freedom of enterprise" has come to mean freedom to try to get the highest possible price for an article, irrespective of its cost, by all methods which do not infringe the law. Freedom of choice of doctor means that the patient is free to choose his medical adviser or the surgeon who should operate on him. But a patient must clearly choose a doctor for reasons which are entirely divorced from his medical ability, since the patient is not in a position to judge; and this is borne out by my long experience of the ignorant criticisms, in most damaging terms, of doctors whom I knew to be of excellent worth, and of the praise, equally ignorant ("He saved my boy's life twelve times"), of doctors whom I knew to be not so good. Moreover, while two commodities may differ considerably in quality, I feel that differences of medical ability as between one general practitioner and another are not sufficiently great to make any difference to the real therapeutic welfare of the patient. If they are, it is a most damning indictment of the quality of medical training and of the degree itself.

It is often argued that if a patient "likes" a doctor he (or she) will be helped more by infusion of gentian and aqua than by the most expensive drugs. But if this is true, it means that the patient is, scientifically speaking, suffering from a neurosis, and should be in the hands of a psychologist. My conclusion is that, as a rule and in the long run, patients "like" whatever doctor they are used to, and they always get used to every doctor in the long run. Dr. Moore (*Supplement*, August 16, p. 27) appears to be unique in his absolute and unbounded freedom, which I hope he does not achieve at the cost of overworking an assistant. My experience is that the general practitioner is "free" to do just as he pleases provided he has a telephone system tied round his neck.

Dr. Leak paints a glamorous picture of the revealing nature of general practice. Yes, I have seen the tuberculous, gastric, and anaemic "actor" moving against his social background of poverty, overcrowding, and malnutrition, as I have seen the neurotics "moulded and modified" by other social conditions. Is Dr. Leak going to suggest that the waning of tuberculosis and chlorosis and rickets is due to the scientific investigations of general practitioners, the solace which they afforded, or the social crusade which they led? Or am I wrong in believing that it has something to do with an improved standard of living of the worker? Something too much is made of this doubtful acquaintance with the patient's background. Assuredly, a large number of patients are suffering from "dis-ease"; but the general practitioner is not educated, either medically or culturally, to treat the neurotic, and when the social background has done its evil work in establishing a neurosis it is time we realized that if we cannot alter the system the wretched patient at least merits the best and most sympathetic psychological treatment.

Dr. Turton quotes a most unfortunate example which merely illustrates that the panel system has an economic basis. Unfortunately we cannot escape the economic basis under any scheme in which the expenditure is derived from a separate taxation of the insured workers and not from a common general tax, as in Russia.

I have said nothing of the "ennobling and elevating" drudgery which the capable but impoverished assistant endures in his efforts to attain independence while retaining his morale. He dreams that one day he will have a practice of his own. Meanwhile he gets the "dirty end of the stick," and when he achieves his goal he lives under the shadow of commercial bondage. Finally, it is time that doctors became a little more conscious of social changes and what this war is about. If they don't, progress in the form of increasing social purpose will come in spite of them. "The rich may be robbed to benefit the poor" and vested interests will howl, but the institution of a State Medical Service is an inevitable step forward in the interests of the common weal, and medical posterity as well.

I append a pen-name, not because I lack the courage of my convictions but because one must work to live.—I am, etc.,

Glasgow, Aug. 20.

"ASSISTANT."

Insurance Practitioners and Collective Bargaining

SIR,—May I support whole-heartedly Dr. Inglis Cameron (*Supplement*, August 9, p. 20). As he rightly says, politicians and officials are "both unimpressed and unimpressible." We all know that great changes are due in the social services when the war is over, which doubtless will include or be preceded by some alterations in the medical services. Whether these take the form of increased health insurance schemes or a complete State scheme we do not yet know, but whatever the method pursued our best way to achieve our reasonable aspirations is by intensive propaganda now.

I would like to urge all general practitioners who find Members of Parliament, Ministry or other officials, or directors of health insurance companies among their patients and friends to make a personal and continued appeal to them to make absolutely clear what are our general problems and difficulties. At the same time we should all make it clear to our friends and patients—that is, the general public—what hours we are now working, what pay we are actually getting, and why we all feel that we are being treated unfairly.

Such presentation of the facts as given by Dr. F. M. Rose (*August 16, p. 28*) should always be kept in mind and should be hammered home daily.—*I am, etc.,*

Tasworth-in-Arden, Aug. 18.

HOWARD F. BURTT.

A Change in the Health Insurance Contract

SIR,—In the report of the special Panel Conference (*Supplement*, August 16, p. 21) no reference is made to the fact that approved societies are not to pay benefit for the first twenty-six weeks of incapacity due to war causes. This may, actuarially, be as it should be. But the N.H.I. practitioner is not so treated. He has to attend his insured patient suffering from a war-caused injury for his basic capitation fee. No practitioner is likely to be concerned about that aspect of the matter in times like the present, but the principle whereby the societies are allowed to contract out of war-caused incapacity but the practitioner not is unjust.

The word "insurance" implies sanctity of contract, without which no insurance of any kind could be effected. The contract in this case is between the Ministry on the one hand and the societies and the practitioners on the other. If one side and half the other arrange to alter the contract it can hardly be held as equitable to the remaining half unless that half has willingly consented or is offered the same alteration. Or is the case now considered by the Ministry as free from contracts, as in reality all practitioners' contracts have been torn across by the inclusion of the £420 p.a. class?

The financial strength, and so the power for lobbying, of the societies is becoming extreme, and it is by such manoeuvres as above and by their receipts for each insured man in the Forces that this strength is being added to. One cannot help thinking that it was pressure from the societies that caused the Ministry to include the £420 class and to exclude the dependants of insured persons, as the obvious deduction from that course is that a much-needed social advance was jettisoned in order to bolster up the societies' funds.—*I am, etc.,*

Lincoln, Aug. 21.

S. WRAY.

State Medical Service

SIR,—In reply to Dr. R. S. Saxton (*Supplement*, August 16, p. 27), who suggests we apply to the U.S.S.R. State Medical Service for its experiences to guide us in the formation of one for ourselves, this is hardly opportune at the moment. Also, the standard of living in Russia is very low; the methods and foundations of an organization which may suit Russia might not suit Britain. So we had better leave the U.S.S.R. out of it.

In reply to Dr. E. U. MacWilliam (*August 23, p. 31*), my letter was inspired by a desire to help the civil members of my profession in their post-war difficulties. I have no "fish of my own to fry" nor assumptions nor conclusions to force on anyone. As regards Dr. MacWilliam's idea as to the origin of the proposal for a State Medical Service, I may ask: Did the Council of the British Medical Association, in setting up its Medical Planning Commission, accept instruction from or act on the propaganda of the undetailed and mysterious association referred to by Dr. MacWilliam? Was the original letter of Dr. Pybus inspired from the same source? Whatever motives prompted

the medical profession to consider the formation of a State Medical Service, the main one undoubtedly is dissatisfaction with the present medical insurance and panel system, with its administration by approved friendly societies, and in particular with the scale of remuneration for medical services rendered. I think I am correct in stating that the panel system pleases neither doctor nor patient. This certainly is a motive originating within the ranks of the medical profession.

My assumptions concerning the post-war financial position of private persons who, before the war, were able to give handsome subscriptions to civil hospitals and who were able to pay generous fees to their medical attendants, require and can have no proof, as by the nature of things they are more of a prophecy than an exact conclusion. The proof of a prophecy consists of its fulfilment; for that we must wait and see.

Questions of high finance are not suitably discussed in the columns of a medical journal, but references are justifiable as to the effect of this war on the financial position of individuals who, as patients of one kind or another, provide the medical profession—to put it baldly—with their incomes and mainly support our civil hospitals. A war costing a hundred millions a week, the end of which no man can foresee, as well as the cost of material reconstruction afterwards, will have to be met somehow and in the end by the individual. Such cannot be escaped by juggling with our monetary system, either of a sane or an insane character but certainly not simple. Proposal (a) of Dr. MacWilliam is pure communism, the fallacies of which have been exposed elsewhere. On proposal (b) I can offer no criticism, since Dr. MacWilliam does not tell us of what it consists. However, I think the introduction of this particular "simple adjustment of our monetary system"—a non-medical subject—was the main reason for his letter.—*I am, etc.,*

S. H. FAIRRIE,

Tunbridge Wells, Aug. 25.

Lieut.-Colonel, late R.A.M.C.

Extension of Health Insurance

SIR,—In such accounts as have been published of the negotiations in regard to the recently proposed extension of scope of national health insurance, I can find no evidence that due consideration has been paid to the unfortunate position of the general practitioner with a middle-class practice who has hitherto been able to maintain his status in the best tradition of private practice without succumbing to the indignities and injustices of the panel. Such private practitioners, by remaining outside the panel, have served the profession as a whole by being a standing witness to the dissatisfaction of the profession with the panel system as at present constituted. The extension of the scope of N.H.I. now threatened means that these doctors must either be prepared to capitulate to the system which their less fortunate colleagues are, of necessity, compelled to operate with such evident dissatisfaction, or, alternatively, must see the invasion of an important proportion of their patients' families by their panel colleagues. Have these doctors any grounds for believing that the B.M.A. has exerted itself on their behalf? I can find none. The published accounts seem to indicate that the B.M.A. and our profession's spokesmen in both Houses of Parliament, instead of resisting this extension of scope of N.H.I. at any price, have conceded the principle without demur and have confined themselves to bargaining over the few pence which are to be the price of this encroachment.

Neither can I find that due publicity has been given to the fact that the profession, through its representatives, has even attempted to mitigate the misfortune which threatens the patients concerned in this new act of the legislature by trying to secure a square deal for the panel doctors which would enable them to give a square deal to their panel patients.

I foresee that these patients are going to be seriously dissatisfied when they find themselves compelled to pay for a medical service they do not desire, which is of a character admittedly less satisfactory than that which they have hitherto been accustomed to receive and to afford, and which will be operated by doctors smarting under such a sense of injustice and frustration as cannot fail to tinge their professional outlook, however nobly they may strive to hide their chagrin.

In the absence of proper publicity in the lay press the blame for this new situation is going to be laid at the door of the profession. Press notices which have appeared not only fail to

indicate the profession's deep distrust of this change but actually imply falsely that the Minister of Health and the representatives of the profession are in accord over the new proposals. This is far from true, as can be seen in the *Supplement to the Journal* of August 16, 1941.

The public should be told clearly and immediately that the profession is most dissatisfied with the new plan; that the profession's representatives have only accepted it under duress and after strong protest and in consideration of the Minister's pledge that this is only a wartime arrangement; that the responsibility for foisting this ill-conceived scheme on an unwilling profession and on an unsuspecting section of the public is Parliament's and not the medical profession's. Only thus can the profession and the B.M.A. retain the confidence of the public and avoid being the scapegoat as well as the victim of Parliament's new venture in social legislation.—I am, etc.,

R. GORDON SIMPSON,
Chairman, North Middlesex Division, B.M.A.

Aug. 16.

Military Training of Medical Students

SIR,—In the *Journal* of August 23 the honorary secretary of the British Medical Students Association drew attention to "the recent Order of the Ministry of Labour making part-time military training compulsory for all medical students." I would like to draw the attention of my fellow medical students to a statement in the *Supplement* of June 7 (p. 73) that: "In the Schedule of Reserved Occupations as revised in April it is provided that all persons who have been admitted, or duly accepted for admission, as students by recognized medical schools shall be reserved. It is, however, a condition of their reservation that, except in the clinical years, they shall join a Senior Officer Training Corps or an Air Training Squadron, or undertake some alternative form of national service approved by the university authorities, and that their reservation is subject to periodical certification of satisfactory progress."

It is, I believe, a fact that the instructions sent by the Ministry of Labour to the universities stated that "the university might recommend the exemption from joining a S.T.C. or Air Squadron on such grounds as membership of the Home Guard, other Civil Defence Services, or clinical studies."

I quote the above in the hope that some authoritative statement might be forthcoming defining the position of students in their clinical years. For I feel that training should be done in pre-clinical years and the later years left entirely for clinical studies.—I am, etc.,

Stanford-le-Hope, Essex, Aug. 25.

M. MELVILLE CRAIG.

Ophthalmic Surgeons

SIR,—All ophthalmic surgeons should read "Yorkist's" letter in the *Optician* dated August 15. I cannot imagine anything more calculated to lead them to take simple precautions. The letter is too long to reproduce here, but briefly it condemns ophthalmic surgeons and hospital committees: (1) Who arrange private examinations for the less urgent cases for National Health Insurance companies (Voluntary Hospital Ophthalmic Clinics). (2) For employing dispensing opticians in place of sight-testing opticians, at the same time attributing most dishonourable motives to them. The whole of the letter and my reply will be reproduced in the next issue of the *Bulletin* of the Association of British Ophthalmologists.

In the meantime may I suggest that ophthalmic surgeons do some or all of the following things: (1) Establish similar clinics (Voluntary Hospital Ophthalmic Clinic) for insured patients and others of like income limits at the hospitals where they work, and so give themselves time for the really needy cases. (2) Employ only dispensing opticians for their hospital and private patients, for "there is hardly anything in the world that some man cannot make a little worse and sell a little cheaper, and the people who consider price only are this man's lawful prey" (Ruskin). (3) Join the British Medical Association and help the Ophthalmic Group. (4) Join the Association of British Ophthalmologists (88, Rodney Street, Liverpool) and tackle the problems which face us and so improve the ophthalmic work of our country.—I am, etc.,

Aug. 22.

OPHTHALMIC SURGEON, F.R.C.S

B.M.A. : Meetings of Branches and Divisions

UNITED PROVINCES BRANCH

At a clinical meeting of the United Provinces Branch, held at Lucknow on March 28, with Dr. E. T. BUCK in the chair, Dr. B. B. BHATIA showed the following cases: (1) pyrexia, continuous for about ten days, with a rash generalized all over the body, and a positive Wassermann reaction; (2) secondary syphilis; and (3) hypochromic microcytic anaemia with enlarged spleen and history of haematemesis: probably a case of splenic anaemia, Dr. B. N. SINHA demonstrated an old case of fractured patella in which excision had resulted in perfect movement of flexion and extension, and a case of swelling of the lower end of the femur of four weeks' duration, probably a case of osteogenic sarcoma. An interesting discussion followed each case.

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following postgraduate courses: (1) Final F.R.C.S. comprehensive revision course, daily, 10 a.m. to 1 p.m., from September 29 to October 17. Instruction will include clinical teaching in the wards and out-patient department, x-ray and museum demonstrations, lectures, tutorials, and written papers; (2) Final F.R.C.S. practical operative surgery on the cadaver, Mondays, Thursdays, and Fridays, at 2 p.m., from October 6 onwards. Both the above courses will be given at the Royal Cancer Hospital; (3) revised course in anaesthetics, daily, September 29 to October 11, at the Radcliffe Infirmary, Oxford.

A series of lectures on "War Surgery of the Abdomen" will be given at the British Postgraduate Medical School from Monday to Friday, September 15 to 19 (both days inclusive), beginning at 10 a.m. daily. The fee for the course is £1 ls. Officers of the armed Forces will be admitted free provided they have obtained necessary leave and registered their names before the commencement of the course. Applications for admission should be addressed to the Dean of the British Postgraduate Medical School, Ducane Road, W. Further war surgery courses will be held as follows: beginning Monday, September 29, "War Medicine"; beginning Monday, October 13, "Treatment of Fractures"; beginning Monday, October 27, "War Surgery of the Chest."

UNIVERSITY OF GLASGOW.—A series of eight postgraduate meetings will be held in the Tennent Institute of Ophthalmology on Wednesdays from September 10 to October 29 at 8 p.m. The subjects of the addresses will include: postgraduate tuition in ophthalmology, the making of the ophthalmic specialist, ophthalmic practice in retrospect, the future of ophthalmic practice, pros and cons in ophthalmic therapeutics, ophthalmology in the law courts, and the problem of the nearly blind. There will be an opportunity for informal discussion.

WEEKLY POSTGRADUATE DIARY

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—St. Mary (Islington) Hospital, Highgate Hill, N.: Wed., 2 p.m., Final F.R.C.S. Clinical Course. Royal National Orthopaedic Hospital, Stanmore: Sat., 2.15 p.m., Final F.R.C.S. Orthopaedic Course. London Chest Hospital, Victoria Park, E.: Tues. and Thurs., 2 p.m., M.R.C.P. Course in Chest and Heart Diseases. Brompton Hospital, S.W.: Mon. and Thurs., 5 p.m., M.R.C.P. Course in Chest Diseases. West End Hospital for Nervous Diseases: Tues. and Fri., 3.30 p.m., M.R.C.P. Course in Neurology. Royal Chest Hospital, City Road, E.C.: Wed., 3.30 p.m., M.R.C.P. Course in Heart Diseases.

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—At Tennent Institute, Church Street, Glasgow, Wed., 8 p.m. Prof. A. Loewenstein: The Making of the Ophthalmic Specialist.

VACANCIES

EXAMINING FACTORY SURGEONS.—The following vacant appointments are announced: Eye (Suffolk); Kilwinning (Ayrshire). Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by September 16.

APPOINTMENTS

FORSYTH, W. W., M.B., Ch.B., Examining Factory Surgeon for the Darlington District (Durham).

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

MARRIAGE

JAMES—HYMERS.—On August 2, 1941, Nicholas Ernest James, M.B., B.S., to Catherine Sinclair Hymers of Caithness. At Nottingham.

DEATH

HESSION.—On August 10, 1941, at sea, Dr. John E. Hession, late Surgeon, s.s. *Scythia*, Cunard-White Star Line.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 13 1941

GENERAL PRACTICE WITHIN A STATE MEDICAL SERVICE

MEETING OF NORTH LONDON PRACTITIONERS

A meeting of general practitioners from seven central and north London areas—namely, Hackney, Stoke Newington, Islington, Finsbury, Shoreditch, Bethnal Green, and the City of London—was held on September 2 to discuss the future of general practice in view of the drift towards a State Medical Service. The meeting was called by the Practitioners' Co-ordinating Committee, a body formed as a result of a previous meeting in Islington in June last, when a scheme of State medical service on lines acceptable to general practitioners was discussed.

At this second meeting, over which Dr. M. F. MOLONEY presided, there was an attendance of about forty. Each person attending was handed a copy of the following resolution, which at the end of the meeting was carried unanimously:

"In order to improve the medical services to the public and to provide the fullest facilities of modern medicine, preventive and curative, and in the light of recent developments, recognizing the probability of some form of State medical service, this meeting of medical men is prepared to accept such a service provided it includes the following aims:

- "1. A State medical service must take into adequate consideration the just requirements of the general practitioners of the country.
- "2. Adequate compensation should be made for existing practices.
- "3. Salaries rather than capitation fees are desired—salaries to be based on years of service and experience.
- "4. Pensions to be granted on retirement.
- "5. Daily hours of attendance to be limited and time off duty to be given each week. Annual leave granted on pay.
- "6. Refresher courses should be provided periodically and on pay.
- "7. Opportunities should be granted to general practitioners for means of obtaining specialized experience and research.
- "8. The general practitioner should have access to hospitals.
- "9. Clinics should be established as the centre for general practice.
- "10. Furthermore, it is resolved that for the success of a State medical service the general practitioner should have fair representation upon any Planning Board for the institution of such a service, and in its subsequent administration."

Criticism of "Executive Medicine"

The CHAIRMAN criticized the Insurance Acts Committee, especially for its concurrence in a scheme whereby persons with incomes up to £420 were admitted to national health insurance while dependants of present insured persons were left out. It would not be true to say that these dependants were left without provision, because in respect of them particularly there had been progressive encroachments by public health authorities upon what was formerly the general practitioner's sphere of activity. General practitioners were being pushed more and more into the background. Although they constituted the majority of doctors in active practice in this country, their representation on the Medical Planning Commission was wholly disproportionate. If the British Medical Association no longer had the confidence of general practitioners it was no reflection upon those who directed its affairs; rather was it a criticism of the apathy of the rank and file of its membership. Shortly there would be an election of the Insurance Acts Committee. He hoped that representatives would be chosen who were "not 'Yes-men,'

swayed by the 'brass hats' of executive medicine." Finally, he said that there was no intention of setting up an opposition organization to the B.M.A.

A Model Medical Centre

Dr. B. HYNES, one of the honorary secretaries of the Committee, illustrated the programme set out in the resolution by taking the case of the borough of Islington, with its population of 250,000 to 300,000. Under some such scheme Islington would be divided into twenty-five centres, each centre to be operated by ten medical men, so that every practitioner would have a list of some 1,000 or 1,100 persons. All patients would be seen either at the centre or in their own homes, not at the doctor's residence. He exhibited a model of one centre clinic—a building of two stories, the ground floor for consultation purposes and the upper floor investigational and residential. In the model there were ten small consulting rooms, one for each practitioner, with examination rooms and waiting rooms attached. A surgery of sufficient size and equipment for minor operations was included. On the upper floor was a pathological laboratory, an x-ray room, and two small observation wards, as well as private rooms for doctors and nurses. The personnel attached to such a centre would consist of ten doctors, the majority of whom would be in daily session at morning and evening surgeries, with visits in between, and others on night duty. There seemed to be no reason why eight hours a day should be exceeded by any doctor, except during epidemics. Other personnel would include a day and a night nurse, possibly a relief nurse, dispenser and laboratory attendant, clerk, and perhaps porter.

Dr. W. W. Fox followed the Chairman in criticizing the Insurance Acts Committee. The Committee should have demanded the inclusion of dependants of present insured persons, which was the policy of the British Medical Association as far back as 1929.

Drift towards State Service

Dr. P. JNWALD, the other honorary secretary, said that the Committee had been formed for the sole purpose of protecting the public and the practitioner in any future scheme of medicine. It was actuated by no desire for self-aggrandisement, and was perfectly willing to stand down if a better body was formed. Conditions were pointing inexorably to social change in which the medical profession would have to accept some scheme of State service. A Gallup survey had shown that 55% of the people whose views were canvassed were in favour of such a service, and the National Union of Railwaymen had voted for it unanimously. It was commonly said that under such a service the intimate contact between practitioner and patient would be lost. He did not admit this, but if it were true, did the patient suffer? The self-esteem of the doctor might suffer, but not the patient. In the out-patient department did not patients accept without demur the services of total strangers? The real solution was to raise the standard of practitioner service so that the patient would feel safe in the hands of each and every one of them. The patient would look more and more for proficiency and less and less for bedside manner. The Medical Planning Commission was now in session investigating the condition of medicine to-day and endeavouring to provide for its future. But the personnel of that Commission did not represent general practitioners in anything like adequate proportions. The majority of its members, if they had ever had to face problems like those confronting general practitioners, had long since forgotten them.

General Discussion

After these speeches, which were all from the platform, the meeting was thrown open for a brief general discussion. In reply to one question the Chairman said that it was desired to bring about such coalescence of medical opinion in the country that if the findings of the Commission were unfavourable it would be possible for the rank and file to prevent their application. Only one speaker was opposed to the idea that State Medical Service would mean an improvement in conditions. The experience of London insurance practitioners of part-time employment by a State-aided body, the London Insurance Committee, was not encouraging. He also demurred to what was said in the resolution about hours of attendance; he thought that some rota of service would have to be worked out. He was doubtful about Dr. Inwald's statement that the out-patient did not mind which doctor treated him. Another speaker, in the employment of one of the boroughs represented, expressed sympathy with general practitioners in the matter of encroachment, and said that it distressed those in charge of municipal clinics to feel, however necessary their work, that they were filching it from the general practitioner.

The resolution set out above was then proposed by Dr. D. LENIHAN and seconded by Dr. G. W. MACKAY and carried. The Practitioners' Co-ordinating Committee was enlarged by the co-option of two representatives from each of the municipal areas represented.

Correspondence

Capitation Fee

SIR.—Every writer who has contributed to the discussion on this matter has attempted to issue, with more or less success, a clarion call to action. But apart from urging a continuance of barren conferences and futile discussions between the secretarial staff and the Ministry, no concrete suggestion has yet been put forward. The profession as a whole, indeed, is working under a great disability from which other more successful exponents of collective bargaining are free—namely, the consideration of our patient's welfare, which takes priority over every other factor. Any attempt at collective bargaining or united action which places in hazard the health and well-being of the panel patients who look to us for their medical attention would be foredoomed to failure by reason of lack of support from within: not one of us would wish the Association to pursue a policy which jeopardizes the confidence placed in us by our patients.

I am writing now to suggest a line of action to enforce an adequate increase in the capitation fee, which, while it places the Ministry of Health under crippling sanctions that must compel attention to our demands, has the double advantage that no hurt will be suffered by our patients from the medical point of view, and that control of the whole scheme is taken out of the hands of the central executive and left entirely in the charge of Branches or even Divisions of the Association. Moreover, the scheme has the further advantage of extreme simplicity. It is as follows.

A Branch or Division of the Association, or any group of insurance practitioners within a fairly wide area such as a whole county, having decided to take action to secure a local increase in the capitation fee within such area, acquaints the Ministry of its demands, at the same time giving formal notice that after a certain specified day, say, January 1, 1942, no further medical certificates will be issued to insured persons unless the demands are met. Before making the actual request to the Ministry certain preliminary steps will be taken by the executive to establish their position and to secure widespread and effective support from the whole body of insurance practitioners in the area. To each doctor on the local panel will be sent the following papers under one cover: (1) A leaflet explaining the demands to be made on the Ministry, and the steps to be taken if these demands are not met. (2) A note to be signed by the doctor and returned without delay to the local secretary, promising support of the scheme. (3) A letter of resignation from the panel, left undated, addressed, of course, to the clerk to the Insurance Committee but returned for safe keeping to the local secretary, together with

Item 2. (4) A large envelope addressed to the clerk for return of all blank panel certificates held by the doctor on January 1, 1942. (5) A second note for signature by the doctor addressed to the local secretary affirming: "I have to-day returned all my panel certificates to the Insurance Committee."

The scheme, once having been launched by the issue to all practitioners within a given area of the envelope containing the five enclosures detailed above, would automatically come into operation on the date specified unless the demands were met. If that fortunate event should supervene, then the scheme would be cancelled by a further communication from local headquarters. The actual return of the certificate books and the unequivocal assurance that they have in fact been returned are essential steps in the success of the scheme: first, because doctors' plans for united action always break down at the weakest point, which in this case will be the faint-hearted member who continues to issue certificates for fear of losing the patients; and, secondly, because the procedure furnishes the reply to all patients asking for their accustomed certificate—"All panel certificates have been recalled and I have none to issue." The certain knowledge that "the fellow round the corner" has also returned his certificates and is therefore unable to issue them is a great factor in keeping up morale during an unpleasant conflict of this kind. Professional unity would further be strengthened a week or so after the commencement of the scheme by the issue of a list of all practitioners who had returned their certificates according to plan; any names missing could be noted, and doubtless a telephone call or a friendly visit from a couple of neighbours would not fail to bring into the scheme any members who, through pressure of work or other cause, had been unable to keep up with the suggested time-table of operations.

In the unlikely event of the Minister wishing to take reprisals by withholding part of the quarterly payment, the local secretary, armed in *advance* with the signed but undated resignations from the bulk of the medical population in his district, would be in a strong position to protect his colleagues and to secure effective recognition of their demands. It would be most distinctly understood—and as assurance to that effect would be in the hands of every doctor signing the resignation paper—that in no circumstances would the collective resignations be tendered by the local secretary unless the total number of resignations was equal to at least 95% (or other agreed figure) of the medical personnel.

I warmly commend this scheme for the scrutiny of all my medical colleagues who, like myself, feel that they are not getting a fair deal from either the Minister or their own accredited representatives. It is, we are agreed, full time that matters should now be taken out of the hands of the central office, and local schemes arranged under regional rather than central control. I can conceive no scheme that would more completely cripple on the financial side the intricate mechanism of State insurance, while leaving unfettered our own medical services to our patients.

—I am, etc.,

Hayle, Cornwall, Aug. 22.

D. STANLEY-JONES.

Organization of Insurance Doctors

SIR.—The recent Panel Conference has impressed on most of us that all is not well with matters concerning national health insurance.

The composition and method of election of the Insurance Acts Committee are not satisfactory. As a standing committee of the Association the President, the Chairman of the Representative Body, the Chairman of Council, and the Treasurer are members *ex officio* of the Insurance Acts Committee. Six members are elected by the Representative Body. One member (who is not a panel practitioner) is elected by the Hospitals Committee. One member is elected by the Medical Women's Federation, one by the Society of Medical Officers of Health, and one by the Association of Local Government Medical Officers. The Chairman of the Panel Conference, who need not be a representative. Twenty-six members are elected by grouped Panel Committees.

It will be seen that out of a committee of forty-one whose duties are to deal with all matters arising under National Health Insurance Acts, twenty-six only are elected directly by panel doctors, and all have the same voting power. The twenty-six should be elected on numerical representative strength rather than on a

territorial basis. The remainder of the committee should be elected as follows: No members elected either by Representative Body, or by Hospitals Committee, Medical Women's Federation, Society of Medical Officers of Health, Association of Local Government Medical Officers. Any alteration such as that proposed would have to be made by the Representative Body.

The Panel Conference as at present constituted by no means fairly represents the views of insurance doctors. At present Panel Committees are represented by one representative for every 100 or part of 100 above each completed 400 panel doctors in the insurance area. It follows therefore that when a Panel Committee represents fifty doctors it will through its representation have an equal voting power with that representing 400 doctors. The injustice of this was exemplified at the recent conference at which a decision of paramount importance was decided by a vote of 98 to 79, and one was left wondering whether this really represented the views of panel practitioners as a whole. It could be argued that in practice decisions so taken do fairly represent the views of panel practitioners, and one could concede this in the case of an overwhelming majority.

It is obvious that for reasons of economy one could not take the smallest Insurance area in the country and make this the unit of representation and increase the representation in other areas in proportion. The only other alternative is a card vote based on this unit of representation. Until this desirable objective is reached no decision involving a change of policy should be accepted unless it is backed by a two-thirds majority of representatives present and voting. The chairman of the conference should be a representative. This would bring the conference into line with the Annual Representative Meeting.

There were other points of secondary importance which were apparent at the recent conference. The Agenda Committee (one assumes that it met) should have grouped the various motions so as to make it possible for the chairman and representatives to understand their relation to each other.

It is of the greatest importance that the Insurance Acts Committee should obtain without delay the written promise of the Minister that he will make no alterations in the provisions of the Act without previous consultation with the Insurance Acts Committee, and that this shall be binding upon his successors.—I am, etc.,

Birmingham, Aug. 15.

ARTHUR BEAUCHAMP.

Doctors at First-aid Posts

SIR,—Regarding the recommendations of the Select Committee on National Expenditure and the Central Medical War Committee's reply (*Supplement*, August 30, p. 33), certain comments, from experience, may be permitted. There can be no doubt that the conditions between the vulnerable and non-vulnerable areas differ. The primary need for the appointment of doctors was to carry out medical or surgical treatment in connexion with casualties. There is no justification for the payment of an annual fee in non-vulnerable areas, and payment should be for work done. In vulnerable areas the £75 per annum should be paid as a retaining fee for work done, but there is no necessity for the doctor to have any administrative power nor to have any work of training. The administrative work should be the duty of the A.R.P. medical officer, as the supervision of training can in most cases be left to the B.R.C. or St. John officers at the posts or to lay superintendents. Many general practitioners are quite unsuited to administration, and others would have been better never to have been appointed owing to their temperaments and inability to give fair treatment to the staff. The retention of some should be reviewed. Under these actual conditions there would be no necessity for medical officers in charge of first-aid posts to put in routine visits at all. If the Select Committee and the Central Medical War Committee would agree to this, then they can safely leave the training and administration to the A.R.P. medical officer, who should be the commandant of the F.A. posts. It is time that the true functions of the A.R.P. medical officer were definitely laid down by the Ministry, and that he should not be put on to school work, maternity and child welfare, tuberculosis clinics, immunization, etc., in order under the term of "A.R.P." to get a grant from the Government. He should be engaged on purely A.R.P. work and its administration, and certain powers should be definitely assigned to him to relieve medical officers of health, many of whom do not seek A.R.P.

work and in any case have enough to do. The school doctor should be kept to the school work and help the M.O.H. in public health and hospital administration. It is time the existing absurdities in administration were firmly removed by the Ministry of Health.—I am, etc.,

Aug. 31.

MEDICAL OFFICER, F.A.P.

State Medical Service

SIR,—In a letter in the *Supplement* of August 23 (p. 31) Dr. E. U. MacWilliam writes: "It may not be generally known, but it is nevertheless a fact, that there is in existence an association with many national and international non-medical affiliations, whose primary object is 'to work for a Socialized Medical Service.'" It is interesting to learn that the light of the Socialist Medical Association has at last penetrated the gloom in which Dr. MacWilliam resides. But although he appears to have heard of this association only recently, it has been well known to many doctors for the last ten years. So far as I know it has no international non-medical affiliations.

Dr. MacWilliam continues: "Though I cannot say where the 'idea of a State Medical Service originated,' I am convinced that it was not within the ranks of the medical profession." And here, I think, he is probably right. The idea of a Socialist Medical Association, I think I am right in saying, first originated in the mind of Dr. Charles Brook, and the association was founded at a meeting of doctors in London at which I was present. I suspect, however, that the idea of a State Medical Service first originated in the mind of Moses when he propounded those admirable sanitary laws that are attributed to him. It has certainly been in the minds of pioneers of health reform, both within and outside the profession, ever since.—I am, etc.,

SOMERVILLE HASTINGS,
President, Socialist Medical Association.

London, Aug. 27.

"Pure Despotism"

SIR,—I was greatly interested in Dr. T. T. Apsimon's letter (*Supplement*, August 30, p. 37). He finds that the treatment of panel doctors under the N.H.I. is not "pure despotism." He has been lucky. Perhaps my own experience may be of some interest.

In 1931 I received a notice that the Regional Medical Officer proposed to call on me on a certain date on the subject of "excessive prescribing." As I had arranged to be on holiday on that date, I wrote to him regretting that I could not meet him and informing him of the date of my return. I returned to work on a certain Monday, and at 10 a.m. on that date the Regional M.O. was on my doorstep. I protested; but my protest was waived aside on the ground that there was nothing in the regulations against it. Thus neatly and legally I was deprived of the advantage of the presence of a member of the Panel Committee. As was to be expected, proceedings were instituted in due course and a smart fine was imposed.

I urged the above circumstances as a reason for some slight mitigation of the comparatively heavy fine, but the Ministry found themselves utterly unable to see any injustice in the proceedings, and to mark the occasion the usual reduction of the fine between the recommendation of the Panel Committee and the decision of the Ministry was omitted in my case.

No one is a competent judge in his own case, but I have always felt that the nearest analogy is that of the pickpocket who relieves you of your note-case—one may admire the dexterity without necessarily condoning the offence.—I am, etc.,

Aug. 31.

JOHN H. TRENCH.

Equipment of Air-raid "Incident" Doctors

SIR,—I have received several inquiries on the equipment which I issue to "incident" doctors. The outfit is as follows: (1) A large haversack; (2) a torch; (3) wool, lint, a towel, and bandages; (4) a tourniquet; (5) scalpel, Spencer-Wells forceps, and scissors; (6) iodine; (7) morphine and syringe; (8) chloroform and anaesthetic mask; (9) funnel and rubber tube with teat at one end of tube. The object of the last item of equipment is to enable doctors at incidents to pass liquid nourishment down to trapped cases when this is possible and desirable.—I am, etc.,

Aug. 25.

GEORGE C. F. ROE,
Medical Officer of Health, Halifax.

Medical Forces of H.M. Services Appointments

ROYAL NAVY

Surgeon Commander A. C. Paterson has been placed on the retired list with rank of Surgeon Captain.
Surgeon Lieut.-Commander W. M. Greer to be Surgeon Commander.
Surgeon Lieut.-Commander F. W. Besley, retired, to be Surgeon Commander, retired.
Surgeon Lieut. M. G. H. Heugh to be Surgeon Lieut.-Commander.

ROYAL NAVAL VOLUNTEER RESERVE

Acting Surgeon Lieut.-Commander H. J. Wade to be Surgeon Lieut.-Commander.

Probationary Temporary Surgeon Lieuts. C. E. Brownridge, J. F. Burdon, K. D. Young, J. G. Byrne, D. A. Miln, D. R. Kilgour, J. D. Kidd, K. C. Balfour, A. G. G. Long, J. McL. Lees, E. B. Grogono, J. H. D. Taylor, C. D. Faleoner, I. S. Bergius, E. E. Jones, J. C. Angell, E. G. McIntosh, J. S. Hogg, R. Taylor, H. D. Ross, C. Fraser, R. C. Percival, S. W. Maxwell, J. C. Ryle, J. Young, W. E. Roden, D. A. Parker, A. Mathison, M. G. McColl, A. M. McCall, H. King, A. M. Evans, T. H. Tweedy, and A. McN. McKelvie to be Temporary Surgeon Lieutenants.

Probationary Temporary Surgeon Lieut. (D.) W. Hughes, M.R.C.S., L.R.C.P., to be Temporary Surgeon Lieut. (D.).

ROYAL ARMY MEDICAL CORPS

Lieut.-Colonel R. G. Martyn has retired and remains employed.
Major (temporary Lieut.-Colonel) W. Bruce, O.B.E., to be Lieut.-Colonel.
Captains (temporary Majors) T. M. R. Ahern, R. Johnston, and J. B. MacFarlane to be Majors.

Short Service Commission.—The appointment of Lieut. J. A. Farrell has been antedated to February 1, 1938, under the provisions of Article 39, Royal Warrant for Pay and Promotion, 1940, but not to carry pay and allowances prior to February 1, 1939. Lieut. J. A. Farrell to be Captain.

Lieut. C. D. Cruickshank to be Captain.
Lieut. A. W. Douglas has relinquished his commission.
To be medical officers with relative rank of Lieutenants: Helen S. Jackson, Phyllis D. Leslie, Frances B. C. Livingston, Beatrice L. H. Sergeant, Mercy S. Cam, Grace A. Johnson, Elizabeth J. B. Orr.

MILITIA

ROYAL ARMY MEDICAL CORPS

Major F. H. B. Norrie, O.B.E., having attained the age limit, has relinquished his commission, and retains the rank of Major.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

The notification for September 14, 1939, regarding Captain (now Temporary Major) C. S. Swinburne in a *Supplement* to the *London Gazette* dated August 1, 1941, is cancelled.

Second Lieut. (War Substantive Lieutenant) H. E. D. Flack, from R.A. (T.A.), to be Lieutenant.

Supernumerary for service with Durham University (Medical Unit) Training Corps (Senior Training Corps): C. H. Tonge to be Lieutenant.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

Captains W. F. G. Scott and C. W. Aikman have relinquished their commissions on account of ill-health.

Lieut. (unpaid) acting Major (unpaid) J. R. Murray has relinquished his commission.

Lieuts. B. A. Janney, P. E. Sundt, J. T. M. Fenton-Fyffe, and K. W. Vandy have relinquished their commissions on account of ill-health.

In the *Supplement* of August 23 (p. 32) the initials of Lieut. R. W. P. Johnson were wrongly given and the surname of Lieut. B. P. Tully was misspelt.

To be Lieuts.: H. Burt-White, E. Egan, J. Andersen, W. Auld, A. Berkeley, H. A. Brittain, J. S. Burns, S. Campbell, P. T. Chopping, D. M. Douglas, B. Fairbairn, S. T. Failla, J. Frankenthal, J. Gilmore, W. Gregor, F. C. R. Harvey, J. C. Houston, W. B. Howell, J. R. S. Innes, W. Ironside, D. Kay, J. Lawrence, R. C. Le Masle, G. Levy, D. Lewis, C. Low, J. S. McCrae, P. F. Meyer, P. F. Milling, W. H. P. Minto, L. C. Montgomery, J. D. Muir, J. A. Ritchie, H. D. H. Robinson, W. J. Y. Speedy, B. E. C. Stanley, I. S. D. Thomson, J. V. Todd, J. Wallace, W. K. J. Walls, P. Wardlaw.

ROYAL AIR FORCE

Flight Lieut. F. V. MacLaine has been granted a permanent commission in the substantive rank of Flight Lieutenant.

Miss Kathleen E. Byrt has been promoted to the relative rank of Flight Lieutenant (War Substantive).

ROYAL AIR FORCE VOLUNTEER RESERVE

D. M. Meckison to be Squadron Leader.

To be Flight Lieutenants: D. N. Matthews, F. D. M. Livingstone, B. G. Parsons-Smith, C. E. W. Wheaton.

Flying Officers F. S. Rae, W. N. Watt, W. E. Bryn, P. A. Tyser, R. G. S. Grant, J. H. Mellish, E. J. Blair, J. D. Jenkins, C. A. I. Fuge, C. A. Dowding, T. R. Davison, G. G. Hartill, R. F. T. Finn, C. V. Gledhill, J. F. Bohn, J. D. Thomson, A. G. Riddell, J. W. Paulty, R. R. Klein, W. F. Tierney, W. T. Gordon, A. Hargreaves, W. B. Waterfall, C. H. George, M. N. Phillips, J. M. Sword, V. E. A. Marwood, E. P. S. Sneff, R. D. Kennedy, and A. W. Woodruff to be Flight Lieutenants (War Substantive).

Flying Officer J. Burdon-Cooper has relinquished his commission on account of ill-health.

To be Flying Officers: A. L. Alban, C. Bucknall, J. L. Coleman, R. G. Dennis, J. C. Garland, W. A. Glen, H. Goulden, S. Gruber, H. E. W. Hardenberg, F. S. Jackson, E. Jones, N. W. R. Lucas, J. B. H. McArthur, F. E. Masie, M. J. O'Donnell, E. T. O'Sullivan, D. C. Rawlins, H. V. Reeves, H. L. Roxburgh, E. S. Samuels, G. W. E. Studley, A. M. Abrahams, A. G. Beattie, F. V. A. Bose, R. H. Evans, W. Flynn, R. C. Fuller, T. Hardy, H. N. G. Hudson, M. H. Kinmonth, G. A. D. Lamb, F. W. Laurie, J. K. McCabe, A. E. Macdonald, A. D. Maclean, K. S. Mullard, W. E. Scott, R. H. Armin, R. Boggan, N. T. Brown, O. T. Brown, A. C. Camm, C. M. Carr, J. M. Duncan, M. D. L. Finlay, J. J. Glynn, W. L. Hardman, J. W. Jackson, J. S. Lane, P. A. Maughan, J. F. S. McKee, R. E. McLachlan, D. G. MacNeill, W. M. Morgan, A. de W. Ranken, T. W. Robson, H. R. Rolin, W. H. T. Shepherd, A. R. Silcock, C. A. N. Anderson, W. D. Arthur, G. N. Blackburn, R. J. Gampell, R. B. Clayton, L. Clement, W. E. Coates, R. E. Dunn, C. M. Gregory, G. Hale, P. M. Peters, O. Plowright, W. L. Price, W. Sewell, G. C. Smith, H. A. Wilson, R. B. Wyde.

DENTAL BRANCH

W. O. Baird, M.R.C.P., L.R.C.P., to be Flying Officer.
Flight Lieut. J. L. Trainer, L.R.C.P.&S.Ed., has been transferred to the Medical Branch in his present rank and seniority.
Flying Officer J. W. S. Harvey, M.R.C.S., L.R.C.P., to be Flight Lieutenant (War Substantive).

INDIAN MEDICAL SERVICE

Colonel D. F. G. Murphy, M.C., has retired from the Service.
Lieut.-Colonels H. S. Cormack, M.C., and J. H. Hislop, M.C., have retired from the Service.
Major R. McRoberts to be Lieut.-Colonel.
E. J. Crowe to be Captain.
Lieut. F. Murray has relinquished his commission on account of ill-health.
To be Lieutenants: P. A. L. Roberts, J. A. MacM. Beaton, M. B. Klein, E. G. W. Lynch, and A. D. Wilson.
The name of E. Dunsby is as now described and not as stated in the *London Gazette* dated July 11, 1941.

ARMY IN BURMA RESERVE OF OFFICERS

EMERGENCY COMMISSIONS

To be Majors: C. Strickland and G. L. Talwar.
To be Lieutenants: A. Banerjee and P. K. Banerjee.

COLONIAL MEDICAL SERVICE

The following appointments are announced: C. Bowesman, M.D., F.R.C.S., Medical Officer, Gold Coast; Minnie Gosden, M.B., B.S., Pathologist, Sierra Leone; K. H. Utley, B.Ch., Senior Medical Officer, Hong Kong; E. A. Blok, L.R.C.P.&S.Ed., Assistant Director of Medical Services, Ceylon; J. D. Reid, M.B., Ch.B., D.P.H., Medical Officer, Sierra Leone.

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following postgraduate courses: (1) Final F.R.C.S. comprehensive revision course, daily, 10 a.m. to 1 p.m., from September 29 to October 17; (2) Final F.R.C.S. practical operative surgery course on the cadaver, Mondays, Wednesdays, and Fridays, at 2 p.m., from October 6 to 31. Both the above courses will be given at the Royal Cancer Hospital; (3) Final F.R.C.S. course in urology, Thursdays, 2.30 p.m., September 25 to October 16, at Colindale Hospital; (4) revision course in anaesthetics, daily, September 29 to October 11, at the Radcliffe Infirmary, Oxford.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE	Road, W.—Daily,
10 a.m. to 4 p.m., N	Clinics and Operations.
Obstetrical an	and Operations.
Daily, 1.30 p.m., Post	Mon., Course on
War Surgery of Abdomen commences. Tues., 11 a.m., Paediatric	
Clinic, Dr. R. Ligi	
Conference (Medic	
R. T. Brain; 2 p	
White, Fri., 12.15	
2 p.m., Clinico-pat	
Sterility Clinic, Mr. V. B. Green-Armytage.	

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—**St. Mary Islington Hospital**, Highgate Hill, N.: Wed., 2 p.m., Final F.R.C.S. Clinical Course. **Royal National Orthopaedic Hospital**, Stanmore: Sat., 2.15 p.m., Final F.R.C.S. Orthopaedic Course. **London Chest Hospital**, Victoria Park, E.: Tues. and Thurs., 2 p.m., M.R.C.P. Course in Chest and Heart Diseases. **Brompton Hospital**, S.W.: Mon. and Thurs., 5 p.m., M.R.C.P. Course in Chest Diseases. **West End Hospital for Nervous Diseases**: Tues. and Fri., 3.30 p.m., M.R.C.P. Course in Neurology. **Royal Chest Hospital**, City Road, E.C.: Wed., 3.30 p.m., M.R.C.P. Course in Heart Diseases.

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—At Tennent Institute, Church Street, Glasgow, Wed., 8 p.m. Dr. John Marshall: The Problem of the Partially Blind.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTH

ROSS.—On August 30, 1941, to Betty, wife of Major K. M. Ross, R.A.M.C., of Farnham, a son.

DEATH

BURGESS.—On August 31, 1941, at Ashlea, Cheadle, Cheshire, Elspeth, beloved wife of Arthur H. Burgess, F.R.C.S.

COURSE FOR HOME GUARD MEDICAL OFFICERS

There were approximately 150 applications for the course for Home Guard medical officers, arranged for September 11 to September 16 at St. John's College, Cambridge. The course was limited to 40, with the inevitable result that the majority of applicants have been unsuccessful. The successful as well as the unsuccessful applicants have now been communicated with. It is hoped that it may be possible to hold a further course in a few months' time, and to give preference for such a course to the unsuccessful applicants for this course.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 20 1941

British Medical Association CONFERENCE OF REPRESENTATIVES OF HOME DIVISIONS

A Conference of representatives of Home Divisions of the British Medical Association was held in the Great Hall of the British Medical Association House, London, beginning at noon on Thursday, September 11, and continuing until the late afternoon of the following day. Almost all the Divisions in Great Britain, as well as the Northern Ireland Branch, were represented. On the motion of Mr. H. S. SOUTTAR (Chairman of the Association's Council), Dr. H. G. DAIN (Chairman of the Representative Body) was unanimously elected to the chair, and he was supported by Mr. Souttar, Dr. T. Fraser (President), Dr. J. W. Bone (Treasurer), and Dr. Peter Macdonald (Deputy Chairman of the Representative Body).

The Conference was summoned by the Council of the Association to consider problems of current medical interest. Its first business was to discuss the Council's Annual Report (*Supplement*, May 17), together with a later statement on "Recent B.M.A. Activities" (*Supplement*, August 30), but time was afforded for the discussion of problems raised by Divisions, whether referred to in these documents or not. There were on the agenda sixty motions sent forward by Divisions.

FIRST DAY

Statement by Chairman of Council

Mr. H. S. SOUTTAR, in a statement to the Conference, said that the normal activities of the Association had, of course, been gravely interrupted by the war. As an Association they were making a very great contribution towards the successful prosecution of the war effort. He grieved to say that no fewer than sixty-two members had already sacrificed their lives in the cause of their country. The roll of honours and distinctions gained on service was already lengthy. At home the Association buildings had sustained damage, and only the promptitude of members of the staff on more than one occasion had saved them from destruction. The *British Medical Journal* had continued to give full service, and here he desired to pay a tribute to Colonel R. G. Gordon, chairman of the Journal Board, the members of the Board, and the editorial staff for carrying on the *Journal* under very difficult conditions, including the destruction by enemy action of the premises at which it was formerly printed.

The Central Medical War Committee was relied upon by the Government for the supply of medical men for the Forces, and it was engaged to supply further large numbers. It was essential that members should realize what immense commitments had to be met. The work was carried out in closest co-operation with the Services, Government Departments, and the Royal Colleges. Complaints were often forthcoming that no adequate use was made of medical men who were taken from civil practice for the Forces, but he could assure the Conference that although it was impossible to avoid some wastage of effort, the demands of the Army, Navy, and Air Force were reasonable and must so far as possible be met.

Mr. Souttar then went on to speak of the Medical Planning Commission. This Commission had been formed, he said, not as fully representing every body that might have a claim to be represented, but as the best group of men that could be got

together at the time to advise the medical profession on matters affecting its future. After much negotiation the close co-operation of the three Royal Colleges had been secured, and he thought it could now be claimed that the Commission represented the whole of the medical profession. It had been divided up into certain committees, including a General Practice Committee, which in his view was fundamental to its entire work, and other committees dealing with special practice, public health, teaching hospitals, etc., and there was also a Co-ordinating Committee. The Commission was aiming to produce a post-war plan for consideration by the profession, and in doing so desired to carry the whole profession with it. When the scheme had been reduced to some tangible form it would be submitted to every Division for its criticisms, and also to the Royal Colleges and other bodies. It was hoped that a scheme would be worked out which would command the complete support of the medical profession throughout the country. He ended his remarks by saying how much the Association owed to the work of its permanent officials during this difficult period. (Applause.)

Medical Planning

Dr. F. DALLIMORE (Stockport) moved:

That in the opinion of this meeting the individual member of the public and the doctor of his choice still constitute the primary essential element in the health service of this country, and that the Medical Planning Commission be invited to express its acceptance of this principle.

He said that in a memorandum recently issued by the Ministry of Health and circulated among medical officers in charge of first-aid posts the Ministry insisted on all persons with open wounds being given a dose of tetanus antitoxin. No discretion was left to the doctor, and failure to administer the antitoxin might result in an action for damages. A proclamation of therapeutic measures by bureaucrats! A gesture of contempt for the intelligence of medical practitioners! A Government Department which issued so clear and full an exposition of its policy must be very sure of itself. In seeking support for its motion his Division was moved by no narrow motive. If they could be sure that every individual member of the public would continue to insist on his right to choose his own doctor, for which in return he would receive sincere and efficient service, there was good prospect of the danger of a bureaucratic medicine being averted. But if as a result of indifference or persuasion the public surrendered that right the way would be opened for intervention, and intervention would bring them well on the road to complete subordination of the profession, with results which would be disastrous for the profession, and not for the profession only. The nation would be inadequately served by a medical profession owing allegiance to an oligarchy, in which none but sycophants would be likely to survive.

Another danger lay in the chaotic condition of the health services of this country. There was a complete lack of co-ordination. Government Departments vied with each other in efforts at control of various services throughout the country. The lack of order and system involved a very serious wastage of resources, both financial and administrative. Any person or corporation that could produce out of this chaos a comprehensive, well-coordinated system of health services would deserve well of the country. In Stockport they were fearful lest the Government should step in and seize the opportunity to extend its control of medical affairs. They were hoping that somehow the initiative in this great enterprise would fall to the

lot of their own profession, and when they heard of the formation of the Medical Planning Commission they awaited eagerly for news of its plans and activities. The organization of the Commission would receive more support and less suspicion if the mass of general practitioners had been allowed to elect representatives for themselves. One of the first needs in any well-organized smoothly working health service was that there must be complete mutual understanding and confidence between the medical profession and the general public. In the attainment and maintenance of that happy association between doctors and public the key position was held by the general practitioner. If they were justified in their expectations that the Medical Planning Commission would undertake the task of reorganizing the health services they hoped it would give consideration to the needs of general practice, that there would be careful selection of those who entered the profession, that the medical curriculum would have as its aim the turning out of highly competent men and women, that the conditions of service would be such as to attract first-class people, and that the remuneration would be on such a scale that the general practitioner would not need to take more work than he could adequately perform.

Mr. P. W. L. CAMPS (South Middlesex) proposed, and Dr. W. A. HOLNES (Peterborough) seconded, certain verbal amendments to the resolution, which were accepted by the proposer, and the resolution was carried in the following form:

That in the opinion of this meeting the family and the family doctor of the patient's choice still constitute the primary essential unit in the health services of this country, and that the Medical Planning Commission be invited to regard this as a fundamental principle.

Dr. M. STEVENS (West Suffolk) moved a resolution urging the need for early publication of an interim report by the Commission. He said that it would be some time before the full result of its deliberations would be available, and some early report seemed to be required. A great deal of correspondence on State medicine was now appearing in the medical journals, and the fullest discussion of this vital subject by the whole rank and file of the profession at the earliest moment was desirable. The probability was that the final scheme approved by the Commission would be adopted by the Government, and therefore it was all the more necessary that an interim report should be published in order that all medical men might have an early opportunity of giving expression to their opinion. This would go far to mitigate any resentment against the final plan adopted.

Mr. SOUTTAR, speaking as Chairman of the Commission, said that its whole object was to carry the medical profession with it. No report would be issued until the members of the profession as a whole had been consulted. To issue a formal interim report without such consultation would be a very great mistake, but they must not expect the Commission to work too fast. The whole problem bristled with difficulties and was one of quite extraordinary complexity. He could promise that the members of the Association would be kept informed as to the progress of the inquiries, and that the fullest consultation would take place.

Dr. STEVENS withdrew his motion, as did Dr. L. KILROE (Preston), who had a similar motion on the agenda, in view of the statement made by the Chairman of the Commission.

Dr. C. M. STEVENSON (Cambridge) urged that the report should be available for discussion by the profession before being published at large. Mr. SOUTTAR again said that the profession would be fully informed. It would be a great mistake to publish even in their own *Journal* many of the tentative findings which the members of the Commission discussed in the most open and free manner among themselves.

Dr. STEVENSON welcomed Mr. Souttar's assurance, and in view of his statement certain other motions were withdrawn.

Dr. F. W. CHRESE (East Kent) was anxious that the findings of the Commission should be circulated in sufficient time to be considered by men away from their practices, and Mr. SOUTTAR said that this would be taken into account.

Constitution of Planning Commission

Dr. J. S. HUTCHISON (Halifax) moved a resolution supporting the principle of a Medical Planning Commission, but disapproving of the personnel and method of constitution of the

present Commission. He said that the criticism which was implied in such a motion was that on so important a matter as the study of the future of medicine the Council had set up the Commission without a referendum to the Divisions. The Commission would have carried much more weight had it been elected by members of the profession as individuals. It was also the view of his constituents that the whole question of the future of medicine was being tackled from the wrong end. The answers to vast problems of this kind were apt to be over-synthesized, and many small details of great practical importance would be missed. The Council's action savoured too much of the formula "a marriage has been arranged." It rather suggested Hitler's "plebiscites."

Dr. R. BOYD (Manchester) said that the Commission was composed for the most part of "yes-men." It would formulate a plan and present it to the Divisions as something cut and dried, and whatever the nature of the plan they might be pretty sure that the general practitioner would still remain, as in the past, a hewer of wood and drawer of water. It was up to that meeting to show the Council that they were entirely dissatisfied with that method of arrangement.

Mr. SOUTTAR said that no one was more strongly in favour of democratic methods than himself, but here they were faced with a complicated and difficult problem. One might just as well send out a questionnaire to the medical profession on the differential calculus as on a matter of this kind. As for the representation of different points of view on the Commission, at its very first meeting some of them feared that the whole thing might break up in a riot, so diverse were the points of view expressed, but he was glad to say that they were gradually working together as a homogeneous whole.

On a show of hands the Halifax motion was carried by 68 votes against 54.

Dr. HUTCHISON further moved on behalf of Halifax that no further changes should be made in the conditions of medical practice until opportunity had been given for full discussion by all members of the profession. Recently, he said, they had been faced with an increase in the income limit as applied to persons under national health insurance, and there was a general feeling throughout the profession that this increase had been thrust upon them without an opportunity of discussion. There was too much of a tendency to arrange things for the profession.

Mr. H. J. MCCURRICH (Brighton) supported the motion. At present, he said, the bulk of the medical profession were too busily engaged in winning the war to deal adequately with what might happen after it, and they might find that while they had been so engaged, conditions had been changed for them.

The motion was carried.

Espying "Strangers"

Dr. A. V. CAMPBELL (North Staffordshire) moved to express the opinion that representatives of the Ministries of Health and of Labour should be excluded from meetings of the Planning Commission until the ultimate meeting of the Commission, at which its findings would be discussed. His objection was that if these representatives were present at all the discussions it gave them an opportunity to find out the weak spots in the profession and might possibly help them to formulate some future opposition in circumstances which might imaginably arise.

Sir KAYE LE FLEMING said that he had been a little disappointed on listening from the floor of the house to the arguments put forward that afternoon. He was disappointed, in the first place, because recognition did not seem to have been given to the Association for its foresight. The Association at this early stage was the only body to foresee that great changes must come about as the result of the war, and it had tried to take some practical step to ensure that those changes should not be disadvantageous to medical practice. He thought it was a long-sighted policy and that the Association was to be congratulated on having formulated it. If the Commission was to do any good it had to study every section of medical practice from every point of view. It had to listen with an open mind to those who advocated this, that, or the other form of change, and only when it had

finished its hearing would it be in a position to put before the medical profession the issues which had been raised, and which the profession—not the Commission—must determine. If there were going to be important changes in medical practice after the war, which would they prefer—that the Ministry of Health and the other Ministries should themselves decide what those changes should be, or that they should be decided by those who had a full knowledge of the opinion of the profession at large? It was a most important thing that representatives of the Departments concerned should be able to listen to views from every side of the profession, because they would naturally wish, in bringing forward legislation, to meet the general trend of professional opinion.

Dr. CAMPBELL said that in bringing forward the motion it was not intended to suggest that representatives of the Ministries should not give evidence, but only that they should not be present to listen to all the discussions.

The resolution was declared carried by 68 votes against 65.

Mr. SOUTTAR said that the Conference had already light-heartedly passed a resolution denouncing the constitution of the Commission, and now it had denounced one of the most vital parts of the Commission. He fully understood that it had done both these things in complete ignorance of the extreme difficulties under which the Commission had been constituted at all and of the very great importance of the Commission working in the closest possible co-operation with Government Departments. The representatives of the Ministry of Health and the Ministry of Labour were of the greatest possible help to them. ("Hear, hear.")

Mr. BISHOP HARMAN asked whether the motion just passed was a vote of censure on the Council. If that were so the next business would be the Council's resignation. Did representatives wish that to happen? ("No.") The Council was in favour of proceeding with the Commission, it had most carefully considered its personnel, and now the Conference was implying that in asking the representatives of Government Departments to come and give information and work with them the Council had done the wrong thing. These two resolutions if acted on would be disastrous. He suggested that they both be referred to the Council.

Request to the Commission to Continue its Work

The CHAIRMAN said that a motion had been handed in, duly proposed and seconded, that, despite the passage of the resolution disapproving of the personnel and method of constitution of the Commission and the further resolution that representatives of the Ministries of Health and Labour be excluded from all meetings of the Commission until the ultimate meeting, "This Conference desires the Medical Planning Commission to continue its work with its present personnel and procedure, on the understanding that no decisions are reached or announced until considered by the Divisions and by a Representative Meeting."

Dr. S. WARD (Birmingham), in moving the above resolution, said that he had always advocated in the Representative Body and in the Divisions that, above all, the profession must be prepared in advance for even unlikely eventualities. The Council in this case had taken steps to do something which would make the profession fully prepared, and had done so under conditions of the greatest difficulty. Many of them who were on the Council had disagreed with the way in which the personnel was put on the Commission, but they had to admit that whatever method was adopted, unless it made the Commission into a parliament of six hundred, there would be complaints at least equal to and probably greater than those voiced at the Conference. It was necessary to face up to the fact that whatever the Council had done in its selection of personnel there would have been serious complaints. One complaint of another kind that had been made in the past was that they had failed to get their point of view across to the appropriate authority, such as the officials in the Ministries. But they could never get them around a table to hear the discussions which led up to their findings. Such a table had now been furnished in the shape of the Commission, and there the officials could learn not only of the findings but of what had led to them. They had nothing to hide in their discussions, and they would be glad to have these officials present. A resolution had been passed that afternoon

deprecating the fact that for the first time they had been able to do what they had always aimed at doing. He had not intervened earlier in the discussion because he felt that as a member of the Council and a member of the Commission it might be thought that he was trying unduly to influence the Conference. After the resolution which had been passed some of them would have to consider very carefully whether they had a right to sit on the Commission. If the British Medical Association withdrew its support from the Commission very great difficulties would arise and the profession would be left high and dry, for, whatever they might say, the British Medical Association offered the most representative and most thoughtful body of all those which were attempting to look after the interests of the medical profession. Never in his medico-political career had he been called a "yes-man," and he could assure them that on the Commission there was an open mind to receive, to hear, to arrive at the facts, and then to collaborate and produce something of which at the end of the war the profession would be proud. (Applause.)

Colonel R. G. GORDON desired to say a few words from the point of view of the Services. Service members had expressed dissatisfaction with the Medical Planning Commission, and at a largely meeting at a military hospital a resolution of disapproval was passed unanimously. He had therefore thought it his duty to try to find out exactly what was the ground of this disapproval and what steps could be taken to remedy the situation. Many of the medical officers complained that they were not represented. That was perfectly true, and that was the difficulty of the situation which had arisen that afternoon. So many people said they were not represented, and yet if account were taken of the composition of the Commission a very wide representation of interests would be found. Furthermore, the people who were on this Commission were on the whole people who had thought about the things which it had got to do. If any of those present had attended the first meeting of the Commission they would not have thought that these were people who had minds ready made up, for a more remarkable dissonance of opinion he had never heard. This was largely a fact-finding Commission. He had found almost universal agreement with the proposition—to put it at its lowest value—that the Commission was better than nothing. If the Conference turned this Commission down, what were they going to do? They would impress the Government Departments with the idea that the medical profession was not capable of making up its mind as to what it wanted. That would be a disastrous step, especially unfortunate at a time when most of the Departments had been persuaded to come and consult the Association in preference to any other body as representing the medical profession. The Association had become established as the mouthpiece of the profession. Did the Conference want to upset all that as it would be upset if by any action of theirs they caused the Commission to disband?

Dr. J. S. HUTCHISON (Halifax) said that the motion by his Division which the Conference had passed actually supported the principle of a Medical Planning Commission. It disapproved only of the personnel and method of constitution. Their objection was that the Commission was foisted upon the profession without consultation. His Division wanted a Commission. It might on certain conditions be satisfied with the present one, and he wanted particularly to draw attention to a later motion on the agenda in his name recommending Divisions to organize discussion groups to consider the future of medicine, the results of these deliberations to be forwarded to the central body. He wanted as many members of the profession as possible to share in the responsibility of solving this problem.

Sir KAYE LE FLEMING said that he was not a member of the Commission, but no man in that Conference had more deeply at heart the welfare of the Association. The Conference had passed two resolutions, certainly by very narrow majorities, and in a sense conflicting resolutions, which had placed the Council and those of its members who served on the Commission in an extremely difficult situation. He wanted the Conference to consider the position from a much higher standpoint. If it went forth from a meeting of that kind that the action of the Council was condemned and that the Commission was disapproved, the prestige of the Association would be thrown back for years. ("Hear, hear.") It was a most lamentable position. He asked

the Conference to support the resolution now before it which offered a way out of the difficulty. Let the Commission be allowed to go on with their tacit approval until the matter could be brought forward at a proper Representative Meeting next year, and then, when they had more knowledge before them and had more time to consider resolutions, they would arrive at a proper decision.

Dr. A. W. WESTON (Dudley) said that although the Association had sponsored the Commission it must not be inferred that every member of it was necessarily a member of the Association. The members were not chosen for that reason. He was all for improvements in medical practice, and he thought it would be a backward step if, having formed the Commission, it was now allowed to lapse.

Dr. O. C. CARTER (Bournemouth) supported the motion, adding that it would be quite impossible for any member of the Commission to be there in the capacity of a representative; it would tie his hands unduly.

Dr. A. V. CAMPBELL (North Staffs) considered that the motion now brought forward was a direct negative to the one he had proposed and which the Conference had passed. If they were in a dilemma it was because the Commission had been formed without consultation with the Divisions. There were no more loyal supporters of the Association than members in North Staffordshire; nevertheless they were entitled to make their criticisms and express their opinions.

Dr. C. I. SCHIFF (City of London) said that by passing the motions from North Staffordshire and Halifax the Conference had committed itself to a wholesale condemnation of the Commission. Then the Chairman of Council had pointed out what a serious step had been taken, and the Conference got into a panic and was now going to the other extreme. He thought there was no reason why a resolution should not be passed approving of the general principle of a Commission and in great part of the constitution and method of working of the Commission now set up, but suggesting that some alterations might be made. If the motion now before the Conference was defeated he would be prepared to move another which would offer a *via media*.

Dr. R. BOYD (Manchester) said that if the Conference passed this motion, which was a direct negative to the motion by Halifax, it would stultify itself.

Dr. E. A. GREGG spoke in support of the motion, and said that those who had consistently criticized the Association for failing to be on the spot in time could no longer do so. The setting up of this Commission was a stroke of genius. Had the Association not stepped in and done this, other interests would have done so very quickly. Any action which would tend to take away from the confidence felt by the profession in this Commission would be fatal. If the Commission were in any way to suffer as the result of some slight cast upon it by that Conference, some other body would take the field and would get itself into the position of being accepted as more representative than those chosen by the Association.

Dr. H. S. PASMORE (Kensington) said that he was sure they were all willing to forgive the errors which had attended the formation of the Commission and to offer it their warmest support rather than to take what would be the fatuous step of breaking it up at this critical time in the history of the Association.

The CHAIRMAN (Dr. Dain), in answer to a question by Dr. DE SWIET, explained that the Commission was set up by the Council, and gave invitations to individuals and to bodies of medical men to send representatives to take part in the discussions. It was perfectly true that it was not a committee of the Association, but the Council took credit for having thought in time of setting up a Commission of such a wide character.

Dr. HOWIE WOOD (Isle of Wight) said that one of the points of criticism was that Divisions had no voice in the appointment of the Commission. If that was so would it not be possible for the Council to ask the Divisions now to approve its composition?

Dr. WAND said that to speak of foisting this Commission upon the profession was all nonsense. Let the Commission continue its deliberations. He begged that the vote on this resolution might be so emphatic that it would mean that the Association could say to the Commission, "Go to it!"

The resolution was carried by a very large majority. Out of an assembly of not far short of 200 only 14 voted against.

State Medical Service

Dr. E. H. RICHARDS (North Staffs) moved:

That in view of the strong efforts being made by certain political bodies and groups of medical practitioners to further the introduction of State service, and the possibility that these efforts may be successful, this meeting, without expressing any opinion for or against State service, suggests that the Association ought to be prepared for such an event, and should forthwith consider such essentials of administration and minimum remuneration as would be acceptable to the profession.

He asked whether the Association was ready to put a cut-and-dried scheme into the hands of the profession. It was common knowledge that certain important bodies were striving to gain acceptance for a scheme of this kind.

Major R. SCOTT STEVENSON thought it was time for someone to get up and say that a State Medical Service was not the policy of the British Medical Association. (Applause.) He had heard so frequently recently that the B.M.A. was in favour of State Medical Service that he wondered how that idea could possibly have become current. Not long ago he met an important official of the Ministry of Health who asked him whether he was coming back to London after the war, and, on his saying that he hoped to do so, remarked, "There will not be anything to come back to. We are going to change all that sort of thing." His reply was, "You, and who else?" (Laughter.) It seemed to be forgotten that the British Medical Association had a policy on this subject, which was set out in the grey book entitled, "A General Medical Service for the Nation." In that book, laid down in a first-class way, would be found the basic principles of practice to be carried on after the war. He wished that the Ministry of Health would attend to its proper business. It had been proved conclusively that the greatest single cause of ill-health in this country was not a medical cause but an economic one—namely, poverty, bad housing, malnutrition, and so forth. What did the Ministry do? It washed its hands and said, "Let us push up the income limit for admission to national health insurance." The Ministry of Health should get down to its own job—that of dealing with bad housing and the rest of the evils which made for ill-health. Only after it had shown that it could do that effectively had it any right to go to the medical profession and discuss with them a general health policy of the nation. He repeated that a State Medical Service was not a B.M.A. policy. (Applause.)

Dr. J. B. MILLER said that there were a very large number of new representatives present on that occasion who might not be familiar with what the Association had done in the past. Years ago the Association formulated a general medical service for the nation, differing in no single respect from motions that had been at various times approved at Annual Representative Meetings. A few years ago the Association appointed a new committee to revise its proposals, and the scheme it put forward was accepted unanimously, save for one particular paragraph, by the Annual Representative Meeting of 1938. The policy so affirmed was still the policy of the Association. It was welcomed as such by the Press, by the representatives of local authorities, and by the country generally; but, of course, little public interest had been taken in it owing to the European situation which developed in 1938 and led up to the present war. A false impression had got round that in some way the Association was receding from the position it had always taken up with regard to general medical service. The policy announced in the grey book remained the policy of the Association until it was changed by a Representative Meeting. He reminded the Conference that at the end of the war of 1914-18 they were told that there would be a State Medical Service, but for 22 years since then general practice had been carried on, with gradual improvement in the conditions of the general practitioner, without a State Service. It could not be foreseen what would happen after this war, but to suggest that the Association was not prepared with a scheme alternative to a State Medical Service was quite wrong.

Dr. H. W. POOLER (Chesterfield) thought that the motion ought to be accepted. It implied some condemnation of State Service, or at any rate no satisfaction at the prospect of such a service. But it did embody a warning that sooner or later proposals for a service would be made. Surely they ought to be prepared for any attack of that nature which might be made upon them. He believed that opinion in favour of a State Medical

Service had been gaining ground in the profession, and whether they agreed with it or not they ought to recognize it. He had made a personal inquiry among the members of the profession in his own county of Derbyshire, and the results were somewhat disturbing. Of the practitioners left in Derbyshire 63% were in favour of a State Medical Service. Among general practitioners the proportion was over 50%, and among the practitioners aged from 25 to 45, 70% were in favour. He hoped that this resolution would go through in order that the Commission might consider ways and means of giving effect to what it suggested.

Mr. H. J. McCURRICH (Brighton) opposed the motion. If it were passed it would soon get about that the Association was considering a State Medical Service, and then "the cat will be among the canaries."

Dr. RICHARDS said that his reason for bringing forward the motion was in order that they might know where the Association stood.

The motion was lost.

Ophthalmic Benefit

Mr. H. J. McCURRICH (Brighton) moved:

That this meeting is of opinion that the inclusion of non-insured persons and dependants with incomes between £250 and £420 per annum, as recommended by the Ophthalmic Group Committee for treatment under the National Eye Service, would create an unwarranted restriction on private practice; and that it would form an unfavourable precedent to future extension of specialist services.

He said that this was an extension of service which was being foisted on the profession without the Divisions having had any chance of discussing it at all. Was it to be imagined that a man earning £420 a year could not afford to pay a consulting fee perhaps once in three or four years?

Mr. BISHOP HARMAN said that the Ophthalmic Group Committee considered that two facts should be recognized—namely, that the income limit for insurance entrants had been raised to £420, and that the cost of practice had increased considerably. Practitioners to the number of 870 on the Association's ophthalmic list had been circularized for their opinions. On the question whether they were in favour of raising the fee for all cases in which the income was up to £420, 421 had replied in favour, 41 against, and a few gave no answer. On a second question, whether the fee should be, as recommended by the Committee, 15s. 6d. per case instead of 10s. 6d., 375 had replied in favour, 39 against, and 20 had given no answer. On a third question, whether they would decline to see patients in this class when a lower fee than 15s. 6d. was offered, 381 said that they would do so, 16 gave no definite opinion, and 66 no answer at all.

Dr. F. A. ROPER (Exeter) said that this dealt with an entirely new factor in medical practice. The motion was brought forward by one group of consultants—namely, the Ophthalmic Group. It appeared to him that the inclusion of this new economic class of patients within national health insurance introduced the need for a complete consideration of the new position by others than those in that specialist group. Sufficient time had not been allowed for consideration of these new proposals by consultants in general. The proper course was to refer this resolution to the Council.

Dr. A. S. GOLGH (Watford) said that if they were in future to have a united profession it must be driven home that the specialists would have to make the same sacrifice as general practitioners.

Mr. N. E. WATERFIELD supported the suggestion that this be referred back for further consideration. There had been no opportunity to consider the motion at leisure, and it had much larger bearings than as affecting the Ophthalmic Group.

Mr. BISHOP HARMAN said that the Committee had done its best to see if it could not refrain from making any alteration for non-insured patients, but it was almost impossible to make that distinction. He thought that the request made by their ophthalmic colleagues should be granted.

Mr. McCURRICH said that he still felt, in spite of Mr. Harman's argument, that this was not the time to accept this inclusion. In the case of insured persons they had, of course, no option.

The motion was carried.

The Association's "Journal"

Dr. E. H. RICHARDS (North Staffordshire) moved a resolution urging that the *Journal* should contain more articles for practitioners, giving reports of recent improvements in diagnosis and treatment, as opposed to reports on research. He acknowledged that there had been, particularly during the last twelve months, a great improvement in the direction indicated, but the opinion of many members in his area was that the *Journal* was rather more academic than practical. He himself was not a general practitioner, and the specialist had his own journals: They did not buy their *Journal* every week in order to study research. Some of them found themselves reading the *Supplement* only.

Col. R. G. GORDON (chairman of the Journal Board) said that this motion was obviously framed as a criticism, but it had been proposed in so kindly a way that he did not know how to answer it. The policy of the *Journal* had been to try to satisfy as far as possible all branches of the profession. It must be remembered that membership of the Association was not confined to general practitioners, but included specialists, consultants, and medical officers of health, and it was the object of the Editor to try to balance the various interests concerned. He might be forgiven for mentioning what had happened to the *Journal* during the war. It had been necessary to cut their coat according to their cloth, and to modify the *Journal* in various ways. Paper had been the great difficulty. It cost £17 17s. 6d. a ton before the war and now it cost £46 1s. 8d. Moreover, the supply allowed was far short of the previous allotment. For this and other reasons, including the absence of contributing staff, certain features had had to be dropped. One of these was the Key to Current Literature. The *Supplement* had to be bound in instead of being loose, because if loose it had to consist of a certain number of pages—four, eight, or twelve. The Editorial Department had had a very difficult time. He also wanted to congratulate the Advertisement Department on a most successful result in spite of increased costs in every respect. The mover had said that members did not buy the *Journal* to study research. But in fact they did not buy the *Journal* at all. It was included in their subscription, and the cost of the *Journal* last year was only 2s. 1d. per member. He hoped those who had put forward this motion would realize the editorial difficulties. If one took the current issue there was only one article in it—a subsidiary leader—which was not of great interest to the general practitioner. He believed they were serving the general practitioner well, but the general practitioner must bear in mind the other classes of members who had to be served.

The motion was lost.

Dr. RICHARDS further moved: "That as the *Supplement* is the only means of informing practitioners of current events there should be more complete reports of central meetings." This time, he said, he really had a serious criticism. Those who took an active part in the work of the Divisions were often asked what the Association was doing. If in reply they confined themselves to the *Supplement* they would not have a very ready answer. There should be more complete reports of central meetings. How would the present Conference, for instance, be reported? Representatives were given a very great responsibility. Dr. Campbell and himself from North Staffs represented 200 members. Those members should be able to read in print exactly what they, their representatives, had said, and what happened to the motions they brought forward, also as to what opposition was encountered, and what type of opposition. The *Supplement* provided an ideal vehicle. It was reports of central meetings, not so much of divisional meetings, that were needed.

Col. GORDON, in reply, said that Dr. Richards feared that the present Conference would not be adequately reported. There had been no Representative Meeting since the war, but he wondered whether Dr. Richards had looked at the reports of the Representative Meetings before the war and was prepared to say that they were not adequate. It had not been recent policy to report meetings of committees, other than the Insurance Acts Committee, and, of course, the Council, because committees represented a stage at which matters were thrashed out, and it was often inexpedient to report them. Council meetings since the war had been few and brief, and there had not been the usual number of central meetings to report.

The motion was lost.

Dr. H. S. PASMORE (Kensington) moved that members of the Association should be entitled to reduced charges for advertisements in the *Journal*.

Col. GORDON said that most of the individual advertisements were for assistants, partners, and so forth. Was it really good policy to differentiate between members and non-members in the case of these small advertisements?

Dr. A. W. WESTON (Dudley) suggested that the advertisement charges in the *Journal* were generally too high. With a guaranteed circulation of 43,000 a week the charges could well be brought down.

It was agreed to refer this motion to Council.

Medical Organization

Dr. T. M. J. STEWART (East Yorks) moved: That a department should be set up at headquarters to keep under constant review the factors determining, and relevant to, the remuneration of medical practitioners. The information collected should be available to the Insurance Acts Committee and to any other committee of the Association as desired, and the department should be under the control of a committee of general practitioners elected by the Divisions. His Branch felt that the Insurance Acts Committee did not have sufficient data to prove any case that they had to present, and therefore they did not impress the officials to whom it had to be presented. If necessary the department he was envisaging could employ experts to advise in the matter of compilation and presentation. It was a serious matter for the practitioners of the country if a case was not presented in the best possible way.

The motion was lost without debate.

Dr. H. S. PASMORE (Kensington) moved to refer it to the Council to consider in the interests of the profession the formation of a standing committee of general practitioners. At present two separate standing committees dealt with general practice—the General Practice Committee and the Insurance Acts Committee. This motion from his Division arose out of dissatisfaction with the trend of certain matters in general practice to-day. The dissatisfaction was based, among other things, upon the recent expansion of the insurance income limit without consultation with the practitioners who would do the work. Apparently the Government could alter its panel contracts at will, while the practitioner had to maintain his part of the contract to the letter. This and various other grounds for dissatisfaction gave rise to the feeling that there must be something wrong with the organization in the Association. They all recognized the enormous amount of work that the committees were called upon to do, but these innumerable activities prevented full consideration being given to major issues. If such a committee were set up to give unbiased attention to the findings of the General Practice Committee and the Insurance Acts Committee, it would be able to prevent a series of small retreats which, if they did not prejudice the position of the profession at present, might well do so in the future.

Dr. E. A. GREGG, as chairman of the Insurance Acts Committee, said that probably the proposer did not realize the particular character of that body. The committee and its annual Panel Conference was a piece of machinery through which insurance practitioners might make their opinions felt. It was so constructed that while in one sense, through the link there was between it and the Council of the Association, it was a committee of the Association, in another and very real sense it was something very much more, and he had never yet known the Council fail to accept at the hands of the committee what it knew to be the expressed view of the insurance practitioners of the country. To take any other step such as was proposed in this motion would be retrograde and would immediately provide their critics and opponents with a great deal of material: While the profession was indebted to the Association for the machinery, the Association made no attempt to fetter or control the opinion expressed through the committee.

The motion was lost.

The Conference adjourned until the following day. A report of the proceedings will appear in next week's *Supplement*.

PROCEEDINGS OF COUNCIL

A meeting of the Council of the Association preceded the Conference of Representatives on Thursday, September 11. Mr. H. S. SOUTTAR was in the chair.

Dr. A. M. Watts was co-opted a member of Council in place of Captain A. W. Gardner, representative of the Kent and Sussex Branch, who had resigned because he was on national service.

The Council instructed that its congratulations should be forwarded to the members who had received recent honours.

A report was made of the deaths of Dr. W. F. Brook and Dr. G. E. Twynam, former members of Council, and the Chairman was authorized to forward letters of condolence.

Congratulations were tendered to the Secretary, Dr. G. C. Anderson, on receiving the Fellowship of the Royal College of Physicians. Sir Kaye Le Fleming referred to the tact and wisdom which Dr. Anderson had shown in dealing with the Royal Colleges in the matter of the Medical Planning Commission, and said that this bestowal was all the more appropriate on that account. Sir Ewen Maclean added his congratulations.

The Central Medical War Committee was nominated. The Chairman stated that the Medical Superintendents Society had applied for representation, and he thought this was a reasonable inclusion. The Council agreed. The Protection of Practices Committee was also re-elected.

Dr. F. Gray was nominated as the Association's representative on the governing body of the British Postgraduate Medical School.

Award of Gold Medal

The Chairman of Council proposed: "That the Gold Medal of the Association be awarded to Sir Kaye Le Fleming in recognition of his distinguished work for the Association and the profession." He said that it was quite unnecessary for him to stress the claims of Sir Kaye Le Fleming to this honour. He had had a very distinguished career in connexion with the Association, and the very solid position which the Association had now attained with the profession and the public was due in no small degree to his efforts.

The motion was carried unanimously and with acclamation.

Supply of Milk to Domestic Consumers

A report was made to the Council on the subject of the medical certificate prescribed under the Sale of Milk (Restriction) Order. The Secretary stated that an indication had been given that all the practitioner would have to do would be to indicate the particular class of illness mentioned in the Schedule, but now in the medical certificate which had been forwarded from the Ministry of Food it appeared to be required that the practitioner in some instances should state the actual disease from which the person was suffering. That was quite a new point and a most material alteration.

Prof. Picken said that it was true that the certificate was no longer to be handed to the dairyman but to be sent to the Food Control Office. At the same time he thought it was unfortunate that it should have to go through that channel bearing the name of the disease from which the person was suffering, as it might fall into the hands of persons in that office who knew the applicant. Dame Louise McIlroy thought it was a breach of medical confidence and secrecy to insert the name of the disease or illness. Dr. Dain said that this new arrangement did in a way cut across professional secrecy.

It was agreed to protest to the Ministry of Food against that form of certificate which required the practitioner to insert the name of the disease or illness from which the applicant was suffering, and the forwarding of such certificate to the Food Control Office.

Business of the Executive Committee

Mr. Souttar reported that the Executive Committee had, on the instructions of the Council, given further consideration to its decision not to admit to membership of the Association alien practitioners who had been admitted to restricted registration. The committee adhered to its previous decision, but had given instructions that any alien practitioners admitted to temporary registration should be able to obtain the *Journal* at the reduced

subscription rate of 1½ guineas. The admission of these practitioners to membership of the Association involved considerable difficulties. The Council confirmed the decision of the committee.

Mr. Souttar also stated that a communication from the British Hospitals Association had been considered suggesting that that body and the British Medical Association should each nominate three representatives to form a standing liaison committee to consider matters of mutual interest. The Executive Committee had approved this suggestion, and the following had been appointed as the Association's representatives: Dr. Peter Macdonald (chairman of the Hospitals Committee), Mr. R. G. Newell, and Dr. Russell Brain.

Colonel R. G. Gordon (chairman of the Journal Board) described the arrangements which had been made for the printing and publication of the *Journal* following the destruction by enemy action in May last of the premises at which the *Journal* was printed. The Chairman of Council said that a most admirable arrangement had been made, the printing of the *Journal* was in every respect excellent, and the Association was indebted to Colonel Gordon and the Journal Board for the effort they had made to maintain this production at a high standard.

Dr. E. A. Gregg brought forward the report of the Protection of Practices Committee. He said that an important point which the committee was bearing in mind was that the acting practitioner should accept on behalf of the absent practitioner those persons who would ordinarily have gone on to the list of the latter had he been in his practice, and should attend them in the absence of that practitioner.

Dr. Gregg also submitted a report of the Insurance Acts Committee. Speaking with regard to the recent negotiations over the capitation fee he said that a firm promise had been given by the Minister of Health that at the end of the war the whole question of the capitation fee should be opened up in the widest possible way, and should the result be a higher capitation fee, necessitating further financial allocations, a Bill would be introduced into Parliament to give effect to it.

This concluded the meeting of the Council, which had lasted one hour.

MEDICINE TO-MORROW

In his presidential address to the Paddington Medical Society on the place of the doctor in the community of to-morrow, Dr. G. de Swiet said that modern war altered modern life on so vast a scale that no amount of detailed planning made during the strife could be of much use. Nothing but big outlines could be of any help. There was a danger that unless we altered the character and the scope of our activities we might lose our claim to be a leading profession. We should not isolate ourselves by professional limitation of interests.

The conception of prevention of diseases was relatively new, and a further study of immunology might prove that the subject was by no means exhausted. Medicine would tend to be linked more and more with sociology, the first link having been established through public health, then hygiene, and later epidemiology. There were, he continued, periodic epidemics of a social kind, and the community of to-morrow might ask doctors to discover a remedy against these. Those who had predicted the advent of the present war might be able to suggest remedies. Wars, he said, were the outcome of cumulative grievances, real or imaginary, at home or abroad. It was the quick settlement of grievances, both national and individual, that would go a long way towards the prevention of war.

Another problem that might be tackled on preventive lines was that of marital conflict, a problem hitherto avoided by the medical profession and abandoned to the legal. Doctors were sometimes consulted on physical problems, but little on temperamental problems. Future generations would, he believed, blame the medical profession for not doing anything about a more judicious selection of chromosomes. Finally Dr. de Swiet referred to the community of to-morrow, stating that the information accumulated by teachers on the behaviour and character of their pupils was lost as soon as the latter left school and entered the outside world. Such information should be available to the doctor without his having to ask for it, so that constructive use could be made of it.

MEDICAL WAR RELIEF FUND

TWENTY-SECOND LIST

Previously acknowledged, £31,980 14s. 5d. and £100 3½% Conversion Stock and £40 3% Defence Bonds

Individual Subscriptions

£2 2s.—Dr. F. S. Airey, Leicester (2nd donation); Major J. W. Crofton, M.E.F.

£1 1s.—Dr. F. M. E. Davies, London.

£347 17s. 3d.—Canadian Medical Association.

£129 14s. 6d.—Blackpool Division—per Dr. T. S. Blackledge.

£64 18s.—Practitioners in Buckinghamshire—per Dr. V. Lloyd Hart (amount already sent £28 12s. 6d.); Dr. D. Luffman (2nd donation), Dr. M. Ward (2nd donation), Dr. M. Wills, Dr. V. Minster, Dr. T. W. S. Paterson (2nd donation), Drs. Cowper, Grogan, and Sharp, Dr. I. Clarke, Dr. D. Bull (2nd donation), Dr. A. W. D. Coventry, Dr. F. H. P. Wills (2nd donation), Dr. W. G. Robson (2nd donation), Dr. A. J. Wright, Dr. G. S. W. Evans, Dr. J. W. A. Graham, Dr. G. O. M. Dickenson, Dr. R. W. L. May, Mr. R. W. McConnel (3rd donation), Dr. B. Maddison.

£32 10s.—Rochdale Division—per Dr. A. M. McMaster (amount already sent £67 4s.); Dr. E. C. Hepp £5 5s.; Dr. J. F. O'Brien £2 2s.; Dr. C. R. Wilson £1; Dr. K. A. Evans £2 2s.; Dr. T. N. Fogarty £2 2s.; Dr. H. N. Crossley £5 5s.; Dr. A. M. McMaster £5 5s. (The cost of collection, £2, was met by Dr. McMaster.)

£27 17s. 7d.—Malaya Branch (amount already sent £293 5s. 11d.).

£15.—Tadmorden Medical Society—per Dr. H. Thorp (amount already sent £15). Dr. J. C. Putter Bayley £1 10s. (2nd donation), Dr. S. H. Brown £1 10s. (2nd donation), Dr. R. McGregor £1 10s. (2nd donation), Dr. J. de V. Mather £1 10s. (2nd donation), Dr. Ena M. Morrison £1 10s. (2nd donation), Dr. A. J. Muir £1 10s. (2nd donation), Dr. V. Southwell £1 10s. (2nd donation), Dr. T. C. Stephen £1 10s. (2nd donation), Dr. H. Thorp £1 10s. (2nd donation).

£7 7s.—Per Dr. Hollis, honorary secretary, Leeds Panel Committee (amount already sent £273 7s.); Mr. A. M. Clave £5 5s.; Dr. W. Bolton £1 1s. (2nd donation); Dr. J. E. Middlemiss £1 1s.

£4 4s.—Practitioners in the area of the Newcastle-upon-Tyne Division—per Mr. Weldon Watts (amount already sent £419 7s. 6d.); Dr. G. M. Murhead.

£3 3s.—Practitioners in Chelsea and Fulham Division—per Dr. J. A. Scott (amount already sent £50 2s. 9d.); Dr. Stanley Brass.

£2 2s.—Practitioners in the Swansea area—per Drs. T. Ben Thomas and T. W. Davies (amount already sent £352 3s.). Dr. H. R. Stubbins.

£2.—Sheffield Division—per Dr. J. Nunan (amount already sent £256 10s. 7d.); Dr. F. J. Leddy.

£1 10s.—Per Dr. Lorton Wilson—Furness L.M.W.C. (amount already sent £73 9s. 6d.); Dr. J. A. Guy 10s. (2nd donation), Dr. H. Beddinsfield £1.

£1 1s.—Grimsby Division—per Dr. T. J. T. Wilmot (amount already sent £66 13s.). Dr. L. Gabbe.

Local Medical and Panel Committees

£100.—Kent.

£15.—Kilmarnock Burgh (2nd donation).

Total, £32,740 2s. 9d. and £100 3½% Conversion Stock and £40 3% Defence Bonds

Correspondence

State Medical Service

SIR,—From the letter of Dr. E. U. MacWilliam (*Supplement*, August 23, p. 31) it is clear that at least some members of our profession realize that if the nation is wisely guided there will be after the war radical, in fact one might say revolutionary, changes in our whole system of political economy. Of necessity these revolutionary changes will involve both the medical services to the nation and our whole financial system. To argue about a State Medical Service as against our present system without considering the larger question to all its bearings seems to me like fighting about the paraplegia of a pernicious anaemia case while forgetting or disregarding the really important question of the whole blood-producing mechanism. If the present narrow escape of the democracies from total destruction by the totalitarian States does not convince our economists of the necessity for revolutionary changes if we wish to survive at all, nothing can save us from that total destruction in the near future.

I hope someone at head office is giving careful study to the whole question in all its bearings so that the profession may be given a considered and authoritative lead when the inevitable revolutionary changes are brought into being. Would it be possible to have a few articles of an educative nature in the *Journal* from recognized authorities on political economy, with special reference to the bearings of possible post-war changes on the medical profession and its duties to the nation? As a rule medical men have not the time to give to exhaustive studies of this sort, and therefore their opinions on such things as State Medical Service are not always as sound as they should be. It may be quite all right to insist on free choice of doctor, but it should be remembered that that in itself is valueless if we have

not a community in which to exercise that choice. Have our leaders and advisers fully explored all suggested ways of salvation, including Douglas Social Credit and Sir Richard Acland's "common ownership," in their efforts to find a way of escape from our present highly dangerous difficulties?—I am, etc.,
Ballymena, Sept. 1.
J. ARMSTRONG.

SIR,—As medicine marches on, the need for closer co-operation between general practitioners, specialists, and hospitals becomes more and more evident, and many now, it seems, are advocating the organization of these various services into a single State Medical Service. If such a service is to be established, then may we well ask—What of the future of the G.P.? Will he, as some would have us believe, be robbed of his independence, be doomed to become a mere sorting machine for hospitals and consultants, an issuer of certificates, a humble salaried unit of a Government Department? Worse still, enmeshed in a web of red tape, shall we see his hitherto suave bedside manner lapse into official abruptness, his sympathetic bottle of physis replaced by the stern injection needle, the cryptic symbols of his prescription disclosed in bold Roman type—in short, his mystic mantle snatched from his shoulders and the whole tricks of his trade exposed to the cold scrutiny of public opinion? And moreover, bereft of their friendly advisers, shall we see his patients obliged to carry their ailments to an impartial board of "specialists" and sink to the level of mere "clinical material"? I think not. And for this reason. However much the public and politicians may desire it, never can we make of medicine an exact science, and never can medical men and women be bound by rigid rules and regulations. The very nature of his (or her) work renders the doctor's comings and going erratic. Strictly limited hours of labour, regular holidays with pay, liberty to strike—all the cut-and-dried routine so important in the eyes of the industrial worker—are not for us. We cannot down tools in the operation theatre, abandon the woman in labour at the first note of the hooter, or insist upon our "rights" in the face of a matter of life and death. Willy nilly we must "carry on," and at all costs uphold the high ideals of our profession. But whether the proposed scheme be merely an extension of the national health insurance system or an "all in" State Medical Service, there is one thing the G.P. must never submit to have wrested from him—that is his individuality, for, in my opinion it is just the innate sympathy, the personal touch between doctor and patient, which makes of the healing art a vocation and not a trade, and no sound medical system can afford to ignore this fact.—I am, etc.,
Sunninghill, Sept. 7.

ARTHUR E. FRANCIS.

SIR,—Dr. Lindsey W. Batten (*Supplement*, August 30, p. 36), having expressed his fear that those contemplating a State Medical Service must be thinking in terms of a dream State, then proceeds to draw his own picture in terms of an undoubted nightmare State. He declares none of the services he worked for seemed to want his best work, and generally draws a horrific picture, presumably founded on his own experience. Like Dr. Batten, I have both experienced private practice and worked for services, with little to complain of; but it is particularly on behalf of the L.C.C. school medical service, which he mentions, that I want to take up the cudgels. I have often cited this as a shining light of what a large service can be. When I first worked for them I was struck by three facts. There was a pleasant atmosphere of trust in their doctors; if something (e.g., free milk) was needed for a child the spirit was "do what is for the good of the child first, and justify it afterwards"; and, though the numerous forms opened up vast possibilities for red tape, barely the lightest of pink tape was in evidence. The credit for this was undoubtedly due to those running the service, who were medical men. If such a large service could be both efficient and pleasant to work for I see no reason why other ones should not similarly be so, provided an important tradition—of patient first, forms afterwards—is established and maintained. One way of achieving this would be decentralization into small units. At present our teaching hospitals receive State grants, but nevertheless run themselves. Part of the trouble at present lies in Government Departments having to be preoccupied with the taxpayer's money. But may one not hope that in the future a change of outlook and a realization of the value of health services may make the public

realize that "putting the patient first attitude" is more important than putting the necessity for rigid economy first. Or will the cynic object that such a charitable view of Governmental extravagance can only be expected where really large sums, as in a "costs + 10%," are involved?

The other point Dr. Batten makes is that the private patient rewards us nearer to our deserts than does the State. But unless we consider our deserts very meagre, what of the large section of the community who cannot pay an adequate sum, and to whom illness entails all the extra worry of financial strain? Some service must be provided for them. In actual fact it should not be impossible to devise a service whereby a doctor is left free to devote part of his time to those patients who wish to and can pay him.

Finally, what strikes me in the enormous controversy regarding the most efficient form of medical service is that, important though this question is, there seems to be a tendency to overlook a more important aspect, and that is that a doctor should be in a position to prescribe those things required for health: decent accommodation, fresh air, and adequate nourishment. Without these no service, however well planned, can properly achieve what is needed.—I am, etc.,
Tunbridge Wells, Sept. 1.

W. LINDSAY NEUSTATTER.

State Medicine—What is Not Wanted

SIR,—It is true some sort of State Medicine is inevitable; but having read the views expounded by your numerous correspondents on this urgent subject, one can only be struck by the diversity of opinions as to what form State Medicine should take. So much is this the case that perhaps more coherence could be elicited by starting from the other end—what is not wanted. One can nearly always obtain a fair agreement in discussing a destructive policy, and, anyway, it is a pleasanter occupation and requires less mental effort than formulating a constructive scheme.

As a start, and speaking from the general practitioner's point of view (for some variant of the G.P. is bound to survive to act the humble part of go-between or filter between the patient and his ultimate "disposal"—a horrible word in this connexion which is certainly not wanted), the G.P. must on no account become a clerk, enshrined in an office, complete with desk, typewriter, and an elaborate filing system. That kind of filter, in peacetime, should be anathema to all sane men, though perhaps not so much so to women. Unlike most filters, the efficiency of the G.P. should be judged more on the amount he lets through than on the residue, for the filtrate he deals with himself, only passing on the dregs to the specialist, hospital, or whatnot.

There are a few exceptional beings among us who can combine the duties of clerk and doctor in a most praiseworthy way, and a room could be found for these in any scheme, but most of us are not so constituted—the better the clerk, the worse the doctor. Forms 1066, 69, and 1212 rendered in triplicate must be dispensed with, and form-filling generally reduced to a minimum and never in triplicate. What necessary correspondence a medical service entails should be of an informal nature, and even certificates might be humanized.

Of course, all this sounds impossibly Utopian, for whoever heard of any public service that was not deluged with ink or throttled with paper? But it will have to be or medicine will suffer.

As for the patients, the poor patients—the less they are passed on from one department to another and generally badgered, the better. One has heard a lot lately of raising a race of super-men—may the Lord forbid!—and of "health-consciousness" as the patient remained well. Surely all this is wrong. Health-consciousness might well be the forerunner of neuroses. If a man is well, well! he's well, and from his point of view that is all there should be to it.

Preventive medicine can go much too far. Who wants to be for ever touching wood or continually inoculated against everything of himself, such as tonsils and foreskins, as libations to the gods of good luck! Preventive medicine can become as much a curse as the taking out of insurance policies. One can be over-armoured and safety becomes a burden.

I do not believe that prevention is necessarily better than cure. It's a stop-gap to be undertaken gently and kept well in

the twilight. And finally, after this war we want to be individuals, for, with the awful examples before one, it is individuality if anything one is fighting for, though what this latter has to do with a State Medical Service I'm not at all sure.

E. GRANGER, M.B.

Medical Planning and a State Medical Service

SIR,—I have read with interest, and I confess some qualms of conscience, the thoroughly honest forthright letter of Squadron Leader W. H. Gossip (*Supplement*, August 30, p. 35). Surely his is a just plea: do not decide the fate and mode of living of the younger members of the profession without consulting them. Now is certainly not the time to plan a State Medical Service.

The raising of the panel limit was simply announced; we were not consulted. It is debatable whether the profession or public desires it at all, but apparently the politicians were determined to "slip it over." Above all, let us be careful lest we are but the pawns being placed in position, prior to our movement, step by step, by shrewd party politicians preparing for a post-war period, already with an eye on snatching beforehand the probable propaganda of their opponents, without thought or care to the little pawns, except for the relish of a political game thoroughly well played. We may suddenly find that having sleepily acquiesced in the raising of the panel limit we have to all intents and purposes already agreed to a State Medical Service, without our knowledge.

While the profession as a whole is occupied, in one way or another, serving the war effort, it is in no fit condition to make drastic changes affecting our future, and it is grossly unfair to attempt such changes without both the profession and the public being in a position fully to realize their full implication.

Remember we are the trustees of Squadron-Leader Gossip and thousands like him, who hope to return to the practices and districts they love, and not to a State Medical Service, wherein we shall have lost the most precious of all our possessions—the right to practise our art in that part of the country or town of our liking, and among people with whom we live in harmony and according to our individual ideals.

I am for the present one of the trustees, and through Squadron-Leader Gossip's letter I have just become aware of my responsibility—and that of all of us at home.—I am, etc.,

Hull, Sept. 2.

R. D. B. WRIGHT, M.B., Ch.B.

Domiciliary Vaccination

SIR,—As a public vaccinator for thirty-eight years to a county borough and also a county area adjoining, I am fully convinced that any departure from vaccination in the homes of the people would be disastrous to the cause of vaccination. People would not attend clinics for this purpose. As one who has conducted child welfare clinics in three different county areas over a long period, I say quite definitely that there was never anything to suggest that they would. If some are indifferent about it at home they would never think of undertaking a journey to a clinic, and only such as are now known as "request" cases would be done. By visiting the homes doctors have a rare chance of explaining vaccination, which, if adequately done by doctors who will take the trouble, will greatly improve the number of consents and considerably lessen the number of blank journeys. I have also found great help from leaving copies of *The Truth about Vaccination*, a most useful (I'd.) pamphlet issued by the Association of Public Vaccinators of England and Wales.

As an example of the benefit of visiting the homes, may I say that from my last list of eight names received from the vaccination officer on Form H, I vaccinated seven. (One had recently left the district.) Of the seven only two were "request" cases, and if I had not visited the homes of the others and given a brief explanation of the reasons for vaccination it is practically certain that not one of the remaining five would have been done—it is absolutely certain, too, that not one of these mothers would ever have thought of making a journey to a centre for this purpose.

As most public vaccinators are also private practitioners and run in vaccination along with their ordinary round, the extra-territorial argument seems of minor importance. As regards fees, it would seem that the solution would be to ask the local administrative authority—either county borough or county council—to increase the minimum fee of 1s. per case entered on the lists received from vaccination officers to such a sum as would com-

pensate for what are now blank journeys. It is in the power of such authorities to do this. It is not likely that the Ministry of Health would agree to holding vaccination clinics on the lines of child welfare and diphtheria immunization clinics when so much per session is paid, as this would be a fundamental alteration requiring "statutory" adjustment. We must assume, therefore, that even if it were made permissible to establish vaccination centres vice domiciliary visits, doctors would only be paid a fee for each person successfully vaccinated. Such a fee would undoubtedly be very much lower than the present fee for domiciliary vaccination, and a doctor would have to attend the centre, probably often at inconvenient but regularly recurring times, and, after waiting, might get no patient at all, and would not get even the above-mentioned shilling, as no list of children requiring vaccination would be received from the vaccination officer. His last plight would be very much worse than his present one.—I am, etc.,

Walter Warrington, Aug. 25.

JAMES BENNETT.

The Threepence Halfpenny

SIR,—I am somewhat exercised in my mind concerning the question of the remuneration offered to, and accepted by, the Special Panel Conference of July 31 in respect of the new entrants to insurance (incomes below £420 per annum). The effect appears to be as follows. A doctor practising in a densely inhabited area who has a full panel of 3,000 will, without accepting a single new entrant, be paid an additional 3½d. for everyone on his list. In other words, he will be made a present of about £45 per annum. On the other hand, a doctor practising in a more open neighbourhood, with a panel list of 1,000, and who accepts 250 new entrants, previously attended privately, will be paid an additional £22 on his increased list. Therefore the doctor who has no responsibility whatever for treatment of new entrants would be paid twice as much out of the increase in the fee of 3½d. per head as the doctor who undertakes the treatment of 250 of the new class. It sounds queer.—I am, etc.,

London, N.W.1, Sept. 7

W. A. M. SWAN.

Medical Records as Waste Paper

SIR,—At a recent meeting of the Isle of Wight Local Medical and Panel Committee a member recounted the following experience. An insured patient of his had been absent on active service. He returned to civil life and reported to his doctor, bringing a history of schizophrenia from the Service he had left. The doctor telephoned to the local Insurance Committee for this man's previous medical records. He received the following reply:

"With reference to our telephone conversation this morning, I find that all medical records more than three years old have been disposed of for waste paper. This was in accordance with the instructions of the Ministry of Health. I regret, therefore, the medical record of Mr. X cannot be forwarded."

My committee has instructed me to submit this letter to you for publication.—I am, etc.,

G. M. BALFOUR,

Hon. Secretary, Isle of Wight Local Medical and Panel Committee.

Cowes, Sept. 4

Speaking on the diagnosis and treatment of gas casualties at a meeting at Swansea which had been arranged by the Swansea Division of the B.M.A., in co-operation with the Ministry of Health, Prof. J. A. Nixon of Bristol emphasized once again the need for rapid first-aid treatment and cleansing; serious internal damage might be caused, he said, before an external blister was obvious. Ordinary thick male clothing, especially a rubber coat and an umbrella, would have a high protective value in the event of sprayed gas, but he viewed with less certainty the present vogue among women for stockingless legs and openwork shoes. Some of the worst cases of injury from gas in Abyssinia were due to unpreparedness and to lack of clothing. The cardinal principle in the treatment of gas casualties, after contaminated clothing had been discarded, was prompt and vigorous washing, especially of the eyes. So long as the public were prepared—and they should be with their respirators—and those responsible for the treatment of gas casualties were well versed in procedure, we could, said Prof. Nixon, face any gas attack which might come. The lecture was attended by about eighty doctors from the Swansea Division and the neighbouring area of the South-West Wales Division.

B.M.A. : Branch and Division Meetings to be Held

WILTSHIRE BRANCH: SWINON DIVISION.—At Victoria Hospital, Swindon, Wednesday, September 24, 8.30 p.m. Dr. H. Crichton-Miller: War Neuroses.

B.M.A. : Meetings of Branches and Divisions

BERKS, BUCKS, AND OXFORD BRANCH: OXFORD DIVISION

At a general meeting of the Oxford Division, held at the Radcliffe Infirmary on May 21, Group Captain STRUAN MARSHALL gave a lecture on "Some Physiological Aspects of Flying."

Another general meeting of the Division was held at Radcliffe Infirmary on June 25, when the following clinical cases were shown: by Mr. J. PENNYBACKER, chronic sciatica due to adenocarcinoma of the lumbar region; by Dr. PICKLES, myasthenia gravis; by Lieut.-Colonel R. P. S. KELMAG, R.A.M.C., (a) march fracture, (b) fractured scaphoid of soldiers, and (c) feet showing types of corns and callosities; by Dr. NORAH ARCHER, glandular fever. Dr. FRED A. PRATT demonstrated the Oxford ether vaporizer No. 1 and apparatus for intravenous administration of fluids.

**Medical Forces of H.M. Services
Appointments****ROYAL NAVY****ROYAL NAVAL VOLUNTEER RESERVE**

C. J. Thomas to be Temporary Surgeon Captain.

Acting Surgeon Lieut.-Commander F. J. S. Gowar to be Surgeon Lieutenant-Commander.

Probationary Temporary Surgeon Lieuts. J. W. Warrick, E. O. Davies, J. A. N. Lock, and J. R. Gray to be Temporary Surgeon Lieutenants.

ARMY

Captain D. B. O'Sullivan-Beare, half-pay list, late R.A.M.C., has retired on account of ill-health, receiving a gratuity.

ROYAL ARMY MEDICAL CORPS

Major S. J. A. Walshe, D.S.O., retired pay, late R.A.M.C., has been restored to the rank of Lieutenant-Colonel on ceasing to be employed.

Captains (Temporary Majors) J. C. Barnetson, H. J. R. Thorne, and T. J. Moloney to be Majors.

Captain (Acting Major) B. Blewitt to be Major.

REGULAR ARMY RESERVE OF OFFICERS

Colonel R. A. Bryden, D.S.O., late R.A.M.C., has ceased to belong to the Reserve of Officers on account of ill-health.

TERRITORIAL ARMY**ROYAL ARMY MEDICAL CORPS**

Lieut.-Colonel J. A. Hooker, from Royal Artillery, Territorial Army, to be Lieutenant-Colonel.

Captain J. F. Hinksman has relinquished his commission on account of ill-health.

**TERRITORIAL ARMY RESERVE OF OFFICERS: ROYAL ARMY
MEDICAL CORPS**

Lieut.-Colonels F. A. Roper, A. J. Williamson, D.S.O., and A. C. Court, M.C., having attained the age limit, have relinquished their commissions and retained their ranks.

LAND FORCES: EMERGENCY COMMISSIONS**ROYAL ARMY MEDICAL CORPS**

Captain D. W. Whyte has relinquished his Emergency commission. The surname of Lieut. A. W. Krichauff is as now described, and not as stated in a *Supplement to the London Gazette* dated April 29.

To be Lieutenants: E. V. Oulton, J. A. Carson, W. R. Cylras-Williams, K. A. Hall, W. H. N. Heavens, J. J. Landon, I. A. MacDougall, J. I. Maran, S. V. Sansom, C. J. B. Anderson, G. H. Armitage, W. Bowman, M. J. Bradlaw, F. W. Bunting, A. Cameron, J. D. Dow, P. J. Duff, J. G. Ferguson, R. G. Forrest, S. M. Freedman, M. Gardiner, I. E. W. Gilmour, J. Gregory, T. B. Harrison, E. G. Hendry, R. B. Killoh, G. S. Lester, S. F. Lindsay, J. L. Maclean, A. D. Macrae, D. Macrae, A. P. McAra, W. W. Marsden, F. E. Milson, J. G. Moir, J. F. O'Donovan, R. S. Ogborn, R. Park, S. W. Price, J. W. Rogerson, J. Scott, J. L. Shanks, J. Sleight, B. H. Smith, W. H. Spencer, G. Tattersall, G. H. C. Taylor, C. Tetlow, A. Thomson, A. L. Tulk, A. Walker, D. H. G. Walker, R. P. Warin, D. Ward, W. G. Wilson.

ROYAL AIR FORCE

Wing Commanders V. R. Smith, C. P. Barber, and G. H. H. Maxwell to be Group Captains (Temporary).

Squadron Leaders G. A. M. Knight, F. W. P. Dixon, C. R. Palfreyman, and C. A. Rumball to be Wing Commanders (Temporary).

Squadron Leader (War Substantive) A. S. Burns to be Wing Commander (Temporary).

Flight Lieuts. R. S. Peill, H. E. Bellringer, R. L. Soper, R. S. B. McClean, L. M. Crooks, D. J. Sheehan, R. F. Wynroe, and J. B. Wallace to be Squadron Leaders (Temporary).

Miss Cecilia D. Middleton and Miss Mary Robertson to be employed by the Royal Air Force, with the relative rank of Flying Officer.

RESERVE OF AIR FORCE OFFICERS

Squadron Leaders (War Substantive or Temporary) R. F. T. Grace, J. C. Smyth, and E. G. Howell to be Wing Commanders (Temporary).

Flight Lieuts. P. A. Lee, D. F. Cameron, E. Corner, F. W. G. Smith, W. Hall, A. H. Osmond, J. McGovern, H. S. Barber, and H. F. Harvey to be Squadron Leaders (Temporary).

AUXILIARY AIR FORCE

Squadron Leaders (War Substantive or Temporary) J. H. Williams, I. A. G. L. Dick, J. P. Huins, and J. H. Attwood to be Wing Commanders (Temporary).

Flight Lieuts. R. G. Smith, J. Aitken, A. C. Hendry, and E. C. Gross to be Squadron Leaders (Temporary).

ROYAL AIR FORCE VOLUNTEER RESERVE

Squadron Leaders J. C. Ainsworth-Davis and J. G. Stewart to be Wing Commanders (Temporary).

Flight Lieutenant J. F. Bromley to be Squadron Leader (War Substantive).

Flight Lieuts. A. Ronald, W. S. McKenzie, J. S. Harper, M. Gordon, G. H. Bateman, J. G. L. Brown, H. A. Graham, and J. Howkins to be Squadron Leaders (Temporary).

Flying Officers P. J. Blandland, H. Halson, M. J. Greenberg, L. J. Jacobs, G. R. Green, G. C. Barron, and H. T. Macauley to be Flight Lieutenants (War Substantive).

COLONIAL MEDICAL SERVICE

The following appointments are announced: R. A. S. Cory, M.B., Ch.B., Senior Medical Officer, Jamaica; J. D. Reid, M.B., Ch.B., D.P.H., Assistant Bacteriologist, Sierra Leone.

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following postgraduate courses: (1) Final F.R.C.S. comprehensive revision course, daily, 10 a.m. to 1 p.m., from September 29 to October 17. (2) Final F.R.C.S. practical operative surgery course on the cadaver, Mondays, Wednesdays, and Fridays, at 2 p.m., from October 6 to 31. Both these courses will be given at the Royal Cancer Hospital. (3) Revision course in anaesthetics, daily, September 29 to October 11, at the Radcliffe Infirmary, Oxford.

A series of lectures on "Treatment of Fractures, with Special Reference to War Conditions" will be given at the British Postgraduate Medical School from Monday to Friday, October 13 to 17 (both days inclusive), beginning at 10 a.m. daily. The fee for the course is £5 5s., but a limited number of officers of the armed Forces will be admitted free on receipt of a leave certificate. Applications for admission should be addressed to the Dean of the British Postgraduate Medical School, Ducane Road, W.

WEEKLY POSTGRADUATE DIARY

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—St. Mary Islington Hospital, Highgate Hill, N.: Wed., 2 p.m., Final F.R.C.S. Clinical Course. Royal National Orthopaedic Hospital, Stanmore: Sat., 2.15 p.m., Final F.R.C.S. Orthopaedic Course. Colindale Hospital, The Hyde, N.W.: Thurs., 2.30 p.m., Final F.R.C.S. Urology Course. London Chest Hospital, Victoria Park, E.: Tues. and Thurs., M.R.C.P. Course in Chest and Heart Diseases.

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—At Tennent Institute, Church Street, Glasgow, Wed., 8 p.m. Dr. H. Wright Thomson: As Things Were Then.

DIARY OF SOCIETIES AND LECTURES

BIOCHEMICAL SOCIETY.—At School of Biochemistry, Cambridge, Sat., 11.45 a.m. Communications.

VACANCIES

EXAMINING FACTORY SURGEON.—The appointment at Midhurst (Sussex) is vacant. Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by September 30.

APPOINTMENTS

MORGAN, A. W. J., M.R.C.S., L.R.C.P., D.P.H., Officiating Chief Medical Officer, Bengal-Nagpur Railway.

SIMMONS, R. W. A., B.M., B.Ch., Examining Factory Surgeon for the Eastleigh (formerly Bishopstoke) District (Hampshire).

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 27 1941

British Medical Association CONFERENCE OF REPRESENTATIVES OF HOME DIVISIONS SECOND DAY

The Conference reassembled on September 12, Dr. H. G. DAIN again occupying the chair.

MEDICAL ORGANIZATION

Divisional Discussion Groups

Dr. H.-S. HUTCHINSON (Halifax) moved to ask the Council to make a strong recommendation to all Divisions to organize within themselves discussion groups for the consideration of the future of medicine, the results of the deliberations to be forwarded to the central body for approval, assessment, and publication. He began with an expression of regret that on the previous day, in moving a resolution which had provoked a certain amount of controversy, he had not had the good sense to compliment the Council on forming a Medical Planning Commission. He had been so obsessed with the method of appointment as to forget the merit of the thing in itself. He went on to say that the individual practitioner, by virtue of his work, was far too much detached from medical politics, and the Conference had an opportunity to formulate a plan which might bring him more closely into the shaping of what lay ahead. One day the members of the profession might have to vote on some scheme presented to them, but in his opinion at present 95% of the profession were quite unable to register an effective vote. He asked the Conference to instruct every Division to take upon itself the business of educating its members. The best method was not by means of unwieldy Divisional meetings, but by discussion groups of six to ten members, in which even the most timid might have his say. Every doctor ought to decide for himself the details of future medical service—it was not the grand plan but the details which counted. It was the small signs and symptoms they looked for in their daily diagnosis, and it was the small signs and symptoms they had to look for in this matter of a medical service scheme. What he was afraid of was that the Commission would present them with a plan, probably a very good plan, but one which would evoke no such interest as would be forthcoming if the electorate had had the opportunity of studying the problem for itself. The results of the groups' deliberations should be collated and subedited by a central body and then presented for the opinion of experts, after which a Conference might be called with adequately instructed delegates. "The destiny of the profession may be decided very soon, and this Conference to-day may be the last effective opportunity you will ever have of a say in that destiny. The instruction of the individual medical practitioner is the keypoint in preparing a plan for the future."

Prof. R. M. F. PICKEN said that he was entirely in accord with the motion, except for one word which required qualification. The motion asked the meeting to instruct the Council to "publish" this material, but such publication might be impracticable at the present time. He proposed that before the word "publication" there should be inserted "as far as practicable."

Dr. HUTCHINSON accepted this amendment.

Dr. R. W. McCONNAL (Nottinghamshire) moved an amendment: "That the results of these deliberations should not be published, but, with the findings of the Medical Planning Com-

mission, should be referred to the Divisions and to the Representative Meeting."

Dr. E. A. GREGG said that it was of the utmost importance that the members of the profession should not be faced with a mass of material that had already been dealt with by other people and asked to give a hurried decision on it. In St. Pancras they had already started discussion groups and proposed to continue them. He agreed with a further suggestion in the motion that members of the profession who were not members of the Association should be invited to attend. As for publication, the results of deliberations of this kind would go out to the constituencies through many normal routes—through meetings of the Association as well as in the *Journal*—and he deprecated the requirement that the results should be forwarded to a central body for approval, assessment, and publication.

Mr. P. W. L. CAMPS said that South Middlesex warmly supported this proposal. If the work of practitioners was passing from them as a result of encroachments it was because they had not taken a keen enough interest as individuals. It was essential that the discussion groups should place the results of their discussions periodically before the whole Division.

Sir KAYE LE FLEMING said that he thought the whole Conference was agreed on this proposal, but it was difficult to find words in which to put it quite clearly. He suggested that the motion after the word "medicine" should read as follows: "And that it be left to the Council to work out the details of assessment and publication of the findings, so that all members of the profession, whether members of the Association or not, may have the opportunity of free and full discussion."

In this form the motion was agreed to without dissent.

Organizations of Branches and Divisions

Dr. A. B. CAMPBELL (North Staffs) brought forward a motion declaring the time to be opportune to consider reconstruction in the organization of the Association: (1) Divisions should be so arranged that it was possible for every practitioner to attend meetings; (2) Branches should be regrouped according to distances; (3) area councils should be formed; (4) grouped Divisions must meet a certain specified number of times a year; (5) membership of Council should be limited to a certain number of years; (6) additional permanent officials should be appointed to visit Divisions; and (7) the whole profession should be asked, to support a Division engaged in a fight.

He said that this series of resolutions was drawn up at a well-attended meeting in his Division. More intimate contact was wanted between members of the Council and their constituents. The area of Branches was unwieldy; the Branch of which North Staffordshire was a part extended southwards down to Buckinghamshire. The constitution of the Council, he believed, was drawn up in the 'nineties, with occasional amendments since, and what was right for the 'nineties did not serve the purpose fifty years later. He wanted also to ensure that younger men had a chance of gaining a seat on the Council. This might be done if, after a number of years of service, some members of Council were made honorary or alderman members, so that their

advice would be retained, although they would have no vote. As to the secretariat, it was fully appreciated that the permanent officials were at present fully occupied, but though it was not easy to train such officials, it did seem to be necessary to have men who could visit the Divisions when required and at least once a year.

Dr. F. A. ROPER (Exeter) said that even if it was agreed that the time was now opportune to consider the basic organization of the Association *ab initio*, there was really on analysis very little that fundamentally needed altering. It was already the duty of the Council to approve the areas of Divisions, and naturally Divisions had been mapped out with a view to general convenience. Again, in view of the trend of legislation it was found to be of constantly increasing importance that, to save absurd duplication, Division and Branch areas should be coterminous with local government areas. As for the constitution of the Council, twenty-two of its members were at present elected by direct vote of members throughout the country, and twenty others were elected by members of the Representative Body, themselves presumably on the whole better able than most people to assess the merits of anyone proposed for the Council. There was no case for altering the constitution of the Council, and the whole motion was unnecessary and should be turned down.

Sir KAYE LE FLEMING said that anything more ludicrous than the statement that the Council was framed on ideas that had not been reviewed for the last forty years he could not conceive. The organization of the Association was continually being changed. The great virtue of it was that it was open to change from time to time, and most of the points raised in this motion were continually under review by the Council itself. "You have got a very good machine; if you would take a little less notice of the machine and pay a little more attention to the spirit you put into it, it would go better." The idea was put forward that after a certain term of years a member of the Council should automatically retire. But that, in fact, was provided for in the constitution, and in order to retain the services of old and valuable members of the Council, it was provided that they might be elected by the Representative Body as a whole after they had served their full term. He asked the Conference to turn down this motion.

Dr. D. O. TWINING (Plymouth) said that the proceedings of the Conference reminded him of an ancient pedagogue who illustrated the four stages of a man's life by saying that in childhood we knew a great deal and did not realize it, in adolescence we knew nothing and thought we knew everything, in manhood we spent our time learning laboriously the things we ought to have known years before, and in old age, when we knew a great deal, we found nobody to listen to us. On the previous day the Conference had shown itself in the adolescent stage; that morning it had reached manhood and was showing a great desire for more information. The difficulty which those of them who were country practitioners found was in getting people together to join in discussions. One method which had been found to work fairly well in a scattered rural area was the method of election to the Panel Committee by dividing up the area into a number of districts, each of them with a Panel Committee representative, who was elected by eight or twelve men and was more or less able to discuss matters with his constituents. But it was often very difficult to get men to go even short distances to discuss matters which were vital to their profession and interests.

Dr. F. W. CHEESE (East Kent) said that there was machinery at headquarters for dealing with changes of boundaries of Divisions, and in Kent several Divisions had been reorganized. If North Staffordshire had been unwieldy for some years it was its own fault.

Mr. H. J. MCCURRICH (Brighton) said that some Divisions had become over-large through no wish of their own. His own Division had from time to time taken in certain others which had become moribund.

Dr. T. R. DAVIES (South-West Wales) said that his Division extended for seventy miles from end to end. The Council should consider whether large Divisions could not be split up. The idea that the Branches must follow county boundaries had had to be modified in certain districts owing to the regionalization plan for hospitals.

Dr. J. B. MILLER said that the present arrangement of Divisions was very recent and was due entirely to the passage of the Local Government Act, 1929. It was essential that the practising doctors should have the closest possible relation with the medical officer of health, and that could only happen if the Division and Branch corresponded entirely to local government boundaries.

The North Staffordshire motion was lost.

Dr. S. W. SWINDELLS (Grimsby) asked the Conference to express the opinion that in matters of important policy the principle of a plebiscite should be adopted. He said that this was really an expression of dissatisfaction with recent action of the Council.

The CHAIRMAN said that the Association could at any time take a plebiscite on matters of policy which it felt should be referred to individual members of the Association. He was bound to say that many of the motions on the present agenda displayed ignorance on the part of Divisions with regard to their own machinery.

This motion also was lost.

CERTIFICATION

Industrial Certification under War Conditions

Dr. W. A. KIRKPATRICK (Cleveland) moved to ask the Council to review the question of industrial certification under war conditions. He said that, Cleveland being an industrial area, practitioners were inundated with requests for certificates. He hoped the Council would issue some definite instruction and not leave the matter in the air. As it was, some medical men refused to issue certificates, whereas others were ready to issue them. Another matter which was likely to arise related to the Essential Works Order. The National Service officer had power to demand from doctors detailed reports on patients as to whom there remained some doubt concerning their capacity for work. It would be useful to have some instructions whether they should charge for these certificates, and, if so, whether these should be charged to the person making the request or to the National Service officer.

The SECRETARY (Dr. Anderson), by permission of the Conference, made a statement on the subject. He said that several months ago he was in contact with the Ministry of Labour in connexion with one of the certificates which was being demanded of practitioners. This was the certificate required under the Transfer of Labour Order. He had a discussion with one of the chief officials of the Ministry and, realizing that the same situation might arise as arose during the general strike in 1926, he felt that a general plan should be adopted to obviate some of the difficulties which then presented themselves. The arrangement arrived at tentatively was that in each area there should be an officially appointed person to whom doubtful certificates could be referred, and it was obvious, in his judgment, that that person should be a medical man. This meant that the practitioner would give on request to his own patient a certificate in connexion with the Transfer of Labour Order, but that if there was doubt or if the certificate was not likely to be accepted for one reason or another, there should be appointed a medical man to whom the case could be referred. The man suggested was the examining surgeon, formerly known as the certifying factory surgeon, and the arrangement was that he should receive a fee of 5s. Later, however, he learned that the Treasury was not prepared to sanction that arrangement, and so the whole thing fell to the ground.

The second point was in connexion with the attendance bonus certificate. He realized shortly after the introduction of that scheme that trouble was likely to arise, and it was not long before resolutions were forthcoming from the Divisions in regard to that matter. He thereupon got in touch with the Mining Association, which was anxious also to get in touch with him in order to impress upon him the necessity for issuing an instruction—as they called it—to members with regard to the giving of these certificates. He suggested that the best plan would be first to have a discussion between the representatives of the Mining Association and of the mine workers, because he held the view that before any proposal could come into effect the medical profession should be consulted. The chairman and

secretary of the Mining Federation had been good enough to come to the office, and he listened to their argument that practitioners should be more free in giving these certificates. He had to tell them that so far from helping them he was going to oppose them and to recommend that certificates should not be given by the medical profession generally in connexion with one day's absence from work. He did so because in the vast majority of such cases there were bound to be insufficient clinical data on which the medical man could make up his mind to give a certificate. He now had a letter from the secretary of the Mining Association, dated September 5, and enclosing a copy of an agreed statement regarding a new arrangement which operated as from September 1. The effect of it was that while the conditions of qualification operated in respect of payments of the bonus for days prior to that date, a worker was not disqualified for payment in respect of work after September 1 by reason of absence on account of sickness on any other day. This, therefore, disposed of medical certificates in future so far as the attendance bonus was concerned.

Another point, however, was going to arise. The secretary of the Mining Association stated that the question of satisfactory evidence of incapacity through sickness might come forward subsequently in connexion with the Essential Work Order. The position until recently was that, both under the Essential Work (Provisions) Order, which did not apply to coal mines, and the Essential Work (Coal-mining Industries) Order, absence, even for sickness, constituted a disqualification for the guaranteed wage. Now, however, the first of these Orders had been amended to provide that a person shall not be disqualified if his absence is due to sickness and, if required, he submits satisfactory evidence to that effect, and the Mineworkers' Federation was likely to suggest a corresponding amendment in the second Order. It was in connexion with the multiplication of certificates that the Ministry of Health had been approached and their assistance requested. This approach was not a recent one. He himself had been personally in contact with the Ministry of Health, asking them to give consideration to this difficult problem, and quite recently there was a conference at the Ministry, attended by Dr. Hill, who suggested that there should be some better co-ordination between Government Departments which were either demanding or stimulating requests for certificates, and that before any new certification was foisted upon the profession consultation should take place between the Government Department concerned and the Ministry, in which consultation the Association should have a share.

There were a number of certificates that doctors must give, but there were a number of others required of the profession at the moment that need not, in his judgment, be given at all. One of these was the certificate in connexion with milk for children under 5. Surely that did not require a certificate from a medical man. There were also the occasions on which a practitioner was required to witness the signature of a person presenting a document; he should be relieved of that. If it was possible to bring about central consultation before the certificate requirements were made public a distinct gain would have been achieved. (Applause.)

Dr. C. W. SOMERVILLE (Lothians) read a letter which he had received from a subsidiary company of Imperial Chemical Industries: "We enclose one book of medical certificate forms for the purpose of informing us of the illness of any of our employees who are your patients. We propose to pay you 1s. per certificate." The form of the certificate was: name; address; date from which the man was unfit to work; the nature of the illness; and the date on which he was fit to resume work. Employers who paid wages when a man was absent were entitled to a certificate, but the question was whether 1s. was enough and whether the employers had any right to ask the nature of the illness. He intended only to say whether it was an accident, an illness, or an infectious illness. With regard to school certificates, some practitioners refused to give them, some gave them and did not charge, and others gave them and charged for them. The attendance officer visited every sick child, and therefore it seemed to him that certificates were not required. It was very desirable that these matters should be on a uniform basis.

Dr. A. W. WESTON (Dudley) said their first duty to a patient was to treat him; a second duty was to certify whether he was

fit or not fit for work, but why they should take upon themselves all sorts of extra burdens when they were overworked already he could not understand.

Dr. HOWIE WOOD (Isle of Wight) said that a point of principle of some importance was the use of N.H.I. certificates for other purposes. It was expressly laid down and printed on each N.H.I. certificate that it was to be used only for national health insurance purposes, but this rule was often contravened. Even a Government Department went so far as to insist upon this certificate being exhibited for evidence of incapacity. In his area the engineering department of the Post Office Telephone Service, whose staff were on national health insurance, but not on the capitation list of the Post Office doctor, insisted that the insurance certificate be submitted to them by the insured person, after which it was returned to him for submission to his society.

The Cleveland motion was carried.

Unnecessary Certificates

Dr. W. S. MACDONALD (Leeds) had a further motion on the paper asking the Council to give special consideration to the increasing demands by State Departments and employers for certificates, but in view of the satisfactory statement of the Secretary he did not move it. He hoped, however, that the Council would also take up the question in its relation to the general public. The general public was making far too many requests to doctors for unnecessary certificates on all manner of subjects.

Dr. MAXWELL ADAMS (Lanarkshire) moved:

That this meeting views with concern the apparent apathy which representatives of the Association permit ever-increasing certification to mount unhindered, apparently without protest, to the detriment of general practitioners, who form the majority of the membership of the Association.

Multiple certification, he said, was interfering with the professional work of the practising doctor. On a busy day in his consulting room a doctor was signing certificates for from 20 to 40 people, "for patients yet unborn to patients who have crossed the bar." As a consequence of this the good relations between doctors and patients were being frayed.

Dr. J. W. BONE said that the question of medical certification had always been a difficult one, but under war conditions it became a burden of such magnitude that the general practitioner in many areas found that it interfered materially with his work. The Conference had already passed a resolution on the subject, with which he was sure everybody concerned in the central organization would be in full agreement. Under war conditions the committees which dealt with these matters had not been functioning, but a small General Practice Executive Committee had been working, and it was probably to this body, strengthened for the purpose, that the Council would remit this question. He suggested that the movers of this and other motions on the agenda should withdraw them and embody their views in letters to the Secretary, which would be available for the information of the committee concerned. Those at headquarters did not need any arguments on this subject: all they wanted was detailed information. Every Division in which there was a grievance on this matter should send in some kind of document stating exactly what the grievance was.

Dr. W. N. LEAK (Mid-Cheshire) pointed out that these certificates were of great importance to employers. He was a member of the Advisory Medical Council of Imperial Chemical Industries, and they found extraordinary variations all over the country in this question of one-day or two-day sickness absence. It was of the greatest importance to know whether such absence was due to sickness or to slacking, and unless these certificates were given, and given accurately, it would mean some interference with the man-power of this country. In one firm with over 1,000 employees the one-, two-, and three-day absences accounted for nearly 50% of the total absenteeism due to sickness. If practitioners said that these certificates were a nuisance and that they did not want to issue them, they were not pulling their weight in the national effort.

It was agreed unanimously to proceed to the next business, and it was understood that this and other motions dealing with certification would be referred to the Council.

REMUNERATION OF PRACTITIONERS**The Recommended Increase of Private Fees**

Dr. E. WARD (Torquay) had a resolution on the paper which read: "That this meeting regards the recent advice of the Council to raise fees by 20% as inopportune, and indicative of a serious ignorance of the conditions of general practice at the present time," but in moving it he desired to withdraw the words after "inopportune." He said that, with decreasing incomes and increasing taxation, it was certainly not advisable to impose any increase of private fees upon the public. There were no doubt districts in which higher fees might be charged, but this should not be put forward as a general policy applying to the whole country.

Dr. J. W. BONE said that in May last the Council decided, owing to the rise in practice expenses, to recommend to the profession that general practitioners should increase their private fees by 20%. No representations to the contrary effect had been received from any Division, and this was the first time he had heard any suggestion that they were unaware of the conditions of general practice. He believed that the recommendation had met with general acceptance. It was a recommendation, not a mandate, and any Division which decided not to take this advice was fully at liberty to do so.

Dr. S. W. SWINDELLS (Grimsby) gave some figures of earnings of persons in his constituency, from which he inferred that it was unreasonable to ask these people at any rate to pay 20% more in doctors' fees. As it was, many people in his locality could not afford to pay even the ordinary fees. This was specially the case when the bread-winner of the family was on active service.

The motion was lost by a large majority.

Fees derived from Insurance Companies

Dr. G. PRIESTMAN moved that the principle of the 20% increase should be applied to all fees, including those derived from public health authorities, insurance companies, and other corporate bodies. He said that whatever happened to the fees charged to private patients, the increase should certainly apply to contract figures, but in the case of fees paid by insurance companies particularly they were up against a brick wall. The usual fee of £1 1s. payable for medical examination had been unaltered since, he believed, 1914. If £1 1s. was a fair remuneration then, £2 2s. should be paid now. The comprehensive character of life insurance examinations was well known, and many of the companies required the filling up of a number of foolscap sheets of questions. In the opinion of his Division the whole question of payment for life insurance examinations should be considered by the Council, and negotiations should take place between the Association and the companies in order to obtain a more satisfactory remuneration.

Dr. J. W. BONE said that the final settlement of insurance companies' fees was made in 1919, but the Association had had many brushes with the companies since then. He was entirely in favour of trying to get adequate increases under war conditions for all this work, and the Council had recommended that the increase should apply to contract practice as well as to private fees. But it had deliberately excluded from its recommendation some of the bodies mentioned in the Bradford resolution, particularly insurance companies. Those companies to-day had their difficulties. They existed by receiving money and investing it, and they were now all up against the position that on the money which they invested at the present time they could get only a poor return. It would be difficult to persuade those controlling these companies that it was an opportune time for them to increase their medical fees. He suggested that this motion be modified into a reference to Council to consider the subject, and not, as at present, a recommendation to take action.

The CHAIRMAN said that the last time the insurance companies were tackled on this subject they gave the flat answer that if doctors insisted on putting up their fees they would do away with medical examinations altogether.

The representative of Bradford agreed that his motion be referred to the Council, and other like motions were also referred.

Dr. D. M. MACHERMAN (Outer Islands) asked the Conference to consider the remuneration of practitioners in the Highlands and Islands. Owing to the increase in professional expenses, cost of living, and transport costs, the medical service grants and mileage grants, as well as the insurance capitation fee, were inadequate. The work of doctors in this area who received poor law medical salaries had been considerably increased in recent years, but the salaries had not been raised.

Mr. HUGH MILLER (Inverness) spoke to the same effect. Practitioners in the Highlands and Islands Medical Service were given a special grant, but not the mileage grant under the Insurance Act, and he urged that they be placed on the same level as the rest of the insurance practitioners of this country.

The CHAIRMAN said that the Conference was glad to welcome these representatives from remote areas, and they could be sure that the Council would consider their case along with the other resolutions and do its best to make an improvement.

Economic Status of the Profession

Dr. G. DE SWIET (Kensington) moved:

That the Council be asked to fight more wholeheartedly for the livelihood of practitioners, their remuneration (aiming at a capitation fee of 15s. per annum for insured persons), their war damage compensation, their pensions (A.R.P. and others), and a more equitable distribution of jobs.

He said that the recent history of the insurance capitation fee would be in the minds of all representatives. There was a good deal of criticism at the half-heartedness with which the practitioners' case had been handled. He also desired to call attention to the unfairness with which practitioners were treated over war damage compensation as compared with large business firms who had had their premises destroyed. He thought there should be a war damage department for practitioners which would carry out its work altogether apart from any charitable activities. At the present time doctors had to pass a veritable means test before they could make an application for a Government advance, and even then, having gone through that humiliating and exacting experience, they were liable to be turned down. He had never heard of anyone getting more than £15 compensation. As to the more equitable distribution of jobs, there should be some broad lines to guide those responsible for making appointments, and Government appointments should not be a preserve for small circles.

Dr. E. A. GREGG said that there was more in this motion than met the eye. This was a blow aimed at the Association and its activities by those who were "willing to wound and yet afraid to strike." He repudiated the aspersion on the Association which appeared in the first part of this motion. Speaking for the Insurance Acts Committee, of which he was chairman, that body had used every endeavour on behalf of the insurance practitioner to get his capitation fee increased. There was only one card in the pack which would take every trick, and that was refusal of service. Was there any sane member of the Conference prepared to say that they could at the present moment go to the Ministry of Health and say they refused service? Dare they say it without consulting the profession? And short of saying it, what could the committee have said more than it had said already? It was asked by the Ministry to give its recommendation to certain proposals. It declined to recommend them, but it was bound to place them before the profession, as it did at the recent Panel Conference. The committee refused to attempt to coerce the Panel Conference to accept those terms. It took the decision of the Conference, which was called specially for that purpose. Those who blamed the Association and the committee seemed to have shut their eyes to the fact that the decision was the decision of the Conference. It was a decision made under protest; the Conference felt sore, as they all did, at the way in which the Ministry had dealt with them. But he wanted any critic to tell him how, at the present time, they could have done any more than make their protest. While they did not get what they wanted, they did get some things. They got a firm undertaking from the Minister, emphasized and underlined at two discussions with him, that the question of the capitation fee should be reopened immediately after the war, and in a way that had not been done before, right from A to Z. That was quite a good thing, and it was up to the pro-

session to make the very best of it. They had also got all that they asked for on the question of mileage, and on that of an additional sum for practice expenses. They had the explicit statement from the Minister that in what they had been offered there was no element in relation to cost of living, and when an award was made to meet the increased cost of living in the case of any class comparable with themselves, the case under that heading would come up for consideration. He resented this motion from Kensington and hoped the Conference would throw it out. (Applause.)

The CHAIRMAN OF COUNCIL (Mr. Souttar) said that the Council had done everything in its power to obtain the best terms it could in regard to compensation for air-raid injuries, but as a profession they had no greater claim than other people to be compensated for war damage. They stood to take their injuries just as did others in the Civil Defence Service, and they were prepared to place themselves whole-heartedly at the service of the country. They had done their best to obtain an improvement in conditions of work for the profession, but surely the country came first? (Applause.)

Dr. DE SWIET said that he had not asked for special treatment for doctors, but he was not prepared to take worse treatment for doctors whose surgeries had been destroyed in air raids than was meted out to big business firms whose premises had suffered a similar destruction. It was not a question of patriotism. In that respect he did not require a lesson from anyone in that hall.

The Kensington motion was lost by a large majority.

Salaries in the E.M.S.

Dr. F. W. CHEESE (East Kent) brought forward two motions, one declaring that the salary scale for whole-time members of the Emergency Medical Service, especially those in the £550 per annum grade, was inadequate and unjust, and the other that the allowance of £100 for expenses paid to doctors retained in the service in the coastal areas was insufficient. He said that the majority of doctors holding these posts had families to support and were being compelled to break in on their savings. The salaries did not compare favourably with the scale laid down by the Association for senior medical officers employed by a public health authority.

Dr. BONE thought the Conference was not sufficiently informed to pass such a sweeping condemnation as the motion implied on the financial arrangements for carrying on this Emergency Medical Service.

The SECRETARY (Dr. Anderson) said that the fixing of these fees dated back to before the start of the war. At that time, when it was not known what would happen, they set themselves to agree with the Ministry on a scale corresponding approximately to the pay which a medical officer would receive if he went into the Army. The £550 scale, with the £100 in lieu of board and lodging, corresponded to the pay of a captain or lieutenant. The whole idea of the scales at that time was that one Service should not be more attractive than the other. When trouble arose in the coastal towns they were faced with the situation that the practices of the medical men there were disappearing because of the evacuation of the population. Representatives of the Association went to the Ministry to see what could be done to safeguard the interests of those men, and a scheme was arranged in towns like Dover, Folkestone, and Margate which gave a selected team of men the opportunity to live in those coastal towns, providing the necessary A.R.P. and hospital services, as well as domiciliary attendance on the people who remained. A bargain was struck on the basis of £550 per annum, plus £100 in lieu of board and lodging. But in addition the men were allowed to participate in the Protection of Practices Scheme as well, and a conference was held at the Ministry of Health, when the actual division of the money was agreed to by the representatives from those towns themselves. At headquarters at any rate it was considered to be a good stroke of business for men whose livelihood was disappearing at a critical time. He suggested that they should not be led away by the simple statement that the £550 per annum was inadequate without knowing the conditions attaching to the whole situation.

Dr. C. G. TAYLOR (East Norfolk) asked the Conference, in fairness to men in the coast towns, to give their case some sympathetic consideration.

Dr. W. N. LEAK (Mid-Cheshire) considered that extra allowances should be given for wives and children.

Dr. CHEESE said that £550 a year plus £100 might sound all very well, but the expenses of running a practice had to be considered, and the case was not on a level with that of medical officers in the Army.

The resolution declaring that the salary scale was inadequate and unjust was lost by 22 votes in favour and 34 against, but the further motion that the allowance for expenses in coastal areas was insufficient was carried.

Fees of Medical Officers of First-aid Posts

Dr. W. A. KIRKPATRICK (Cleveland) moved to ask the Council forthwith to obtain a fresh contract for medical officers of first-aid posts and Class III Emergency Medical Service officers, such contract abolishing the overriding maximum clause. His Division felt that in the event of being called upon to act under the contract practitioners should be paid for the work they had to do. The overriding maximum clause limited the amount they could be paid, however much work fell to their share.

The DEPUTY SECRETARY (Dr. Hill) said that when the terms of service of E.M.S. officers were first negotiated just before the war the overriding maximum for consultants and specialists at 2½ guineas per session was 120 guineas a quarter, and the overriding maximum for general practitioners, who were paid at the rate of 1½ guineas per session up to five sessions and £1 6s. per session thereafter, was 75 guineas a quarter. Following representations to the Ministry, the overriding maxima were altered. They were doubled and applied to six-months periods instead of quarterly periods, the understanding being that practitioners on a sessional basis would continue to render service at such sessions as were required of them throughout the whole period even though in the early part of the period they had achieved the maximum remuneration permissible. In regard to first-aid posts, however, the maximum was a daily one. A little while ago the Ministry asked whether it would not be appropriate for the same six-months system to apply to first-aid posts as already applied to E.M.S. hospital sessions. The reply on behalf of the Association was that they agreed that the parallel was a sound one, but that if the Ministry proposed to apply the six-months maximum to first-aid posts they would no doubt at the same time, in order to bring it fully in line with the E.M.S., withdraw the daily maximum of three guineas. That led to a prolonged delay in the discussions, but the Ministry had asked representatives to meet him next week to discuss the matter further.

The CHAIRMAN said that as the matter was so actively under discussion it might be wiser not to pass any special instructions at that Conference. The mover of the Cleveland motion agreed, and the motion was withdrawn.

EXTENSION OF MEDICAL BENEFIT

The New Insurance Group

Dr. P. H. TAYLOR (Camberwell) moved:

That this meeting approves in principle the extension of national health insurance services to cover dependants of insured persons with incomes up to £500 per annum.

He said that the Association had strongly recommended that dependants of insured persons up to £250 per annum be included in the insurance scheme, and if there was a case for the inclusion of people earning up to £420 a year their dependants should come in.

Dr. GREGG hoped the Conference would not touch this proposal. It ought to have proper discussion in the same way as the question of the inclusion of the original dependants was discussed some years ago.

Dr. BONE moved to proceed to the next business, and this was carried.

Dr. KIRKPATRICK (Cleveland) had a motion:

That this meeting, having ascertained that the great majority of panel practitioners have no desire to include on their list as panel patients the class of non-manual workers earning between £250 and £420 a year . . . asks the Council to advise insurance practitioners to refuse to undertake this service.

He said that no adequate arguments had been brought forward for this extension, and he thought the Government had been guilty of a breach of contract.

Dr. PETER MACDONALD asked whether it was competent for practitioners to refuse—to use the word in the motion—this service to the new insurance group. The CHAIRMAN said that it was only competent for a practitioner to refuse all service.

Dr. A. BEAUCHAMP (Birmingham) asked whether it was competent for the Council to instruct practitioners to refuse service when the Panel Conference had accepted it. The CHAIRMAN said that in his view it was not competent for the Council to override the decision made by the Conference of Insurance Practitioners themselves. The present motion contained an inaccurate statement. It suggested that the present Conference had ascertained that the great majority of practitioners did not desire to include this new group on their lists.

After some further discussion the Chairman ruled the Cleveland motion out of order.

Dr. F. W. CHEESE (East Kent) brought forward a motion disapproving the extension of the panel system and deprecating action being taken by the Government on matters concerning the medical profession without first consulting the profession's representatives. He said that this extension was the latest instance of a raw deal for the profession. The Minister appeared to have been prevailed upon by powerful approved societies to surrender to their vested interest.

Dr. Cheese accepted a suggestion to omit the first part of his motion, and it was agreed to in the following form:

The Conference deprecates action being taken by the Government on matters concerning the medical profession without first consulting the profession's representatives.

Panel Committees not Adequately Informed

Dr. A. S. GOUGH (Watford) brought forward a motion expressing indignation that the Insurance Acts Committee had failed to keep local committees adequately informed during the recent vital negotiations. He complained that many representatives at the recent Panel Conference were not properly instructed by their committees. He himself waited for six months until in the first week of July he happened to notice the report of the I.A.C. meeting in the *Supplement*. He thereupon requested the summoning of an extraordinary meeting of his Division to discuss that report. That meeting decided to send a letter of protest against acceptance of the proposals, but this was held up until after the Panel Conference on July 31. There had been no real opportunity for instructions from the Panel Committees to be given. They paid their subscription to the Association in the belief that the Council would provide them with adequate information and leadership. Prominent members of the Association had expressed in letters and speeches their opinion as to the injustice of the present basic fee and the action of the Government, yet in spite of this no leading articles had been published in the *Journal* advising them to withstand this pressure, and vital information had been held up until it was too late for them effectively to discuss it. It was said that after the war the question of the capitation fee would be gone into "from the ground floor." Unless they reorganized themselves they would go from the ground floor to the basement, taking in all dependants up to £420 at a bargain basement capitation fee. This would involve practically a State service, and its control would remain in the hands of the approved societies.

Dr. J. A. PRIDHAM (Dorset) said that the Insurance Acts Committee had for many years been led by statesmen as opposed to politicians, meaning by statesmen those who took a broad national view, and by politicians those whose view was a party or class one. At Conferences such as the present and at Panel Conferences clashes had occurred between politicians and statesmen. There was a need for the leaders to educate the rank and file of the profession, or those leaders were liable to be replaced by people who would take a narrower view.

Dr. GREGG said that he was anxious that the utmost publicity should be given to everything that had taken place in the negotiations between the Insurance Acts Committee and the Ministry. He complained of the motion that a great deal in it was not true, and the part which might have a grain of truth was unhappily expressed.

Dr. GOUGH asked the Conference to pass the motion as an expression of the undercurrent of feeling which was evident in the Conference. The Council had a moral obligation to see that it was "contacting" the practitioner. It had miserably failed on this occasion to keep practitioners informed in time for them to express their opinion.

The motion was carried.

Dr. GREGG accepted a motion from Finchley which expressed regret that the negotiations had produced such a meagre increase in the capitation fee and urging the Association to take steps to ensure that the Government was held to its firm promise as to the reopening of the question after the war. Dr. T. A. CRAWFORD (Finchley) said that while the Council had recommended a 20% increase in private fees, the efforts of the Insurance Acts Committee had resulted in only an 8½% increase.

A further motion which combined two others was agreed to: "That the Government be requested to provide as an urgent necessity free medical attention for dependants of men in the Forces."

The CHAIRMAN ruled out of order, despite the protest of the representative, a motion by North-East Essex calling for the reference back of the recent national health insurance proposals in regard to the capitation fee and extension of income limit in order that they might be considered by the whole profession; he did so because of the vote of the Panel Conference.

Criticism of the Insurance Acts Committee

Dr. C. I. SCHIFF (City of London) moved a resolution expressing "complete dissatisfaction with the recent action of the Insurance Acts Committee in its negotiations with the Ministry of Health." If ever there should have been a plebiscite, he said, it was in this case; instead it had been handled in a semi-secretive way, with the result that the first battle with the Ministry of Health had been lost, and "when the bell rings for the second round we shall come up bruised, smarting, and discouraged." The general public had a notion that in a very quiet and easy way the general practitioner had secured a material advance in his rate of remuneration; this was entirely contrary to fact.

Dr. GREGG asked for the grounds of dissatisfaction. Were they dissatisfied because the committee had protested to the Minister against its action in including a new group of insured without consultation, or because it had said that it would not recommend his terms to a Conference, but would leave the Conference to determine the matter for itself, or because it had secured, along with a sum to meet the increased practice expenses and mileage, an absolute promise that the matter of the capitation fee should be gone into fully after the war and that legislation would be passed to make the new financial provision which a higher fee would necessitate? This "silly resolution" implied dissatisfaction with all these things. "Do not be foolish. Of course you are not dissatisfied with them. You are damned glad you have got them. You hope to get more, and we hope to get more for you." (Applause.)

Dr. BODMAN (Bristol) said that in his Division they were still dissatisfied; they felt that the protest to the Minister was not "tough" enough. Some of them were also of opinion that the Panel Conference did not express the feeling of the profession as a whole. It was arranged at such short notice that those who appointed the representatives had not time to make up their minds.

Dr. T. R. DAVIES (South-West Wales) opposed the motion. The best way to improve the standard of service was to bring in people of higher economic and social status.

Dr. C. G. TAYLOR (Norfolk) spoke of a growing volume of protest in his county, where there was a feeling that the officers of the Association came too much under the influence of the Ministry of Health.

Dr. F. GRAY (Wandsworth) said that it had been suggested that some doctors were prepared to refuse service under the new terms. He wondered whether the grounds for dissatisfaction were that the committee did not recommend all practitioners to refuse service. Did anyone suggest that in the middle of a war, when the country was fighting for its existence, the profession should go on strike?

Mr. P. W. L. CAMPS (South Middlesex) said that the majority in his Division were in favour of the extension. The opinion of

the lay public should also have some weight. At one meeting of lay persons in his constituency the opinion was wholly in favour of this extension.

Dr. HOWIE WOOD (Isle of Wight) said that the profession was not adequately consulted before action was taken.

Dr. SCHUFF said that he objected to the surrender because of the tempo which it would give to future discussions. There was no need for any representative to talk about a strike. If a plebiscite had been taken it would have announced to the Minister that a given percentage of practitioners were against the scheme, and arbitration might have been suggested. Even if arbitration had not been granted, the matter could have been so handled that their patients, instead of saying, "I hear you have got a rise, doctor," would have said, "Well, doctor, you have got a raw deal."

The City of London motion was carried by 71 votes against 56.

PROTECTION OF PRACTICES

Dr. H. D. McLROY (Greenwich and Deptford) asked that the position of doctors who had left their practices to go to a reception area should be reviewed, and that those who had voluntarily left their practices to do similar work in "safe" areas should have the benefits of the Protection of Practices Scheme withdrawn from them. Such practitioners should not be permitted to draw a considerable financial benefit from the work of colleagues who had remained in the danger zone.

Dr. F. GRAY (Wandsworth) pointed out that in the reception areas it was no secret that there was a great shortage of doctors, and that young men eligible for the Forces had had to be left in practice because they could not be spared, while in other areas doctors were not overburdened with work. He thought that men who had left evacuation areas for reception areas were doing work of national importance.

Dr. C. HILL (Deputy Secretary) said that the full responsibility lay with Local Medical War Committees, but many committees had realized that it was in the national interest where a good case had been made out that transfers should be arranged. Speaking on a further resolution that the present 50-50 basis of sharing fees was inequitable, Dr. Hill said that the local areas could have varied the ratio before the scheme was adopted, but only one area had done so. In any case the schemes were legal agreements which could only be varied now by agreement of all signatories, including absentees. It might on the face of it seem unfair that no allowance for expenses was made to the acting practitioner; but in fact the acting practitioner could enjoy such increments of practice as were normally available, whereas the absentee practitioner, speaking generally, could only experience a wastage of practice without the compensating increment.

It was agreed to pass to the next business.

RECRUITMENT OF MEDICAL PERSONNEL

Dr. E. C. Dawson (Derby) asked the Council to approach the appropriate authorities with a view to making it clear that the Central and Local Medical War Committees were solely responsible for the allocation of medical personnel for recruitment for the armed Forces and for all branches of the E.M.S. and civil defence. Dr. C. M. STEVENSON (Cambridge) said that there seemed to be a constant effort in some quarters to by-pass the Central Medical War Committee. Prof. PICKEN said that this motion by Derby was far too general to cover the particular difficulty. He objected to the word "solely." The Government had never handed over to any non-Government body the final responsibility in these matters. The committees were acting as agents of the Ministry of Health, which was itself acting as agent of the Ministry of Labour.

The Derby motion was agreed to after the elimination of the word "solely." A motion by Camberwell was agreed to drawing attention to the dangerous depletion of civilian medical provision and advocating the employment of part-time civilian practitioners for duty with isolated Service units as a contribution towards the solution of the difficulty.

Dr. N. A. SPURR (Hampstead) brought forward a motion deploying the attempt of the Central Medical War Committee

to coerce senior general practitioners to join the Forces while so many young practitioners were employed in the E.M.S., whose work could, to a large extent, be carried out by general practitioners. It seemed a prodigal waste of valuable manpower.

Prof. PICKEN said that the majority of the young men in the civilian hospitals were recent graduates who were putting in their agreed six months. They were not sheltering in the hospitals; they were getting ready to go. The problem in London was rather different from that of the Provinces. In London there were probably more practitioners than were actually required, but large numbers of them were retired or over military age, and it was impossible by the quota system to get them out for any other purposes.

Dr. C. W. SOMERVILLE (Lothians) said that in many cases it was the older men who should join the Forces rather than the younger men, for the work of the men at home was much harder than the work of the men in the Army in the last war.

The CHAIRMAN OF COUNCIL said that the Central Medical War Committee had this problem very much in mind, and would do everything in their power to find a solution.

The motion was withdrawn, and a further motion by Hampstead calling for the registration through the Labour Exchanges of all practitioners up to the age of 55 was lost.

ALIEN PRACTITIONERS

Dr. R. B. HICK (Swindon) had a motion recommending that increased facilities be given to refugee doctors to practise in this country for the duration of the war. In his area one refugee practitioner was serving in a shop and another was a private in the Pioneers, emptying railway wagons. It was not in accordance with the dignity of the profession that any member of it of whatever nationality should be so employed.

The SECRETARY (Dr. Anderson) said that last year two Orders were made, the first of which gave permission to Canadian and American doctors not registered in this country to practise here under certain conditions; the second, again under certain conditions, gave a similar permission to doctors from other Dominions, the Colonies, and certain European countries. They were required to produce credentials which were satisfactory to the General Medical Council, also to have passed the security test of the Home Office and its Aliens War Service Department, and the permission given them to remain in this country was only for the duration of the war. It was intended only that they should practise in hospital services or some service connected with civil defence. A number of medical men from other countries—Greece, Yugoslavia, and Egypt, for example—were excluded by the terms of the Order, but an Order was now on the stocks extending the number of countries, which were now to be referred to, not specifically, but as territories abroad. The Order of 1940 made it imperative that before a man could be registered he must have a job in view, but the new Order would permit registration before he secured the job. It was also to be permitted to such a practitioner, with certain safeguards, to engage in practice as an assistant. It was felt that it would not be right or fair to allow a foreign practitioner without a British qualification to engage in practice on his own account. The Central Medical War Committee had approved these new proposals as a wartime measure with the safeguards he had mentioned. The present motion was a little too wide. For example, a certain number of practitioners would not pass the security test, but they would all be covered by this resolution.

The Swindon motion was withdrawn.

OTHER RESOLUTIONS

On the motion of Dr. A. BEAUCHAMP (Birmingham) the Council was asked to request the Minister of Labour to reserve at least one maid in a doctor's house. Portsmouth had a motion that doctors' white coats and overalls should be procurable without coupons. The SECRETARY said that this had already been taken up with the Board of Trade.

Dr. H. S. PASMORE (Kensington) asked that the Association should adopt the Kensington scheme for providing facilities for continuous postgraduate study for general practitioners. The

scheme, he said, had two advantages. It enabled the practitioner to keep himself abreast of the progress of medicine, and it led to better co-operation between practitioners and hospitals. The CHAIRMAN said they were all in favour of postgraduate education, but it did not seem to him that at the moment they had sufficient leisure to organize courses. The Conference agreed to proceed to the next business. A further motion by Kensington that a general practitioner should be attached to the staff of every teaching hospital to instruct students in the art of general practice was referred to the Medical Planning Commission.

A resolution from East Kent asking the Association to endeavour to arrange for more medical representation in the House of Commons was agreed to. The same constituency asked that medical boards should be set up for women who are being called up for compulsory service in any capacity. The CHAIRMAN pointed out some difficulties in the way of this proposal, and it was agreed to proceed to the next business. A Camberwell motion that all institutions used as hospitals by local authorities should be, as a matter of compulsion, administered under the Public Health Acts instead of under the Poor Law was also referred to the Medical Planning Commission, and from the same constituency a motion urging the employment of part-time medical officers where practicable in the various local government services was agreed to.

Dr. J. A. PRIDHAM (Dorset) moved that the Minister of Health be requested to make scabies a notifiable disease. Prof. PICKEN pointed out that "notifiable disease" was a term with a very specific meaning. Measles and whooping-cough were not in law notifiable diseases; they were diseases which had to be notified, which was a different thing. He suggested that the motion should read: "... be requested to confer upon local authorities adequate powers and duties to prevent the spread of scabies." This might or might not include notification. In this form the motion was adopted.

On the motion of West Suffolk it was agreed that Divisions be urged to take action through the local press in their areas to popularize the use of the national wheatmeal loaf.

Compensation Payable to Practitioners

Mr. WELDON WATTS (Newcastle) moved:

That any doctor injured in the course of his duties as a member of a civil defence organization should be entitled to compensation at a rate not less than that of a captain in the R.A.M.C.

His Division considered that there was little difference between the civilian doctor carrying on his work under present conditions and his colleague in the Army.

The CHAIRMAN OF COUNCIL said that representations had been made in this direction on six occasions, and a Cabinet decision turned it down. The Cabinet saw no reason why they should be compensated save on the terms for men engaged in A.R.P. duties. He thought it a hardship that they were not treated as Army officers, but there the matter stood.

Dr. C. F. TURNER (Coventry) said that he was injured on his way to an "incident," and was told that for compensation he should apply to the Assistance Board. He did not proceed further with the matter, but he did not see why he should have any more compensation than his ambulance driver or the volunteers at the post. The only thing which differentiated the doctor was that he had to provide a locumtenent and most of the others did not. The whole status of civil defence was wrong, and until it was elevated to the rank of one of His Majesty's Forces under proper discipline and control and with proper allowances, pensions, and so on, there would be no satisfaction.

The motion was lost.

On the motion of Dr. MARK FRASER (Cumberland) the meeting unanimously sent

"a victory message to all Branches and Divisions asking for increased membership and more enthusiasm and loyalty so that at the end of the war the B.M.A. shall be a live body able to speak both for the medical profession and for the health and well-being of the nation."

The Conference concluded its work by passing a hearty vote of thanks to its Chairman.

BRITISH MEDICAL ASSOCIATION

109th ANNUAL GENERAL MEETING

The 109th statutory Annual General Meeting of the British Medical Association was held in the Great Hall of the Association's House, Tavistock Square, London, on Thursday, September 11, 1941. The PRESIDENT (Dr. Thomas Fraser of Aberdeen) was in the chair.

The SECRETARY read the notice convening the meeting, and the minutes of the Annual General Meeting held in London on October 28, 1940, were taken as read, approved, and signed as correct.

On the motion of Dr. J. C. A. NORMAN (Bournemouth), seconded by Dr. O. C. CARTER (Bournemouth), it was unanimously agreed:

That Messrs. Price, Waterhouse and Co. be and they are hereby appointed auditors of the British Medical Association until the next Annual General Meeting at a remuneration of three hundred guineas.

The TREASURER (Dr. J. W. Bone) moved that the statement of accounts of the Association as published in the *Supplement* of May 17, 1941, be received and approved. He said that the accounts were in a very satisfactory condition. The motion was agreed to.

Conferment of Gold Medal

The PRESIDENT announced that the Council at its meeting that day had awarded the Gold Medal of the Association to Sir Kaye Le Fleming, M.D., of Wimborne, in recognition of his distinguished work for the Association and the profession. He then proceeded to present to Sir Kaye Le Fleming the testimonial in respect of the award of the Gold Medal. In doing so he said that he wondered whether members of the Association appreciated the full extent of the services which were demanded from the occupant of the chair of the Council. Those services called for an extraordinary sacrifice of professional time and energy. He had had opportunities of watching the work of four previous Chairmen of Council—namely, the late Dr. J. A. Macdonald of Taunton, the late Sir Robert Bolam of Newcastle, Sir Henry Brackenbury, and Sir Kaye Le Fleming, and it was noteworthy that three of the four came from the Provinces, an appropriate circumstance in view of the fact that the Association itself was provincial-born, in Worcester in 1832. Each of these chairmen had borne a rather heavier burden than his predecessor as the duties attaching to the office had increased. On none of them did the mantle appear to hang so lightly as on Sir Kaye Le Fleming, and during his five years of chairmanship the Association had gained an enhanced reputation in the eyes of the public and the State.

Owing to gold restriction it was not possible at the moment to hand to the recipient the Gold Medal, but in the meantime the President handed to Sir Kaye the testimonial in respect of the award in the form of an illuminated book. This was done amid loud applause, all the members standing.

The meeting then terminated.

The following resolution was passed at a meeting of panel practitioners held in the rooms of the British Medical Association in Edinburgh on September 9: "That this meeting appreciates the action already taken by the British Medical Association in endeavouring to have introduced into national health insurance the dependants of insured persons, and, while keeping in mind this end, would in the present emergency urge immediate action for the inclusion of the dependants of men serving in His Majesty's Forces."

Correspondence

Medicine, Politics, and Economics

SIR.—The main reason for my last letter to you (*Supplement*, August 23) was to sound a note of warning to those members of the B.M.A. who needed it of the existence of a threat to the interests of the profession through the influence of party politics. It is well known that the frustration of the national and, to a lesser extent, the local electorates is due to this cause. This itself should have been sufficient to put us on our guard against the danger of political divisions in our ranks, but apparently it was not, since we now split our voice amongst the British Medical Association, the Medical Practitioners' Union, and the Socialist Medical Association. This undoubtedly is the chief cause of the ineffectiveness with which our "representatives" negotiate with the Ministry of Health and other authorities.

I am grateful to Mr. Aleck Bourne (*Supplement*, September 6) for removing from the S.M.A. the vagueness and mystery in which it appears to have left it enshrouded. I believe that nothing but good can come of bringing this association and its activities into the clear light of day. Perhaps Mr. Bourne will be good enough to tell us something about its history and present affiliations. In reply to the rest of his letter let me say that the picture which he paints of a tamed medical profession which takes its orders from the political party which for the time happens to be in power is not at all attractive to the majority of medical men.

In reply to Lieut.-Colonel S. H. Fairrie's letter (*Supplement*, September 6) may I say that I am aghast at his suggestion that the Medical Planning Commission has been set up simply to decide on what kind of State Medical Service we are to have thrust upon us. If the truth is anything like this the situation is indeed serious. I quite agree with him, however, that our present disagreements have reached such a pitch that something must be done to improve matters, but in this I see no justification for throwing ourselves to be stampeded into a position from which there is virtually no escape if found unsatisfactory, as if this were the only alternative to the present deplorable state of affairs. Under the circumstances might we not to begin with be more profitably employed in trying to find out why, during the last twenty-five years or so, conditions for the individual have been going from bad to worse? If we make the attempt, however, one thing we must not do is to accept "the wickedness of the average human heart" or "the profit motive" as an adequate answer unless we can prove that one or other (or both) of these factors has reached a much greater intensity during this period than ever before in history. I am convinced that the correct answer is already known to a considerable number of persons and, furthermore, that publicity is disallowed in their own interest by certain powerful groups. At any rate, I submit, Sir, for your readers' consideration the following statement:

That the chief cause of our social and economic distresses is the progressively increasing centralization of irresponsible power over persons in the hands of fewer and fewer practically anonymous individuals, with a corresponding curtailment of the initiative of the common man, and the palming off of more and more centralization as the only cure for the evils which centralization has itself produced: hence the remark, "The question no longer is, Are the medical profession in favour of a State service? but rather, What kind of a State service are we prepared to accept?"

On the question of finance there is still a word which needs to be said. What the blood and its circulation are to the body, money and the money system are to the community. No matter what our theories, no matter what our religion—the life of every one of us depends on money. When the money system is found to be working unsatisfactorily for the majority of a community and it is decided to try to improve it, two problems have to be considered: (1) What are the modifications which must be made in order to achieve the desired result? This is a technical matter which our financial experts could deal with in a very short time after being given the order to get on with the job. It is, however, a matter of mere academic interest until the second problem has been solved, which is: (2) How can the opposition of those who use money and the present money system as a means to power on the grand scale be overcome? This is a political matter and

should engage the earnest consideration of every one of us immediately the war ends, if not before.

If any are sufficiently interested to write me and enclose a stamped, addressed envelope I shall be pleased to direct them to a wealth of information on these problems.—I am, etc.,

Cray House, Basley, Kent, Sept. 8.

E. U. MACWILLIAM.

State Medical Service

SIR.—May I be permitted to join in the correspondence on the future of medicine. The correspondence is of vital importance and of great interest—important because it demonstrates an almost universal recognition of the desirability and inevitability of change; of interest because it shows how divided is the profession in its views on the type of change and the means of achieving it.

It seems to me that so many writers are losing sight of two things. First, our own interests do not come before those of our patients; they never have and never will, nor should they. They may come a good second, but in the formation of a medical service, whether State or otherwise, the greatest benefit of the greatest number of the public is the principal concern. Secondly, the health service (i.e., medical practice in all its aspects) is one of the essential services of the country. It behoves some members of the medical profession to take stock of some of the general social changes that are going on around them. We have too many ostriches in our ranks. What in the world are we fighting this war for? Surely not only to rid the world of Hitler, Mussolini, and their like, but to eliminate the causes of world chaos of which such men are but symptoms. Social injustice and insecurity, poverty and malnutrition, speculation and graft, vested interests and the financial oligarchy, usury and self-interest—these are but some of the causes of the present disaster.

Surely we can make a start by ridding our own profession of some of its ill-health. Vested interest in disease is an abomination: the whole system of loans and mortgages; the buying and selling of practices, which produces nothing but an economic millstone round the necks of so many doctors; the stranglehold of the friendly societies on insurance practice—are all things of which we could rid ourselves given sufficient unity of purpose. The health of the community, for which we claim responsibility, is too important to be mixed up any longer with the financial racket. Only general social legislation can remove the extra-medical causes of ill-health, but we can do much for our patients by our willingness to accept and aid such legislation.

A State Medical Service need not be such slavery as some of your correspondents would have us believe. It can be what we, the profession, choose to make it. As a scientific profession we are being remarkably unscientific in our criticisms and our applause. We should get down to scientific principles; examine by a purely fact-finding investigation our whole present lay-out; find out its weaknesses, requirements, and possibilities; and by real reorganization and planning of all aspects of medical practice, education, hospitals, general practice, specialization, and subsidiary services, etc., lay the foundations of a really efficient service. There is a great deal of self-interest and parochialism evident in some quarters. There is much apathy in all quarters. There are strong prejudices to be overcome. One of your correspondents, Lieut.-Colonel S. H. Fairrie (*Supplement*, September 6, p. 43), airily rejects Dr. R. S. Saxton's suggestion that we at least give thought to Russia's State service by saying that it is hardly opportune at this moment . . . that it might not suit us . . . so we had better leave the U.S.S.R. out of it. Ye gods! The one fully working, tried and tested, complete medical service in the world, and we are to leave the U.S.S.R. out of it—the system, as Mr. Aleck Bourne points out in the same *Supplement*, that has among other things produced a phenomenal decrease in the tuberculosis and infant mortality rates.

We cannot afford to sit back whilst the world changes round us. We shall find that we are one of the things that will be compulsorily changed without our bawling much say in the matter. Whether in a socialized community or in any other we should be in the van of social progress. I feel that, through lack of unity and constructive effort, we are in danger of being left behind.—I am, etc.,

Basinstoke, Sept. 10.

R. P. W. SHACKLETON.

SIR.—The spate of letters on the advantages of a State Medical Service may delight the younger generation who have had no experience of panel practice and who have invested no capital in a general practice. It may be, too, that the Socialist members of the profession see at last their Utopia in sight. To those of us, however, who are not Socialists and who wish to retain our individuality and who have been quite a number of years in a general practice which we have no desire should be confiscated, such a scheme is anathema. It is well that this fact should be known.—I am, etc.,

London, N.W.1, Sept. 14.

RUSSELL STEELE.

SIR.—What does the profession really think of the light-hearted way in which some of your correspondents are writing off its vital liberty of thought and action?

A definite day off every week, regular holidays, fixed salaries and pensions far outweigh trust, friendship, professional freedom, and initiative, in the estimate of many of our brethren. Lack of business acumen and of bedside manner, and diffidence in money matters are given as some of the evils which dog the medical man and are to be removed by a State Medical Service.

Can anyone seriously believe that a practitioner who treats his patient with reasonable skill and care cannot keep simple accounts and present and render bills? State control may make the practitioner's life easier, but the standard of his work will inevitably deteriorate, to the detriment of the patient and the good repute of the whole profession. The introduction of national health insurance cannot be said to have raised either the reputation or professional standard of the general medical practitioner, and I cannot see how a State Medical Service can do anything but lower these.

Medical planning generally is a job for the public and the profession after the war, the winning of which should be absorbing all our energies.—I am, etc.,

Windsor, Sept. 13.

J. M. McINNES.

SIR.—So much has been said and written of late in regard to the future of medical practice that I hesitate to trespass upon your limited space. But I ask leave to get out of the dark forest that we now seem in danger of being lost in, into the open, so that we may review the position calmly and dispassionately. It occurs to me that State Medical Service to be or not to be must be considered first from two aspects—namely, (1) the point of view of the general public; (2) the point of view of the medical profession as a whole.

To attempt to answer for (1) may seem hazardous, but I do believe that we, foremost among the nations of the world, are a nation of individuals. I believe that were the entire adult population of the United Kingdom asked to reply to a brief questionnaire containing two questions—for example, (a) Do you and your family desire to be attended as private patients by a doctor of your own free selection? or, (b) Would you prefer yourself and your family to be attended by a whole-time salaried State official?—an overwhelming majority would reply in favour of (a). Almost everyone wishes to be a private patient. The thing that worries millions of people is how to pay their medical expenses. How to raise the money is the point, not how to be attended. It should be simple to devise an insurance scheme by which this could be done. It seems lunacy that the entire medical profession should be sold or surrendered into bondage rather than face the position and evolve a satisfactory insurance scheme. Something on the lines of the National Deposit Friendly Society could undoubtedly be devised for all.

(2) At the end of the war I believe that the medical profession, just like the lay population, will look forward to regaining their freedom and to returning to civil life as free individuals, to their own way of life and their own free individual way of doing things, to their homes, their families, and their work. All those who feel confident in their own ability will desire to resume work as private individuals: 8,000 to 10,000 doctors liberated from the Forces will look forward to regained freedom; those freed from the E.M.S. and other not particularly satisfactory services and systems of the world war will also desire to be free; this is to say nothing of the almost universal discomfort felt by thousands of practitioners with the present panel system and inadequate capitation fee and with the heartless, soulless Ministry.

May I say once again that 90% of post-war medical work will still be general practice, and most of this will be mixed class—panel and private practice. The bulk of the general practitioner's work is bound to be very much as hitherto, a very small proportion of which represents clinical entities.

No State Medical Service should be considered unless it embraces every medical man or woman on the Medical Register. Specialists should be "debunked," their work being auxiliary, not that of super-men, the general practitioner being quite as much a "specialist" in his own sphere. Anything less than this would be simply to split the profession into two classes—an immeasurable disaster. But a most necessary first stage would seem to be an extension of and improvement in the N.H.I. scheme.—I am, etc.,

CHARLES A. H. FRANKLYN, M.D.

Hurstpierpoint, Sussex, Sept. 12.

Future of the Profession

SIR.—I have read with sinking heart and flagging interest the numerous articles and letters in the *Journal* anent the future of medicine. From this chaos emerges the fact that there is an appalling lack of unanimity and clear thinking in the profession.

When I am in a quandary I endeavour to make use of specialized experience: a schoolmaster for my children; a solicitor if I am involved in the law; a specialist when I am out of my depth with a patient. Surely a similar method should be applied to the immensely more important matter of our future professional existence?

I therefore suggest that:

(1) An institute of applied psychology be employed to make a comprehensive survey of medical practice, and to make recommendations in the light of their findings.

(2) That upon these data we base our deliberations.

(3) That an experienced political adviser be retained to present our conclusions to the Government.

(4) That a successful propaganda agent be employed to (a) enlighten, within the limits of professional decorum, the public—who require our services; (b) bring our views pointedly to the notice of our respective members of Parliament—who require our political support.—I am, your very depressed member,

Swinton, nr. Manchester, Sept. 9.

J. H. MOORE.

Payment of Deputies and Assistants

SIR.—It is to be regretted that no medical body exists which has the willingness and the ability to bring some semblance of order into the chaos of fees and salaries offered to locums and assistants.

Recent numbers of the *Journal* show that members of the profession value the services of their less fortunate colleagues at anything from £350 to £1,000 per annum. The former sum was actually put forward for an outdoor engagement. Personal experience has taught me that some doctors are willing to pay only seven guineas a week for the services of a locum. In peacetime I expected to pay more for a reliable man.

Furthermore, £50 per annum appears to be looked upon as a more or less standard allowance for a motor-car. One wonders how many doctors in Great Britain would be satisfied if their local inspectors of taxes allowed them only £50 as their motor-car expenses, apart altogether from the wear and tear clause.

The gentlemen who are lucky enough to require assistants but who want to secure them at the lowest possible prices might be reminded that with income tax at its present level they are trying to get their less fortunate colleagues to serve them at a cost to themselves actually less than would have been the case before the war. Their wretched employees would, of course, have to pay income tax on the present high rates and thus have a much smaller net income than formerly, despite the fact that the pound now has a very greatly reduced purchasing power in every other field.

Equity seems to demand that the assistant should be paid a living wage, and that over and above this he should receive some sort of bonus or share in the extra earnings of the practice which he is helping. As a stimulus to discussion one would put forward a suggestion that the first charge on the earnings of the practice should be the profits of the principal in the last year before the

war. Thereafter the assistant's salary—say £350 indoor, £450 outdoor—would be debited. The balance of increased profits should be divided between the two parties in proportions to be decided by an actuary.

It is absurd that a profession which is so jealous of its financial rights *vis-à-vis* any outside employer should permit extreme niggardliness within its own ranks.—I am, etc.,

DONALD O'CONNOR.

"Pure Despotism"

SIR.—Dr. T. T. Apsimon (*Supplement*, August 30, p. 37) would appear to have enjoyed complete immunity from "despotic officials" in his practice of panel medicine. He scouts the notion that such officials ever existed, and assumes that the bulk of the profession would display considerable hilarity at the mere mention of such a possibility.

It is a fact that not only has the professional life of many doctors been made miserable on account of "despotic officials," but also it is not outside the bounds of truth to suggest that even tragedy may have occurred either directly or indirectly from the bullying of such officials. From my own personal experience I may say that I was for years subjected to bullying: if it was not bullying, then words have lost their meaning. That part of my professional life which was connected with panel practice was made worse than miserable, and by intent. I was then much younger than I am now and did not know that the N.H.I. Act had no spirit, but only the letter. I conceived the idea that the practice of medicine had relation to the investigation and treatment of disease, together with its study. It needed many years to convince me that such affairs had no place in the N.H.I. Act. What mattered most were the forms and ceremonies, the sanctified funds of the approved societies, and, particularly, certain dates on the calendar. For my peace of mind I became a conformist. As in Russia, about which country Dr. Apsimon seems to be so well informed, so in the United Kingdom, to be a non-conformist means the nearest thing to extinction. My feelings are still bitter, and the passage of years has not made them any less bitter. An Act which might have been so beneficial, which might have been the means of advancing medicine, has been so mishandled, so subjected to the ignorant obstinacy of "despotic officials" (among others) that after thirty years of action it has practically nothing to recommend it from the clinical standpoint.

What composes this mighty State to which so many doctors would hand themselves over? I forbear to provide the answer. Dr. Lindsey W. Batten in his admirable letter (*Supplement*, August 30, p. 36) writes: "It has been my constant experience that the State does not want my best work, does not really like it, and very frequently has stood between me and the doing of it." I concur heartily with Dr. Batten. Many truths about the N.H.I. Act have appeared in your columns since the correspondence first commenced upon the subject. This is the most fundamental truth of all. Its substance should be examined by the Medical Planning Commission. But the purpose of this Commission will, I fear, not be made manifest until it is accomplished.—I am, etc.,

SEELY, YORKS, SEPT. 7.

J. C. GILLIES.

Organized Representation: Appeal for Union

SIR.—Of late there have been many letters of complaint about this, that, and the other, the underlying—often unwritten—grumble being that no matter what we decide among ourselves no Government body is going to take much notice. Well! Why should it? At the present moment we have more than one representative body, each supported by a proportion of our number and each with views often differing considerably from those of the other. Were there only one body and that supported wholeheartedly in its policy our present invidious position would alter. Now each of these bodies maintains that it serves the profession, aided by our subscriptions. Would it not be real service if they met together, determined that, though perhaps many members of each council might by their own actions become redundant, one amalgamated body should be formed, whose composition and policy would have the support of the entire profession, and able, therefore, to command attention. Each one of us will have his own ideas as to the constitution of this amalgamated body, my own view being that numerically

proportional representation would be a very good thing for a change.

Such a meeting having taken place (with, I trust, wide professional publicity) confined solely to broad issues with all personal feelings sunk, each as yet individual body should circularize its members, acquainting them of the mode of discussion, and the basic proposals made, with a card vote. His Majesty—if not H.M. Government—would, I feel, give permission for the Service members to take part in this. The scheme is vast, requires much individual thought, yet, as our daily work involves the solution of problems no less intricate, not impossible.

Might I also take this opportunity of pointing out that should the profession, as at present represented, be forced into an unsatisfactory service, the next generation of the great British public—including the children of the individuals composing the present Government—will find that their doctors are not, as now, physician cum friend cum lawyer cum parish priest, but strange scientists behind a counter, even assuming that the best type of brain has any desire to practise medicine from behind a grille.—I am, etc.,

A. HENRY GREGSON.

STAMFORD, Lincs, SEPT. 15.

•• The recent Conference of Representatives of Home Divisions of the B.M.A. (reported in the *Supplement* this week at page 59) passed a unanimous resolution calling for "increased membership and more enthusiasm and loyalty so that at the end of the war the B.M.A. shall be a live body able to speak both for the medical profession and for the health and well-being of the nation."—ED., B.M.J.

Doctors at First-aid Posts

SIR.—I read with regret the letter of "Medical Officer, F.A.P." in the *Supplement* of September 13 (p. 47). It radiates that spirit of defeatism which seems so prevalent in the profession at present.

By all means let the medical officers be relieved of administrative work, if they have any. The administration in my own post has always been carried out most efficiently, at first by the Red Cross commandant, and latterly by the sister, and I gather that this system obtains in the other posts round about. But when it comes to training, then I submit this is a matter for the medical officer alone, backed up, as he will be, by the trained nurse. Why should B.R.C. or St. John officers or lay superintendents do what is most properly our job? And, for that matter, if we are to give up teaching first aid, where are these officers to receive their instruction? Does not the word "doctor" mean "teacher"?

I have been giving instruction in first aid over a period of thirteen years, and can assure "Medical Officer, F.A.P." that there is no better way of learning than by teaching. Our post has become a centre of instruction, where all connected with Civil Defence are cordially invited. Three times a week for at least one hour per visit this is given by the medical officer, and daily by the sister. Lectures are given (particularly on the wartime aspects of first aid), team tests are arranged and judged, practical first aid taught, and oral questions asked—the last, by the way, being very popular, and a great help to those studying first-aid manuals.

Let the A.R.P. medical officer keep to the administrative side; but let the doctor (that is, general practitioner) give the instruction with all the wealth of sympathy and understanding which goes with general practice.

I say only this about fees. If the three visits a week are truly and conscientiously made, then £75 per annum is a cheap price for the help given and knowledge imparted to the first-aid personnel.—I am, etc.,

GILBERT R. HULL,
Medical Officer in Charge,
First-Aid Post No. 6.

STREATHAM, S.W.16, SEPT. 13.

Equipment of Home Guard First-aid Posts

SIR.—It is difficult to understand the reason for the lack of facilities Home Guard medical officers have to contend with in obtaining the necessary equipment for the collecting places to which Home Guard casualties may be taken should an emergency arise. They are expected as part of their duties to find suitable places for the purpose, and, having done so, are left wondering through what channel they can get all they may require to make

the first-aid services given there as thorough as they are intended to be. Are the first-aid workers in the Home Guard, or any M.O. who may be called upon to render such services, expected to do so without or with extremely limited equipment? This state of things would be as unfair to them as it would be prejudicial to the well-being of the unfortunate men who may need urgent help in circumstances the nature of which no one can foresee.—I am, etc.,

Greenhithe, Sept. 15.

D. W. STANDLEY.

Medical Forces of H.M. Services Appointments

ROYAL NAVY

ROYAL NAVAL VOLUNTEER RESERVE

Acting Surgeon Lieut.-Commander W. J. Healy to be Surgeon Lieutenant-Commander.

Probationary Temporary Surgeon Lieuts. F. A. Shackleton, R. J. Ingham, J. L. Burnett, E. L. Mommen, G. M. Watson, F. R. Aston, A. C. Hamer, N. A. Douglas, and R. P. Strang to be Temporary Surgeon Lieutenants.

ROYAL ARMY MEDICAL CORPS

Temporary Commission.—Major P. N. Creagh has relinquished his commission and retains the rank of Major.

Short Service Commission.—Captain A. F. Murray forfeits nine months' service for the purposes of promotion.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Major A. Badenoch has relinquished his commission on account of ill-health and retains his rank.

Second Lieut. C. C. Laird, from Royal Artillery, Territorial Army, to be Lieutenant, next below Lieut. J. D. F. Norman.

TERRITORIAL ARMY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Lieut.-Colonel G. C. E. Simpson, O.B.E., T.D., having attained the age limit, has relinquished his commission.

Captain A. R. Ward, having attained the age limit, has relinquished his commission.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

Major St. G. E. Harris, O.B.E., from temporary commission, to be Lieutenant.

War Substantive Captains A. A. M. Roberts, P. O'Driscoll, and T. T. Stocker have relinquished their commissions on account of ill-health.

ROYAL AIR FORCE

Flight Lieut. J. H. Lewis has been granted a permanent commission in the substantive rank of Flight Lieutenant.

Mrs. Edna V. Butler Jones has been promoted to the relative rank of Flight Lieutenant (War Substantive).

Miss Lesley I. Stewart has been granted a commission for employment with the Royal Air Force with the relative rank of Flying Officer.

ROYAL AIR FORCE VOLUNTEER RESERVE

To be Squadron Leaders: N. Black and E. M. Darmady, Flight Lieut. D. H. Le Good has relinquished his commission on account of ill-health.

To be Flight Lieutenants: S. W. Liggett and R. C. Morton.

The notification in the *London Gazette* dated February 18, p. 1087, column 1, concerning E. C. de M. Morgan should have read "Flight Lieutenant" and not "Flying Officer."

Flying Officers P. J. M. Kent, J. H. Hurl, H. F. S. Beadles, W. J. Lawrence, W. J. O. Page, C. K. Cole, J. M. Jones, P. H. Denton, and W. M. L. Turner to be Flight Lieutenants (War Substantive).

To be Flying Officers: G. W. Bellis, G. H. Boston, M. F. J. Clarke, J. L. Connor, E. H. L. Cooke, G. H. Cooper, A. Craig, J. M. Dawson, J. M. Ferguson, J. E. Gilbert, A. H. Hands, E. N. Jenkinson, D. U. MacDonald, R. E. Glennie, A. M. P. Laurent, J. J. O'Callaghan, G. O. Richardson, W. D. Roden, L. B. Scott, C. R. Sluning, J. A. Sutton, T. G. Band, A. L. Bell, T. B. Binns, J. G. Burgess, C. A. Forssander, M. L. Gaudin, J. Harper, N. W. Horne, J. B. Lowe, D. H. Meldrum, J. F. Rickards, H. D. Ross, T. B. Russell, G. A. Summers, H. M. Urquhart, W. S. Whitting, G. M. Wilson, I. M. Wood.

INDIAN MEDICAL SERVICE

Lieut.-Colonel S. N. Makand has retired.

EMERGENCY COMMISSIONS

To be Lieutenants: R. T. Hinde, P. S. Clarke, E. L. Jones, D. G. Horan, T. D. Brown, P. N. Swift, W. Thomson.

REGISTRATION OF DOCTORS' MAIDS

We printed in the *Supplement* of August 2 (p. 18) a letter which the British Medical Association had sent to the Ministry of Labour asking for more consideration to be given in individual cases to the transfer of doctors' maids under the Registration for Employment Order. A reply has now been received from the Ministry. After stating that the procedure has been under review, the Ministry writes:

"I am to inform you that the most important change in the new procedure is to delay calling for interview women registered under the Order until their employers have been consulted. Any representations which the employer may make will be given careful consideration, and full account will be taken of the importance of the work on which a person is engaged, the actual nature of the work which the person is doing, and the possibility of replacing young women by older women. Where local offices are satisfied that releases should be made and substitutes should be provided they are instructed to give the employer every assistance possible to find such substitutes and not to effect any withdrawals until they are satisfied either that the employer is refusing to engage suitable substitutes or that he is not making reasonable arrangements to enable the work to be undertaken by substitutes."

POSTGRADUATE NEWS

The Fellowship of Medicine announces that a practical operative surgery course on the cadaver will be given for Final F.R.C.S. candidates at the Royal Cancer Hospital on Mondays, Wednesdays, and Fridays, at 2 p.m., from October 6, for three to four weeks.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE: 10 a.m. to 4 p.m., Clinics and Operations, Obstetrical and Post-mortem Demonstrations. *Mon.*, Course on War Medicine commences. *Tues.*, 10 a.m., Paediatric Clinic, Dr. R. Green. *Thurs.*, 10 a.m., Sterility Clinic, Mr. V. B. Green-Armytage.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—*Colindale Hospital*, The Hyde, N.W.: *Thurs.*, 2.30 p.m., Final F.R.C.S. Urology Course. *Royal Cancer Hospital*, *Daily*, 10 a.m., Final F.R.C.S. *Radcliffe Infirmary*, Oxford: *Daily*, 9 a.m., Course in Anaesthetics.

CENTRAL MIDDLESEX COUNTY HOSPITAL, Acton Lane, N.W.—*Thurs.*, 3 p.m., Dr. W. Pagel: Demonstration of Some Cases in Pathological Department of the Hospital, 1939-41.

GLASGOW UNIVERSITY: Tennent Institute, Church A. J. Ballantyne: *Thougl* —At Prof.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of History of Medicine.—Wed., 3.30 p.m. Papers by Sir Walter Langdon-Brown: John Caius and the Revival of Learning; Dr. H. P. Bayon: Paracelsus and the Rosicrucian Romantic Legend.

Section of Physical Medicine.—Oxford, Sat., 12 noon, Demonstration of Cases by Prof. H. J. Seddon and Dr. B. Kiernander, at Wingfield Morris Hospital; 2.30 p.m., President's Opening Remarks; 2.45 p.m., Demonstration of Cases and Film on the Treatment of Burns, including the Use of Movement and Short Wave, Surgeon Lieut.-Commander J. Bunyan at Radcliffe Infirmary; 4.15 p.m., Demonstration of Electrically Induced Convulsive Therapy by Lieut.-Col. Armstrong.

B.M.A.: Branch and Division Meetings to be Held

NORTHERN IRELAND BRANCH.—Joint meeting with Ulster Medical Society at Whitla Medical Institute, Friday, October 3, 5 p.m. Sir Joseph Barcroft, F.R.S.: A Gas Attack: What to Do, and When to Do it.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than five post Monday morning to ensure insertion in the current issue.

MARRIAGE

MACLEOD—KOTZÉ.—At Greenside Parish Church, Edinburgh, by the Rev. D. S. Hopkirk, on September 20, 1941, Tormod, youngest son of Mr. and Mrs. Kenneth Macleod, The Rectory, Fortrose, to Cecilia Johanna, youngest daughter of the late Mr. Sari Kotzè and Mrs. Kotzè. Vredendal, Cape Province, South Africa.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 4 1941

WAR NOTICES

E.M.S. Payment for Radiologist's Report

It will be remembered that when the Ministry of Health announced the rates of payment for Class III practitioners in the E.M.S. it was stated that the fees payable to a radiologist or pathologist for special investigation and report within the scope of his specialty and without examination of the patient by the specialist in clinical charge of the hospital would be on a scale which was being drawn up in consultation with the Central Medical War Committee. The fees for the services of radiologists have now been agreed; they will operate as from September 1, 1941, and are set out in the Ministry's latest circular (No. 2478) as follows:

Group No. 1.....7s

Extremities: one area
Foreign body: detection of
Teeth: one area

Group No. 2.....14s.

Extremities: two areas	Salivary glands
Peris	Urinary tract: plain
Spine: one area	Abdomen: plain
Teeth: more than one area	Gall-bladder: plain
Upper or lower jaw	Foreign body: localization of

Group No. 3.....21s.

Extremities: more than two areas	Oesophagus
Chest	Barium meal
Bronchography	Barium enema
Tomography	Cholecystography
Myelography	Sialography
Skull	Urography (intravenous or ascending)
Accessory nasal sinuses	Pregnancy
Mastoid and petrous temporal	Pelvimetry
Ventriculography	Cephalometry
Encephalography	Salpingography.

The Ministry points out that the arrangements in paragraph 5a of Circular 2394 concerning the fee payable to physicians or surgeons or other medical officers in clinical charge of patients remain unchanged. Agreement has not yet been reached on the scale of fees payable to pathologists.

Uniforms for Doctors at First-aid Posts

A circular (No. 2492) is being issued by the Ministry of Health to local authorities and their medical officers on the subject of uniforms for doctors at first-aid posts. After consultation with the Ministry of Home Security and the Central Medical War Committee, it has been agreed that doctors allocated for service at first-aid posts should be reckoned as senior officers in the Civil Defence First-aid Post Service, and may be supplied by the local authority with the appropriate uniforms—namely, for men, serge battledress, greatcoat, beret, boots, and leather anklets; for women, serge jacket and skirt or trousers, greatcoat, felt hat, and leather shoes. The circular continues:

"Arrangements will be made in due course for supplying the shoulder title '1st Aid Post' as in the case of other members of that service (see paragraph 7 of Home Security Circular No. 189/41), and in addition a special shoulder title with the words 'Medical Officer' to be worn immediately below the shoulder title of the service. The practitioners in question will be allowed to wear their uniform in the same manner and subject to the like conditions as those prescribed for other senior officers in paragraph 11 of Home Security Circular 189/41.

"The issue of uniforms authorized by this circular should be limited to the practitioners shown on Section 1 of the quarterly returns of First-aid Post Personnel (Form E.M.S. 125) made to Senior Regional Officers of the Ministry, and is not authorized to other practitioners who may be included in the emergency lists of practitioners prepared by medical officers of health."

CENTRAL MEDICAL WAR COMMITTEE,
B.M.A. House, Tavistock Square, W.C.1.

COURSE FOR HOME GUARD M.O.s

[FROM A CORRESPONDENT]

The course, which was held at Cambridge from September 11 to 16, was an outstanding success. When it was arranged at the request of the War Office and the Central Medical War Committee by the D.D.N.S. II Corps it was intended to limit the number of medical officers taking part to thirty. Some 150 applications were received, and in the end thirty-eight took the course, which, by the courtesy of the Master and Fellows, was held in St. John's College. The D.D.M.S. had arranged an intensive programme of lectures and demonstrations, and the enthusiasm of the members, undeterred by continuous work, including both Saturday and Sunday, continued to show itself in syndicate discussions on Home Guard problems far into each night. This programme was designed to give these medical officers, many of them veterans of one or more campaigns, not only a conspectus of the modern treatment in the forward areas of wound, burn, and gas casualties, but also a background of the latest medical and combatant views on "total" warfare, air attack, armoured combat, and chemical warfare, as well as guidance on the diverse and constantly growing duties assigned to the Home Guard. Every subject was dealt with by the appropriate specialist officers, including staff officers of high rank, and a standard of lecturing prevailed which a long experience of lectures suggests was extraordinarily high. Despite an average of some seven lectures or demonstrations each day the interest of the members never flagged, but was perpetually rekindled by the infectious enthusiasm and obvious mastery of his subject displayed by each successive lecturer. Of the more strictly medical subjects, those on war surgery in the forward areas and the medical aspects of chemical warfare were naturally of outstanding interest where all were of the best. Military discipline prevents the mention of the names of any of the military lecturers or the details of the syllabus, but there are certain features to which reference can be made.

On the afternoon of arrival those attending the course were welcomed by the Master of St. John's, Mr. E. A. Bennions (Vice-Chancellor of the University), the President, and other Fellows. The Master in his welcome gave a graceful summary of St. John's medical record, its succession to the Hospital of St. John with its infirmary; the Linacre tradition; and the great medical men who had been members of the College, such as Sir William Gilbert, President of the Royal College of Physicians and physician to both Elizabeth and James I. Of particular interest to Home Guard medical officers was Sir Isaac Pennington, Regius Professor of Medicine as well as Linacre Lecturer, who, at the age of 60, in the threat of invasion by Napoleon I in 1803, raised the first Cambridge University Volunteers, commanding the St. John's Company of forty-six men, with the great Lord Palmerston, then a youth of 19, and Hugh Martin, the celebrated missionary, as his ensigns. Major-General Lord Loch also welcomed the members and urged the paramount need of the Home Guard for training and sustained enthusiasm and vigilance. Prof. H. A. Harris, professor of anatomy in the University, gave the course a stimulating lecture on the teaching of first aid, packed with aphorisms and good things, thoroughly unorthodox and so most useful to the medical officer, whose own original ideas on teaching first aid have become somewhat formalized from long and

hard wear; especially was this lecture useful as it was generally agreed that it was desirable that every man in the Home Guard should receive some simple teaching in the elementary principles of first aid. A striking historical corrective was given by the President of the College, the Rev. M. P. Charlesworth, who lectured on the medical arrangements of the Roman Army, illustrating *inter alia* first aid from Trajan's Column; and plans and details of military hospitals. The latter, with their cubicles and small two- and four-bed wards, spacious corridors, wide courtyards, and *thermae* for balneotherapy, anticipated modern hospital planning in many ways.

The rehabilitation of the substandard recruit, hygiene, mess-tin cookery, the latest devices for removing wounded are samples of the "diversity of gifts" presented to the course. But every subject was presented in a way which broadened the outlook of the Home Guard medical officer, for as the pace of warfare becomes faster so medical aid in the forward area becomes more difficult and its methods must perforce be simpler and more self-reliant. A visit was paid to a field hygiene section, and demonstrations were given of the latest field-hygiene and water-purification devices that will be of great service in the many isolated posts which Home Guard detachments may garrison. The organization of the Home Guard medical service was the subject of several lectures and of many lively syndicate and general discussions. On the final evening the course had the honour of a particularly heartening address by the Corps Commander, who, paying tribute to the fighting spirit of the Home Guard, emphasized the need in its medical service for the closest and most tactful co-operation with the Civil Casualty Services.

At their last evening's discussion the members of the course passed a unanimous resolution to express their thanks and appreciation to the War Office and the Central Medical War Committee for arranging this course; to the Master, President, and Fellows of St. John's College, Cambridge, for allowing them the use of the College; to the D.D.M.S. II Corps, and the Commandant; and to the lecturers. They expressed the hope that other courses on similar lines may be arranged from time to time.

INSURANCE OF HIGH-FREQUENCY APPARATUS

In the *Supplement* of September 21, 1940, we explained why it was necessary, for reasons of national security, for private practitioners to surrender their high-frequency apparatus to the General Post Office during the war. Recently the owners of impounded apparatus have been informed by the General Post Office that they are responsible for paying an insurance premium under the Business Scheme of the War Damage Act in respect of the apparatus. As the imposition of this liability upon practitioners who had already been deprived of a considerable part of their means of livelihood seemed most unjust, the following letter of protest was sent by the Secretary of the British Medical Association to the General Post Office:

"My attention has been drawn to a circular letter which you have issued to medical practitioners who have surrendered high-frequency apparatus to your Department in accordance with the recent Order prohibiting the use or possession of such apparatus except in certain approved institutions.

"Practitioners have loyally responded to the call made upon them, although this has invariably involved a considerable financial sacrifice and, in some cases, the loss of the doctor's main source of income. It is, therefore, with surprise and regret that I read your statement that the insurance of the impounded apparatus under the War Damage Act is entirely the responsibility of the owner. I am unable to understand why the Post Office authorities, having seriously prejudiced a doctor's means of livelihood by compulsorily removing an important part of his professional equipment, and having stored this equipment in some instances in vulnerable areas where air raids are likely to be of frequent occurrence, disclaims responsibility for insuring against the risk of its destruction.

"It is conceivable that this attitude is strictly in accordance with the provisions of the War Damage Act, but I cannot think that any court would uphold such an arrangement as equitable. In my opinion it is indefensible, and, on behalf of this Association, I wish to protest strongly and to ask that the position be reconsidered as a matter of urgency. I shall be glad to have your observations at your earliest convenience."

The following reply has now been received:

"With reference to your letter of September 5 to the Engineer-in-Chief of the Post Office, I am directed by the Postmaster-General to explain that the Control of High Frequency Apparatus Order, 1940, was made by the Home Secretary for reasons of national security.

"In view of the Order, the retention of high-frequency apparatus by the practitioners to whom you refer would have been an offence under the Defence Regulations, and the apparatus was consequently taken into the custody of the Post Office as an alternative to its destruction, with a view to its return when the Order ceases to be operative. Neither the Post Office nor any other Government Department obtains advantage from the arrangement, which is essentially different from that of requisitioning property for use by the Government.

"The Postmaster-General is a bailee of the apparatus and is under the usual obligation to take proper care of it, but this does not include liability for damage caused by enemy action or other causes beyond the Postmaster-General's control. The apparatus is usually stored in premises where Post Office electrical apparatus is kept, and which are in most cases probably better able to stand bombardment than a private house.

"In the circumstances the Postmaster-General regrets that he is unable to assume responsibility for insurance or for any war damage which may unfortunately occur to any of this apparatus while it is in his custody.

"The circular letter to which you refer has been sent out to enable and assist owners of apparatus which has been damaged or destroyed by enemy action to be in a position to put forward claims under the War Damage Act. The Post Office will, of course, be ready to give any further necessary assistance in individual cases."

The Council of the B.M.A. is considering what further steps shall be taken.

Correspondence

Doctors at First-aid Posts

SIR,—The letter signed "Medical Officer, F.A.P." (*Supplement*, September 13, p. 47), shows such extreme lack of psychological insight, both in regard to the doctors and the personnel of first-aid posts, that a protest seems called for. Your correspondent says: "... there is no necessity for the doctor to have any administrative power nor to have any work of training"; and later: "... there would be no necessity for medical officers in charge of first-aid posts to put in routine visits at all." Has he never heard of team work? How does he imagine that the personnel (most of them voluntary and non-professional) will react during a "blitz" to the ill-understood demands of a complete stranger? How does he imagine the doctor is to know which of the staff he can trust to apply a Thomas splint (probably none if only St. John or B.R.C.!) which will keep their heads as receptionists; which is suited to act as dresser to himself—unless he has trained them and knows their characters and capacities? Further, how is a strange doctor to know the layout of his post (since the majority of first-aid posts are makeshift buildings), the little snags which have to be overcome, the equipment—what is supplied as standard and what must be supplemented, where the stretchers will go, and when trigglift must be used? Does he really imagine that a stranger can take hold successfully and inspire the confidence and sense of steady leadership without which a first-aid post or any other unit is merely a collection of individuals? In this matter, at least, the Central Medical War Committee has exercised more imagination than your correspondent.

And surely we are not so sordid that the pay offered for this national service becomes a major issue. Most first-aid post doctors began to train their teams before the outbreak of war; at that time the retaining fee was £20. Did not most of them work just as hard then as now? And do they regard £75 as the value of their services? I hope and trust that I am speaking for the great majority of first-aid post doctors when I say that if the Government choose to do so they may cut our fees altogether and we shall still carry on the work to which we have set our hands; but that if they ask us to leave the training of our teams to strangers we shall refuse and, if necessary, resign.—I am, etc..

YORK, SEP. 15

J. C. LYTH.

State Medical Service

SIR.—I have, I fear, invited Dr. Neustatter's rebuke (*Supplement*, September 20, p. 56) by rashly entering a controversy in which, so far as I can see, chapter and verse cannot be given for conclusions that may none the less be well founded, and generalizations are unavoidable. I am glad of the chance to agree, fully and gratefully, that the London school medical service allows its medical officers full freedom to do their allotted tasks in their own way, to form their own judgment and express their own views; nor is "red tape"—the multiplication of forms and petty restrictions—the worst evil I foresee in a State service, though I think it may be a real one. What I fear most is the half-heartedness, the timidity, the unreality which I still think are characteristic of a great deal of clinical work directed by the British democratic State as we actually know it. A State Medical Service may indeed be administered by medical men—though it will probably be agreed that good doctors do not in general make good administrators—but controlling the administrators must inevitably be a Ministry and a Minister, Parliament, and behind Parliament the Press and all manner of associations of the public, ignorant of science and of the very nature of clinical medicine, credulous in some respects, suspicious in others, and, as we have good reason to know, with little love for our profession. Instead of being answerable, in the main, to our patients and our consciences we shall be answerable to Parliament and the public, and the fear of the "question in Parliament" will come filtering down until it reaches us with its chilling and stultifying touch in our clinic or wherever it be decreed that we shall work. I still believe that it will be a bad day for the profession of medicine and for our patients when we are one and all gathered in to a State-controlled medical service.—I am, etc.,

London, N.W.3, Sept. 20

LINDSEY W. BATTEN.

Extension of Health Insurance

SIR.—In the numerous letters which have appeared in the *Supplement* on the proposal to include persons with an income up to £420 per annum, no one so far seems to have grasped the real crux of the situation, which is a political and financial move by the approved societies to maintain their incomes. These incomes must be suffering severely for two obvious reasons: (1) their younger, presumably healthy, members are all in the Army and furnishing no contributions; (2) the high rate of wages prevailing at this time has raised many of their members well above the present income limit of £250 per annum, thus causing an additional loss of contributions. The first situation is beyond their control, so they have made use of the second, which involves a class who are the backbone of better working-class private practice and pay standard fees willingly. Moreover, this group, earning about £420 per annum, will certainly be made up of men above 45 years of age whose incidence of disease is found to be high, consequently requiring considerable medical attention. This fact, combined with the loss of the young healthy men at present in the Army, warrants an increased capitation fee; but one naturally asks why this proposed change was permitted without consulting the profession.—I am, etc.,

"OBSERVER."

Health and Preventive Medicine

SIR.—Dr. E. Granger's letter (*Supplement*, September 20, p. 56) cannot be allowed to remain unanswered. To one who believes that preventive medicine will be the medicine of the future the statements in the latter half of his letter, which, incidentally, have nothing to do with the problem of a State Medical Service, are amazing.

Dr. Granger obviously does not understand the meaning of health-consciousness, which implies not only a desire for health but an undertaking on the part of the individual that he or she will, for health's sake, try to observe the rules of health. For far too long the medical schools of this country have been turning out doctors whose conception of health was merely the absence of recognizable disease. The difference between the latter negative condition and the state of optimum or positive health is not easily understood by those who have never experienced "the joy of being alive." The State can never give to the people

positive health unless they are willing to co-operate or are, in other words, health-conscious. The individual cannot escape his own fundamental responsibility for the care of his health. The development of health-consciousness is one of the encouraging signs of the times, and its promotion should certainly be a main aim of the school medical service. It is a sad but true fact that this new conception of health as something positive at which to aim is, among the majority of doctors, conspicuous by its absence. Health-consciousness could only be the forerunner of neuroses if it were accompanied by complete ignorance of the laws of health, and the two conditions are never likely to occur together.

Dr. Granger then states that "preventive medicine can go much too far." It certainly can if, as he suggests, tonsillectomy and circumcision be included within its scope! Finally, his statement: "I do not believe that prevention is necessarily better than cure," is an opinion in which, I trust, few doctors would be willing to concur. For if that view were generally held the future of medicine would indeed be dark.—I am, etc.,

Plymouth, Sept. 22.

JAMES HARPER.

CERTIFICATES FOR EXTRA MILK

The Council of the B.M.A. is pleased to report that as a result of its representations to the Ministry of Food the form of certificate for the supply of extra milk for invalids has been revised in a manner which, it is believed, will be acceptable to the profession. It will be remembered that the two main points at issue were the infringement of professional secrecy involved in handing a medical certificate to a dairyman and the schedule of diseases. The Association's protest with regard to the former has been met. Except in the case of diabetes, to which a specific reference is necessary for administrative purposes, practitioners will not have to name the disease from which the patient is suffering; they will only indicate the category in the schedule in which the case falls. The certificate will be sent to the local Food Office, where it will be dealt with by a special officer. The Association also suggested to the Ministry a number of improvements and additions to the schedule of diseases and the inclusion of sick children who are not attending school. These suggestions have been incorporated in the new schedule. The Council has expressed to the Ministry its appreciation of the way in which its criticisms and suggestions have been met.

Medical Forces of H.M. Services
Appointments

ROYAL NAVY

ROYAL NAVAL VOLUNTEER RESERVE

Probationary Temporary Surgeon Lieutenants J. C. Jones and D. L. Cooke to be Temporary Surgeon Lieutenants.

ARMY

Colonel W. B. Rennie, M.C., late R.A.M.C., and Colonel (Temporary Brigadier) W. Bisset, M.C., late R.A.M.C., having attained the age for retirement, retire and remain employed.

Lieut.-Colonel (Temporary Colonel) N. Cantlie, M.C., from R.A.M.C., and Lieut.-Colonel E. A. P. Brock, from R.A.M.C., to be Colonels.

ROYAL ARMY MEDICAL CORPS

Majors (Temporary Lieut.-Colonels) L. B. Clarke and J. C. Denvir to be Lieutenant-Colonels.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Lieut.-Colonel (Brevet Colonel) J. F. O'Grady, T.D., from R.A.M.C., Territorial Army, to be Colonel. (Substituted for notification in a *Supplement* to the *London Gazette* dated May 26, 1939.)

Lieut.-Colonels W. R. Ward, A. McK. Reid, C. H. Budd, and H. A. B. White Locke, all from R.A.M.C., Territorial Army, to be Colonels. (Substituted for notifications published in *Supplements* to the *London Gazette* dated May 2, 9, and 26, 1939, and July 11, 1939, respectively.)

Major H. J. A. Longmore, late R.A.M.C., T.F., to be Colonel. (Substituted for the notification in a *Supplement* to the *London Gazette* dated May 5, 1939.)

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

Major W. Parsons, from Temporary Commission, to be Lieutenant.
Captain K. T. Goldswain has relinquished his commission.
Lieutenant J. Kelvin has relinquished his commission on account of ill-health.

ROYAL MALTA ARTILLERY

H. A. Said to be Surgeon Lieutenant. (Substituted for the notification in the *Supplement* to the *London Gazette* dated January 17, 1941.)

ROYAL AIR FORCE

ROYAL AIR FORCE VOLUNTEER RESERVE

To be Flight Lieutenants: G. R. Steed, J. C. Hatrick, E. C. Q. Jewesbury, and W. J. Craig.

Flying Officers K. N. Lloyd, G. B. Barbour, B. Flacks, P. M. Burton, G. Herbert, A. H. Knight, G. C. Lee, T. S. Nicol, N. A. Ross, H. B. Jones, T. H. Lawton, R. J. H. McMahon, R. G. Griffiths, S. W. Hinds, J. E. Smith, G. A. Van Someren, A. E. Burton, H. A. Lee, S. A. Smith, R. M. Williams, and R. D. McD. Morrison to be Flight Lieutenants (War Substantive).

To be Flying Officers: E. Sanders, J. Tarlo, W. H. Barbour, H. B. O. Cardew, J. I. Davies, B. Donnelly, J. G. Eadie, A. M. Foxe, S. Haythornthwaite, L. H. Moss, A. R. Norton, C. O. Ribeiro, J. G. Taylor, P. C. E. Unwin, J. Arnott, G. R. Ferguson, J. Gordon, F. J. Hallinan, S. T. Hayes, A. M. Mair, H. D. White, T. N. N. Brennan, W. R. Barrington, G. J. C. Brittain, J. B. Brownlie, R. U. Carr, A. M. Fraser, T. K. Haran, D. J. Howell, W. A. Johnson, A. R. Lyons, S. P. Millar, and F. Rilecy.

INDIAN MEDICAL SERVICE

Lieut.-Colonels J. B. Hance, C.I.E., O.B.E., R. L. Vanec, M. L. Treston, and W. C. Spackman to be Colonels.

B.M.A. LIBRARY

The following books were added to the Library during June and July, 1941:

- Anthony, A. C.: *Industrial Myositis Fibrosa*, etc. 1941.
Box, H. K.: *Twelve Periodontal Studies*. 1940.
Clark, G. L.: *Applied X-rays*. Third edition. 1940.
Craig, C. F., and Faust, E. C.: *Clinical Parasitology*. Second edition. 1940.
Greisheimer, E. M.: *Physiology and Anatomy*. Fourth edition. 1940.
Handfield-Jones, R. M.: *Surgery of the Hand*. 1940.
Haworth, N. A., and Macdonald, E. M.: *Theory of Occupational Therapy for Students and Nurses*. 1940.
Hunt, E.: *Diseases affecting the Vulva*. 1940.
International Labour Office: *Silicosis. Proceedings of the International Conference, Geneva, August 29-September 9, 1938*. 1940.
Joslin, E. P., et al.: *The Treatment of Diabetes Mellitus*. Seventh edition. 1940.
Jouve, A., and Vague, J.: *La Circulation de Retour*. 1940.
Krajian, A. A.: *Histological Technic, including a Discussion of Botanical Microtechnic*. 1940.
Lace, M. V.: *Massage and Medical Gymnastics*. Second edition. 1941.
Laforgue, R.: *The Relativity of Reality, Reflections, etc. (Nervous and Mental Disease Monographs, No. 66)*. 1940.
Lewin, P.: *Orthopaedic Surgery for Nurses, including Nursing Care*. Third edition. 1941.
Mackenzie, M.: *The Human Mind: the Organ of Thought in Function and Dysfunction*. 1941.
Maingot, R.: *Abdominal Operation*. Two volumes. 1940.
Maingot, R.: *Technique of Gastric Operations*. 1941.
Middlemore, M. P.: *The Nursing Couple*. 1941.
Morris, H.: *Medical Electricity for Massage Students*. Second edition. 1941.
Ockman, D.: *Medicine in a Changing World*. 1941.
Pancoast, H. K., et al.: *The Head and Neck in Roentgen Diagnosis*. 1940.
Peter, L. C.: *The Extra-Ocular Muscles: A Clinical Study of Normal and Abnormal Ocular Motility*. Third edition. 1941.
Romanis, W. H. C., and Mitchiner, P. H.: *The Science and Practice of Surgery*. Seventh edition. Two volumes. 1941.
Shaw, W.: *Textbook of Gynaecology*. Third edition. 1941.
Sherrington, Sir Charles: *Man on His Nature. The Gifford Lectures*, Edinburgh, 1937-8. 1940.
Ward, W. K.: *Stammering: A Contribution to the Study of its Problems and Treatment*. 1941.
Williams, J. W.: *Obstetrics: A Textbook for the Use of Students and Practitioners*. Eighth edition, by H. J. Stander. 1941.

Correction

In the report of the Conference of Representatives of Home Divisions in the *Supplement* of September 20 (p. 50) Dr. L. Kilroe was stated to have withdrawn a motion on behalf of the Preston Division. Dr. T. H. C. Derham was the representative of Preston, and he withdrew the motion referred to.

B.M.A.: Meetings of Branches and Divisions

BERKS, BUCKS, AND OXFORD BRANCH

At the annual meeting of the Berks, Bucks, and Oxford Branch, held at Oxford on July 16, the following officers were elected for the ensuing year:

President, Dr. F. G. Hobson. *Vice-President*, Dr. S. F. Logan Dahne. *Honorary Secretary*, Dr. W. Arnott.

Sir ARTHUR HURST gave an address on "Mythical Maladies." After excluding extinct diseases, such as chlorosis, from the scope of the lecture, Sir Arthur then disposed of some bogies. He said, for example, that movable kidney produced no symptoms; "dropped stomach" was long stomach and physiological; gastric flatulence was due to air swallowing; duodenal ileus was not a cause of vomiting, and should not be treated by operation; intestinal kinks and adhesions rarely produced symptoms and were best dealt with medically; toxæmia was a myth; intestinal symptoms arose much more from purgatives than from constipation; and that mucous colitis did not exist, visible mucus being due to constipation, purgatives, or irritation by enemata.

A good discussion followed, and on the motion of Dr. LOGAN DAHNE, seconded by Dame LOUISE MCLROY, a hearty vote of thanks was accorded Sir Arthur Hurst for his address.

SUSSEX BRANCH: WEST SUSSEX DIVISION

At a meeting of the West Sussex Division, held at Worthing on August 22, with Dr. R. H. WILSHAW in the chair, Prof. J. A. RYLE gave a lecture, which was illustrated by slides and pictures, on "The Treatment of Gas Casualties." In the discussion which followed many questions were asked and the lecturer gave helpful answers. There was a large attendance, including dentists and nursing sisters who had been invited to be present. The meeting closed with a vote of thanks to Prof. Ryle for his address.

POSTGRADUATE NEWS

The following courses of lectures, etc., will be given at the London Homoeopathic Hospital, Great Ormond Street and Queen Square, W.C.: Thursday, October 9, at 2.30 p.m., introductory lecture by Dr. T. G. Stonham; Mondays and Thursdays, at 2.30 p.m., October to March, homoeopathic materia medica and therapeutics by Dr. C. E. Wheeler; Fridays, at 2.30 p.m., October to December, Compton Burnett Lectures on homoeopathic philosophy and prescribing by Sir John Weir; Fridays, October to March (autumn session 3.30 p.m., winter session 2.30 p.m.), tutorial class by Dr. D. M. Borland; Mondays and Fridays at 2 p.m., clinical tutorials by Dr. W. W. Rorke.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Clinical Section.—Fri., 2.15 p.m. Meeting at Westminster Hospital.
Section of Orthopaedics.—Sat., 2 p.m. Meeting at Horton Hospital. Short papers by Mr. H. L. C. Wood, Dr. L. Minski, Mr. J. H. Kellgren, Mr. E. J. Radley Smith, and Dr. C. D. Langton. Clinical cases and x-rays of interest, demonstrations of special cases and physical treatment. Members of the Section of Surgery are specially invited to attend.

CHADWICK TRUST.—At Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W., Tues., 2.30 p.m. Mr. V. Zachary Cope: The Influence of War on Surgery.

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—At Tennent Institute, Church Street, Glasgow, Wed., 8 p.m. Prof. W. J. B. Riddell: The Evolution of Postgraduate Study.

APPOINTMENTS

EXAMINING FACTORY SURGEONS.—C. L. Lander, M.B., B.S., for the Maiden Newton District (Dorset); W. Paris, L.R.C.P.&S.Ed., for the Alyth District (Perthshire); C. S. Wise, M.B., B.S., for the Sandwich District (Kent).

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

MARRIAGE

D'ARCY—GOURLEY.—On May 12, 1941, at Lahore, Punjab, India, Captain T. M. W. D'Arcy, R.A.M.C., to Hester Hilary Gourley, Q.A.I.M.N.S.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 11 1941

THE ASSOCIATION'S GOLD MEDAL

The following is the text of the bound and illuminated address handed by the President to Sir Kaye Le Fleming when conferring upon him the Gold Medal of the British Medical Association at the Annual General Meeting held on September 11, 1941, as reported in the *Supplement* of September 27 (p. 66):

TO SIR KAYE LE FLEMING
M.A., M.D. (Hon.), M.B., B.Ch.

The Council of the British Medical Association, recognizing the continuous and valuable contribution which, during many years of service, you have made to the interests and prestige of the Association and to the influence and status of the medical profession, welcomes the opportunity to confer on you the highest distinction within its gift and to award to you the Gold Medal of the Association.

That this decision of the Council is in accord with the opinion and wish of the general membership of the Association is made manifest by the suffrages which have on repeated occasions elected you to positions of high distinction and large responsibility. These include, within the Association, the Chairmanship of the Representative Body during three years, and the Chairmanship of the Council from 1934 to 1939, while, by the choice of the general body of the profession, you presided over the Conference of Local Medical and Panel Committees from 1925 to 1929, and since 1928 you have been one of the Direct Representatives of the profession on the General Medical Council.

These elections and appointments carry a clear message of the confidence which your colleagues in various constituencies have placed in your judgment and capacity, and it is widely recognized that in all these offices you have provided both inspiration and guidance and have given liberal time and attention to the details of practical administration. In all these directions a large contribution to success has been the assurance of your unfailing loyalty, sincerity, and impartiality, and a recognition of your skill in the art of practical politics; with authority you have freely accepted responsibility, and while attentive to all the arguments you have practised a prompt capacity for the virtue of decision.

The occasion does not admit a detailed examination of all your activities within the Association, but there are two aspects of these on which a word may be allowed. First, on occasions not a few you have been called upon, and particularly as Chairman of Council, to represent the Association in public or semi-public, social or intraprofessional functions; and again, in more severe service, to negotiate and discuss legislative and administrative proposals with representatives of His Majesty's Government and other public bodies. Each of these engagements has its own claim and opportunity, and on the verdict of your fellow representatives you have ever proved equal to the event and have secured a presentation of the Association worthy of its status and traditions.

Secondly, it is to be observed that while maintaining a high level of interest in the general administrative service of the Association, you have applied a particular attention to developments which offer to the medical profession an opportunity to apply its specialized skill and knowledge to the general welfare of the community, and this both in the prevention of disease and also in the promotion of health. Medicine, you have recognized, is in its widest application a mode of social service which aspires to contribute to the welfare, efficiency, and happiness of the whole body of the people. Particularly in the work of the

Association's Committees concerned with Nutrition and with Physical Education you have provided both enthusiasm and direction, and have thus at one and the same time recognized a professional obligation and served well the cause of public policy. That these services have received official recognition is a welcome event to the profession generally, and particularly to those who have been associated with you in various public offices and responsibilities.

Not without interest it may be noted that the services you have so generously rendered to the Association and the profession have been contributed while you have been engaged in active medical practice some distance from London. That the discharge of these official claims must have involved much personal sacrifice is obvious; such a record has happily many precedents in the annals of the Association, which, representing as it does all the interests of the profession, properly welcomes to its service all the talents.

In adding your name to the list of the Association's Gold Medallists the members of the Council discharge a pleasing duty and responsibility. At the same time they offer to you a cordial assurance of their affectionate confidence and sincere regard, and they welcome your continued and active co-operation in circumstances which claim in special measure the gifts of wisdom, of experience, of courage, and of good will.

THOMAS FRASER,
President.

H. GUY DAIN,
Chairman of Representative Body.

H. S. SOUTTAR,
Chairman of Council.

JOHN W. BONE,
Treasurer.

MEDICAL WAR RELIEF FUND TWENTY-THIRD LIST

Previously acknowledged £32,740 2s. 9d. and £100 3s.
Conversion Stock and £40 3% Defence Bonds

Individual Subscriptions

- 15.—Dr. C. G. Morice, Wellington, N.Z.; Dr. F. D. Woodhouse, Blandford St. Mary.
13.—Dr. R. McIntosh, Sherborne.
12.—Dr. R. S. MacArthur, Stourport.
12.—Dr. L. A. Bux, Swansea; Mr. T. Colley, Weymouth; Dr. J. Landonce Perceval, Blandford.
12.—Surgeon Lieut. F. B. Weston, R.N.
11.—Dr. H. C. V. Joy, Bridport; Col. F. S. Penny, Dorchester.
10s. 6d.—Dr. T. Benson Evans, Prestatyn (6th donation).
115s. 5s. 1d.—Practitioners in the area of the Cambridge and Huntingdon Division—per Dr. H. P. Younman (amount already sent £291 1s. 7d.); Dr. F. A. Grange £10; Dr. A. Hazen £5 5s.; Dr. J. A. W. Muxson £2 2s.; per Hon. Sec. of Division—contributors' names lost £10 10s.; Dr. N. R. Lawrie £1 1s.; Dr. A. M. Barrett £3 3s.; Dr. A. P. Nicolle £5 5s.; Dr. C. R. Caffry £2 2s.; Dr. L. Cobbett £2 2s.; Prof. H. R. Dean £3 3s.; Drs Hicks and Connan £5 5s.; Dr. J. M. Taylor £20; Mr. S. Riddiough £21; Dr. A. J. Laird £1 1s. 1d. (2nd donation); Drs. Young and Webb £10 10s.; Dr. W. P. Hedgcock £2 2s.; Mr. R. Salisbury Woods £10; Dr. D. R. Ashton £2 2s.; Dr. F. Roberts £5 5s.; Dr. E. J. Jolly £5 5s.; Dr. G. F. Oxden £10 10s.; Dr. A. E. Moore £2 2s.; Dr. C. A. Robson £1; Dr. D. Cameron £2 2s.; Dr. B. P. Royston £s. (2nd donation); Dr. A. J. Smyth £2 2s.; Mr. J. R. C. Canney £10 10s.; Dr. H. Gilbert-Carter £1 1s.
112s. 13s.—Derby Division—per Dr. E. C. Dawson (amount already sent £76 1s. 7d.); Dr. E. H. Grey £1 1s.; Dr. R. Blair £1 11s. 6d.; Drs. E. D. Broster and Fletcher £4 4s.; Dr. H. C. Robertson £2 2s.; Dr. E. L. Ashby £2 2s.; Dr. P. E. H. Patey £3 3s.; Dr. O. Madge £s. (2nd donation); Dr. J. W. P. Motcan £1 1s.; Dr. T. J. Kirkpatrick £2 2s. (2nd donation); Dr. J. W. P. 3s.; Dr. J. P. Penny £2 2s.; Mr. H. Richards £2 2s.; Dr. W. A. St. John £3 3s.; Dr. E. M. Macdonald £10 10s. 6d.; Dr. J. R. Hollak £1 1s. (2nd donation); Dr. F. W. Ord £2 2s.; Dr. L. F. Walker £2 2s.; Dr. T. A. Eccles £2 2s.; Dr. W. Phillips £1 1s.; Dr. T. B. Nicholls £1 1s.; Dr. R. P. Bliss £1 1s.; Mr. C. D. Lochman £1 1s.; Dr. A. Rose £2 2s.; Dr. G. Thomson £1 1s.; Dr. A. C.

Adams 10s.; Medical Staff, Derbyshire Royal Infirmary £52 10s. (2nd donation); Dr. M. Kent £2; Drs. R. F. Smith and F. H. Lee £5 5s.; Dr. M. Elmitt £2 (2nd donation); Dr. C. W. Iliffe £1 1s.; Dr. P. H. J. Turton £5 5s. (2nd donation); Dr. A. R. Elsom £2 10s.; Dr. G. Gillies £3 3s.; Dr. R. L. Brown £1 1s.; Dr. J. C. Macfarlane £2 2s.

£122 15s. 1d.—Hon. Staff, Royal Hants County Hospital (amount already sent £279 17s.).

£44 18s.—Practitioners in Gloucestershire Branch—per Dr. D. C. Reavell (amount already sent £233 17s.); Dr. D. K. Souper £2 2s.; Dr. E. M. Grace £5 5s.; Dr. J. G. Hosken £10 10s.; Dr. H. Jost Smith £3 3s.; Dr. H. G. Dowler £1 1s. (2nd donation); Drs. Greene and Barnes £5 5s.; Dr. F. J. Liddendale £2 2s.; Dr. J. F. Colquhoun £5; Dr. J. L. Dunlop £2 2s.; Dr. H. J. Eastes £3 3s.; Dr. E. N. Davey £3 3s. (2nd donation); Dr. E. Battle £2 2s.

£11 1s.—Practitioners in the Swansea area—per Drs. T. Ben Thomas and T. W. Davies (amount already sent £354 5s.); Dr. C. Armstrong £5; Dr. R. Armstrong £5; Dr. R. Glenn £1 1s.

£4 14s. 6d.—Per Dr. J. M. Johnstone, N. Staffs L.M.W.C. (amount already sent £799 16s.); Dr. C. S. Smith £1 11s. 6d.; Dr. A. H. and Captain C. W. John £3 3s.

£3 3s.—Cleveland Division—per Dr. R. W. Murphy (amount already sent £11 11s.); Dr. D. M. Boothan.

£2 2s.—Practitioners in the Bolton Division—per Dr. R. W. Bowyer (amount already sent £73 1s.); Dr. S. E. Critchley.

Per Dr. A. D. Frazer and Mr. N. P. R. Galloway, Nottingham (amount already sent £288 18s.).

Practitioners in Chelsea and Fulham Division—per Dr. J. A. Scott (amount already sent £53 5s. 9d.); Dr. G. H. Dymond.

£1.—Per Dr. P. V. Anderson, Bishop Auckland Division (amount already sent £26 10s. 6d.); Dr. E. Brauer.

10s. 6d.—Practitioners in Scunthorpe Division—per Dr. J. R. Baker (amount already sent £67 14s.); Dr. L. K. Crow.

The following donations have come in since the above was set in type:

Individual Subscriptions

£10 10s.—Capt. T. K. Elliott, R.A.M.C. (prisoner of war).

£10.—Dr. O. E. Jackson, S. Rhodesia.

£5 5s.—Capt. N. Bickford, R.A.M.C.

£5.—Dr. H. G. Harvey, Dorchester.

£2 2s.—Dr. and Mrs. J. D. Craig, Ormskirk.

£203 5s. 8d.—Watford Division—per Dr. N. W. Gardener: Dr. G. M. Greig £2 2s.; Dr. W. A. Busby £1 1s.; Dr. H. G. Hall, £5; Mr. R. C. Taylor £3 3s.; Dr. A. A. Duffus £5; Dr. T. Wood £2 2s.; Dr. K. Aveling £10 10s.; Dr. T. D. Renwick £3 3s.; Dr. A. J. Williamson £1 1s.; Dr. A. Lees-Lowe £4 4s.; Dr. J. A. Venning £4 4s.; Dr. P. I. Kay £1 1s.; Dr. A. P. Nuttall £3 3s.; Dr. C. Thackray £2 2s. (2nd donation); Dr. A. C. Thackray £2 2s.; Dr. J. Wolstencroft £3 3s.; Dr. C. Ramsay, £3 3s.; Dr. H. A. Lane £5 5s.; Dr. W. C. Pigott £3; Dr. G. L. E. Dudderidge 10s.; Dr. J. W. Yutner £1 1s.; Dr. D. K. Crawford £1 1s.; Mr. J. C. Marshall £3 3s.; Mr. R. Grainger £3 3s.; Dr. C. W. Harvey £1 1s.; Dr. C. M. Young £3 3s. (2nd donation); Dr. C. F. Fothergill £3 3s.; Dr. M. Macrae £1 1s.; Dr. A. Macrae £1 1s. (2nd donation); Dr. A. R. Berrie £2 2s.; Dr. H. W. Salmon £3 3s.; Dr. T. G. Osler £1 1s.; Dr. J. Dixon £2 2s.; Dr. D. C. Osborne £5 5s.; Dr. H. J. Candew £5 5s.; Dr. P. E. Bond, £3 3s.; Dr. M. E. Roberts £2 2s.; Lady M. Alden £1 1s.; Dr. T. Fenton £1 1s.; Prof. H. Hiltsworth £2 2s.; Dr. E. C. Sparrow £3 3s.; Dr. D. Brown £3 3s.; Lieut.-Colonel F. F. Elwes £1 1s.; Dr. D. B. Spence £1; Mr. L. Houghton £3 3s.; Dr. E. W. Alment £3 3s.; Dr. A. H. Williams £2 2s.; Sir John Ledingham £3 3s.; Dr. W. Aukin £2 2s.; Dr. E. Middleton Brown £2 2s.; Dr. I. K. Watson £1 1s.; Dr. H. Skelton £5 5s.; Dr. W. F. Menzies £5; Dr. M. E. Bryson 10s.; Lieut.-Colonel R. Kelsall £3 3s.; Dr. F. J. Aldridge £5 5s.; Drs. G. O'Keefe and Knox £5; Dr. J. W. Leach £2 2s.; Dr. E. T. Solomon 10s.; Dr. J. H. Harrison £1 1s.; Dr. D. J. Young £1 1s.; Dr. N. S. McNeill £2 2s.; Dr. T. C. Blackwell £2 2s.; Dr. J. C. Gregory £2 2s.; Dr. F. B. Martin £3 3s.; Dr. D. G. Clyde £2 2s.; Dr. C. H. Hall £3 3s.; Dr. J. Matheson £2 2s.; Dr. T. W. Griffiths £2 2s.; Dr. A. E. Clarke £2 2s.; Dr. N. Marshall £1 1s.; Dr. H. E. Bentley £1 1s.; Dr. R. Shackleton 10s. 6d.; Sir Thomas Lewis £2 2s.; Dr. J. Y. Rabinowitch £1 1s.; Dr. N. W. Gardener £3 3s. 6d.; Dr. G. L. Patons £5; Dr. J. Maund £2; Dr. S. R. Reynolds £1. (The cost of collection was £2 15s. 4d.)

£50 2s. 6d.—Bristol Division—per Dr. H. M. Golding: Anon £2 2s.; Mr. A. W. Adams £1; Dr. H. M. Aldwinckle £1 1s.; Dr. J. A. Birrell, £1 1s.; Dr. F. H. Bodman 10s. 6d.; Dr. H. W. Brasington £5 5s.; Prof. R. J. Broeklehurst £1 1s.; Drs. D. M. and W. J. S. Cameron £2 2s.; Dr. E. Casson £1; Dr. S. Datta £1 1s.; Dr. C. Dix £1 1s.; Dr. T. B. Dixon £1 1s.; Dr. A. M. Fraser £1; Dr. H. M. Golding £10 10s.; Dr. A. G. Heron £1 1s.; Dr. M. G. Hughes 10s.; Dr. J. E. Lewis £1 1s.; Dr. C. J. MacLaren £2 2s.; Dr. C. C. Morgans £1 1s.; Dr. G. L. Ormerod £1 1s. (2nd donation); Prof. C. B. Perry £1 1s.; Dr. P. Phillips £2; Dr. M. F. Potter £1 1s.; Dr. J. J. Powell £3 3s. (2nd donation); Dr. G. W. F. Pratt 2 2s.; Dr. P. Schnitzler £1 1s.; Mr. A. R. Short £1 1s.; Dr. R. J. Stephen £1 1s.; Mr. Duncan Wood £1 1s.

£36 15s.—Royal College of Physicians, Edinburgh.

£21.—Northants Medical Charity—per Dr. D. G. Greenfield (amount already sent £484 0s. 6d.): Mr. Ralph O. Lee.

£10 10s.—Practitioners in Exeter Division—per Dr. J. D. R. Murray and Dr. N. Y. Paget (amount already sent £212 16s. 6d.): Dr. J. B. Tracey.

£10.—Practitioners in the area of the Cardiff Division—per Dr. F. Y. Pearson (amount already sent £410 13s.): Dr. J. W. Tudor Thomas.

£4 3s.—Sheffield Division—per Dr. J. Nunan (amount already sent £288 10s. 7d.): Dr. H. C. Finklestone-Sayliss £3 3s.; Dr. J. D. Johnston £1.

Local Medical and Panel Committees

£65 16s. 8d.—Midlothian (5th donation).

Total, £33,677 12s. 9d. and £100 3½% Conversion Stock and £40 3% Defence Bonds

The Home Office announces that Dr. Raymond Criswick Evans of Hove, Sussex, is no longer authorized to be in possession of and to supply any drug or preparation to which the Dangerous Drugs Regulations, 1937, or any drug to which the Raw Opium, etc., Regulations, 1937, apply.

B.M.A.: Diary of Central Meetings

OCTOBER

14 Tues. Executive Committee, 2 p.m.

B.M.A.: Branch and Division Meetings to be Held

METROPOLITAN COUNTIES BRANCH: HENDON DIVISION.—At Redhill Hospital, Edgware, Sunday, October 12, 11 a.m. Dr. L. T. Hilliard: The Medical Services of the Soviet Union.

SHROPSHIRE AND MID-WALES BRANCH.—At Royal Salop Infirmary, Tuesday, October 14, 3.45 p.m. Annual general meeting, election of officers, etc. Presidential address by Dr. J. A. Ireland: "The Work of a Medical Board."

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—Daily, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrical and Gynaecological Clinics and Operations. Daily, 1.30 p.m. Treatments, Mon., Course on Tues., 11 a.m., Wed., 11.30 a.m. Conference (Medical). Thurs., 10 a.m., Paediatric Clinic, Dr. R. Lightwood; 2 p.m., Dermatological Clinic, Dr. R. T. Brain; 2 p.m., Radiological Demonstration, Dr. Duncan White. Fri., 12.15 p.m., Clinico-pathological Conference (Surgical); 2 p.m., Clinico-pathological Conference (Gynaecological); 3 p.m., Sterility Clinic, Mr. V. B. Green-Armytage.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—Colindale Hospital, The Hyde, N.W.: Thurs., 2.30 p.m., Final F.R.C.S. Urology Course. Royal Cancer Hospital, Fulham Road, S.W.: Daily, 10 a.m., Final F.R.C.S. Revision Course; Mon., Wed., and Fri., 2 p.m., Final F.R.C.S. Practical Operative Surgery Course.

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—At Tennent Institute, Church Street, Glasgow, Wed., 8 p.m. Dr. J. B. Gaylor: Anomalies of Ocular Innervation from the Neurologist's Viewpoint.

DIARY OF SOCIETIES AND LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—Mon., 2.30 p.m., Prof. A. J. E. Cave, The Constitution of the Skull. Tues., 2.30 p.m., Mr. L. E. C. Norbury, Benign Neoplasms of the Rectum. Wed., 2.30 p.m., Prof. Cave, Vascular Arrangements of the Head and Neck. Thurs., 2.30 p.m., Mr. Norbury, Malignant Neoplasms of the Rectum. Fri., 2.30 p.m., Prof. Cave, Lymphatics of the Head and Neck.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.—Mon., 4 p.m. Annual General Meeting. Presentation of Fothergillian Medal. 4.20 p.m., Pathological Meeting.

SHAFTESBURY MILITARY HOSPITAL MEDICAL SOCIETY.—At the Hospital, Tues., 3 p.m. Colonel J. M. Weddell: A Survey of the Present Position of Surgery in the Army.

VACANCIES

EXAMINING FACTORY SURGEON.—The appointment at Plympton East (Devonshire) is vacant. Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by October 21.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first past Monday morning to ensure insertion in the current issue.

BIRTH

TRIPP.—At 23, Park Circus, Glasgow, on September 28, to Barbara (née Thomas), the wife of Squadron Leader Christopher Howard Tripp, a son.

DEATHS

KERR RUSSELL.—On October 5, 1941, at the Radcliffe Infirmary, Oxford, William Kerr Russell, M.D., husband of Eleanor Kerr Russell, M.D. (née Wylam), late of 126, Harley Street and 75, Gayton Road, Harrow, and only son of the late Dr. Frank Russell of Newcastle-upon-Tyne. Temporary address, Duxmote House, Ross-on-Wye.

ROBERTS.—On April 21, at St. Peter Port, Guernsey, Charles Leonard Digby Roberts, M.B., Ch.B., D.T.M.&H., at the age of 59.

THOMAS.—On Sunday, September 21, at Redbrook-on-Wye, William John Thomas, M.R.C.S., L.R.C.P., D.P.H., beloved husband of Beatrice Mary Thomas, late of 3, King's Gardens, Hove.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 18 1941

DOCTOR'S CONSCIENTIOUS OBJECTION

A Borough Council's Action

The following letters have been sent by the Secretary of the British Medical Association to the Ministry of Health and to the Town Clerk of Dudley, respectively, concerning the action of the County Borough Council of Dudley in suspending its medical officer of health for the duration of the war because that officer had registered objection to military service on conscientious grounds.

From the Secretary of the B.M.A. to the Ministry of Health

October 8, 1941.

I enclose a copy of a letter which has been sent to the County Borough Council of Dudley declining to accept for publication in the *British Medical Journal* an advertisement for a temporary Medical Officer of Health to fill, for the duration of the war, the post now held by Dr. McLennan, who has been suspended by his Council for the duration of the war on account of his exercising his rights under the section of the Military Service Act dealing with conscientious objection.

The Association, of course, offers no observation on the conscientious objection of Dr. McLennan. It does, however, protest most strongly against the action of the Dudley County Borough Council in taking a step which is in direct conflict with the wishes of the Government and, as we believe, of Parliament.

It is a matter of considerable regret to the Association that the Ministry of Health has found itself unable to intervene in order to prevent a local authority from victimizing an officer of high repute and recognized efficiency and from depriving the local community of the services of a skilled and experienced officer.

Dr. McLennan has done no more than exercise his rights as a citizen, and the Association feels that it would be contrary to the public interests to help the Dudley County Borough Council to secure a substitute for the duration of the war.

It is hoped that even at this late stage the Minister will reiterate to the Dudley Council the Government's view in the matter and use his influence to bring this suspension to an end.

From the Secretary of the B.M.A. to the Town Clerk, Dudley

October 8, 1941.

I refer to the advertisement for the post of temporary Medical Officer of Health and School Medical Officer submitted for publication in the *British Medical Journal*.

After careful consideration the British Medical Association has reached the conclusion that it would be contrary to the public interest to publish this advertisement and so to invite medical practitioners to make application for a post from which the present holder is to be suspended solely because he registered as a conscientious objector. In reaching this conclusion the Association has had in mind the following statement by the then Prime Minister, the late Mr. Neville Chamberlain, when moving in the House of Commons the second reading of the Military Training Bill and speaking with particular reference to the sections of the Bill relating to the machinery for considering conscientious objection:

"I want to make it clear here that in the view of the Government, where scruples are conscientiously held we desire that they should be respected and that there should be no persecution of those who hold them. All we have to do is to see that they are not abused, and to try to provide for these special cases of people who are not prepared to undertake the ordinary combatant service but wish to do national service of one kind or another."

It is clearly the Government's desire, expressed on this occasion and subsequently in governmental communications to local authorities, that there should be no victimization of those whose scruples in regard to military service are conscientiously held. To facilitate the appointment of a successor to a Medical Officer of Health who has done no more than exercise his legal rights as a citizen would, it is clear, be acting in conflict with the desires of the Government.

Further, in the prevailing serious and growing shortage of medical personnel in this country it would be a waste of skilled man-power, and contrary to the public interest, to suspend on such grounds a key officer of recognized experience and efficiency, and to endeavour to fill his post for the duration of the war from a very restricted and relatively inexperienced field of applicants.

The Association is conscious of the implications of its decision, and I am to ask your authority seriously to consider whether the public interest and the expressed desires of the Government, that there should be no victimization of those whose conscientious scruples lead them to avail themselves of their legal rights to register as conscientious objectors, do not require that the matter should be reopened and the decision to suspend the present Medical Officer of Health reconsidered.

I should be grateful if you would place this letter before your Council.

GENERAL PRACTICE

Changing Economic Conditions

A meeting of the General Practice Executive Committee of the British Medical Association took place in London on September 30, Dr. H. W. Pooler presiding. The principal business was the consideration of resolutions regarding the economics of general practice passed at the recent Conference of Representatives of Home Divisions. Some time was spent in considering a memorandum from the Ministry of Pensions setting out proposed scales of fees to practitioners serving on Medical Boards set up by the Ministry. This was in response to an expression of dissatisfaction with the rates hitherto prevailing which had been sent to the Ministry by the committee at its last meeting. The scales now submitted had been framed on the basis of the sessional fees agreed by the Association with local authorities. A careful examination was made of the new proposals, and certain detailed criticisms were put forward for submission to the Ministry.

Public Medical Services: The New Income Limit

A discussion took place on the possible effect on Public Medical Services of the new income limits for National Health Insurance. These services are, in general, available for the dependants of insured persons and others of like economic status, and inquiries have been received whether their rules should be modified in view of the raising of the salary maximum for National Health Insurance to £420 per annum. The recommendation to raise private fees by 20% also has its repercussions on Public Medical Service finance. The matter was referred to the Public Medical Services Subcommittee, a meeting of which is to be called as soon as possible.

The Increase in Private Fees

It was reported that advice had been asked of headquarters, following upon the recommendation to increase private fees by 20%, concerning the application of this increase to remuneration in respect of life assurance examinations, the National Deposit Friendly Society, and work done for local authorities and other bodies. A resolution on this subject at the recent Conference will be remembered.

On the subject of fees paid in respect of life assurance examinations it was agreed to recommend the main committee that a letter be sent to the central organization representing the life offices, opening up the matter of an increase, based, as in all these cases, on the increased cost of carrying on practice. The case of the shipping companies, the Post Office, and the prison service was discussed. It was pointed out that the resolution of the Council recommending a 20% increase in fees was intended to apply to fees received in private practice. It was

the view of the committee that part-time service of Post Office doctors and of district medical officers should be increased on the same basis, but the larger question of the remuneration of doctors by local authorities, apart from payment per item of service, should be the subject of later consideration after these other matters had been tackled.

Certification

Several resolutions from the recent Conference dealt with this subject. Some of the discussion in the committee centred round the question of certificates for exemption from fire-watching. The feeling was that the doctor should be expected only to make a statement—that, for example, the person was suffering from a certain disease or infirmity—not to give an opinion as to whether or not he was capable of fire-watching or any other service. One suggestion was that medical referees should be appointed for this purpose, on whom the onus would rest, though this would not prevent a doctor from giving a certificate in a case in which he desired to do so, and the certificate in that case would go to the referee. The same applied to certification in connexion with certain other matters, such as billeting and the Transfer of Work Order.

It was also urged that doctors should be relieved of certification with regard to matters in which medical knowledge and experience were not necessary, as, for example, in connexion with the supply of milk for young children. One member of the committee pointed out that the question of certification required looking into as a whole, and that it would make the position worse if for some form of certificate people had to go to the doctor, and for some other form, which to the patient at least was similar to the first, they were not allowed to go to him.

The views on certification which have been strongly represented are to be put forward to the appropriate authorities in a conference to be held shortly.

Reservation of Maidservants

Since a resolution on this subject was passed at the Conference, the Ministry of Labour has informed the Association that the procedure of calling registered women for interview under the Employment Order is to be delayed until their employers have been consulted, and that any representations which the employer may make will be given careful consideration.

Finally, the committee agreed to take up again with the appropriate authority the question of anaesthetics under the Dental Benefit Regulations. Where the insured person insists on having his own doctor to act as anaesthetist and the doctor charges a higher fee than that provided for in the scale, the dentist is responsible for paying the difference out of his own pocket. A suggestion that the insured person be allowed to pay the balance up to a certain maximum has so far not been accepted.

EMPLOYMENT OF OVERSEA DOCTORS

Reference was made in the *British Medical Journal* last week (p. 520) to the Medical Register (Temporary Registration) Order (No. 2), 1941, and to the amendment of Defence Regulation 32B, under which this Order has been made. The new Order takes the place of the Medical Register (Temporary Registration) Orders, 1940 and 1941. The provisions of the 1940 Order, which concerns only British subjects and American citizens holding American or Canadian diplomas, remain unchanged. Such practitioners should make direct application to the General Medical Council (66, Portland Place, London, W.1.) for temporary registration, and, if they are American citizens, they must obtain permission from the Aliens Department of the Home Office (P.O. Box No. 2, Bournemouth) before accepting civilian medical employment.

The original 1941 Order empowered the General Medical Council to register temporarily certain other practitioners holding foreign diplomas, provided that they were legally entitled to practise in certain territories specified in the Order. As has already been explained, the revised Order applies to all territories without limitation, and a person who has passed the examinations necessary to obtain a diploma will now be treated as if he held that diploma. An applicant for registration is no longer required to show proof that he was entitled to practise.

The new Order also extends the field of employment by permitting a temporarily registered practitioner to work as an assistant to a practitioner who is registered in the *Medical Register* otherwise than by virtue of the Defence (General) Regulations, 1939. *Temporary registration does not entitle a practitioner to engage in private practice on his own account, to conduct a single-handed practice as a locum tenens, or to continue in any form of medical employment after the present emergency has come to an end.*

Employment as an assistant in private practice must be arranged in consultation with the Central Medical War Committee, which is responsible for ensuring that the prescribed conditions are fulfilled. Oversea practitioners who wish this form of employment should communicate with the Committee at B.M.A. House, Tavistock Square, W.C.1, whether or not they have already obtained temporary registration. In no circumstances may they accept assistantships until the approval of the Committee has been obtained. Practitioners who propose to employ assistants with overseas qualifications must notify the Central Medical War Committee, which will supply names of candidates if desired.

Alien practitioners who already hold permits for employment in approved hospitals, institutions, or services "not involving attendance on patients in their own homes" are not required to submit their police registration books for fresh endorsement. The police authorities are being informed by the Home Office that the permit is now to be regarded as covering approved assistantships in private practice.

A recently published statement that registration may now precede selection for approved employment was made as a result of a misunderstanding, and is incorrect.

Before the 1941 Order was revised, the employment of ship surgeon on British ships had been approved for the purposes of the Order. Practitioners interested in this work are invited to communicate with the Central Medical War Committee, which is occasionally asked by Shipping Companies to nominate candidates.

Correspondence

State Medical Service

SIR.—I have read most of the letters concerning a State Medical Service with interest, though not necessarily with agreement, and should like to make some statements and suggestions.

1. Having been in a Colonial Medical Service I can bear out the member of the Highlands and Islands Service that a State Medical Service is not necessarily bureaucratic, and that it does not necessarily interfere with the practitioner's methods and initiative. I therefore write off those who make this assertion as unreliable witnesses.

2. There is an undoubted case for making the benefits of medical science more readily available to the public. This can be done in part: (a) by making diagnostic facilities directly available to the G.P. without the intervention of a specialist or hospital out-patient department; (b) by grouping consulting and waiting rooms into health and welfare centres, to which dispensaries and "clinic" facilities might be added; and where (c) adequate clerical help would be available, so as to let the doctor spend his time doctoring and not clerking.

3. The basis of any future hospital policy should be the "local general hospital." This must be big enough and busy enough for the local "general specialists" to keep their hands in, and to earn their bread and butter. There is no need for the local general hospital to affiliate with any one teaching centre. I know of one that has contacts with six teaching centres, with the result that it gets a better deal than it would get from any single one of them.

4. I am now in a local authority service, and find that my patients and I can treat each other as human beings, that treatment can be ordered without fear of overtaxing the patient's purse, and thus losing me a patient and the portion of my livelihood he provides. I therefore suggest that the formation of *ad hoc* "health and welfare" authorities, to operate the existing local authority services and the national health insurance services,

and to supervise the hospital services, deserves very careful consideration.

5. Personally, I consider that it is high time that the dependants of insured persons were dealt with under the national health insurance service. This would mean that a great deal more work would be placed upon the profession, enough, if my sum is correctly done, to give employment to another twenty thousand doctors.

6. Whatever happens, the payment of panel practitioners on a salary-cum-capitation fee basis merits investigation. The salary would be paid by the *ad hoc* authority, who would decide how many doctors were needed in the area, and would rise by annual increments. Each doctor would still have his panel, and the value of each card on that list should rise by annual increments. It would thus pay the doctor to keep his patients—a direct incentive to good work.

7. The Ministry or Department of Health would remain in much the same position that is now held by these bodies.

8. Finally, there should be no need to consider the possibility of having a scheme we don't like being thrust upon us provided that we present a solid front and refuse to accept service. If the thousands of insurance practitioners were to refuse to treat the latest addition to the ranks of panel patients, no Government could force them to. Mind you, Sir, I am not advocating such a course just now. Union is strength, but if we do not stand together we shall get what we deserve—rule by the bureaucrat with red tape.—I am, etc.,

Seascale, Cumberland, Sept. 24.

I. C. MONRO.

SIR.—The pros and cons of State Medical and general practitioner service have been fully expounded by your correspondents, but the essential question of how best to prevent and cure has largely been obscured by the personal preferences of the general practitioner and the hypothetical preferences of the general public. I gather that most general practitioners (may I include myself?) prefer their way of life, which, in spite of hard work and hard knocks, is well loved; but do those cases where diagnosis is in doubt or specialized treatment required always go, and at once, to that place where the specialized knowledge required is available? And is that confidence which a majority of our patients undoubtedly repose in us really due to our skill or to their ignorance? And if our patients do not wish for any change in the present arrangements, is it not equally true that tight lacing, shut windows, and "dummies" were once held in high regard?—I am, etc.,

Potters Bar, Sept. 27.

W. E. HAYES.

SIR.—When first I joined the medical staff of the Ministry of Health I met the late Sir James Leishman, then chairman of the Scottish Board of Health, and he greeted me with this remark: "And so you have become an official and ceased to be a man!" May I commend the import of this cryptic utterance to the consideration of those advocates of a State Medical Service who would, for a mess of pottage, sell the individual liberty of our profession.—I am, etc.,

Harrogate, Sept. 29.

A. FULTON.

SIR.—The discussion in your columns on the subject of a State Medical Service prompts me to put forward the following questions, the answers to which seem to me to call for some consideration before we commit ourselves to a definite policy.

Does our experience of the working of Civil Service departments and of the operations of private enterprise lead us to suppose that the former is more efficient, expeditious, and economical, or vice versa? Are solicitors, accountants, stockbrokers, as a class intelligent and honest men, proposing to give up their individuality and merge themselves into State legal, State accountancy, or State stockbroking services? And, if not, do they know what is good for them and for their clients? Is our experience of national health insurance practice and our present treatment by the Ministry of Health such as to encourage us to out our affairs still more under ministerial control? Does not "Timeo Danaos et dona ferentes" still apply? And is not the increase in the capitation fee much the same colour as the Trojan horse? Lastly, while we probably all agree that the service of the medical profession to the public leaves much room for improvement, can we not set our own house in order without putting our trust in "Princes"?—I am, etc.,

Southbourne, Hants, Sept. 27.

T. M. BELL.

"Liability" for Health Insurance

SIR.—One of my patients recently informed me of the following facts, which may have some interest to practitioners in connexion with the extension of N.H.I. to include persons whose incomes lie between £250 and £420 per annum. He is a fairly well-to-do farmer, who, like several of his colleagues, holds a part-time appointment connected with the sugar-beet industry, carrying a salary in the neighbourhood of £400 per annum. He was recently sent the familiar brown medical card with instructions as to how to choose a doctor, and he has the appropriate amount for N.H.I. contributions compulsorily deducted from his monthly cheque. His reaction to what he felt to be a gratuitous interference with his private affairs was to pop the card into his waste-paper basket, and he says this reflects the attitude of his colleagues, some of whom have incomes making them liable for £1,000 to £1,500 per annum in income-tax!

It would appear that the test for eligibility for N.H.I. benefit is not a total income below the £420 mark, but any single item of income below that figure. If this is the case (and it must be unless the circumstances I quote arose through some official's misinterpretation of the rules), then I am sure that the indignation of these new and unwilling entrants to N.H.I. will be well matched by that of their medical attendants.—I am, etc.,

Norwich, Sept. 29.

E. G. WATSON.

* Insurable employment under the N.H.I. Act includes any single non-manual employment remunerated at a rate not exceeding £420 per annum for whole-time service. No account is taken of private income or income from other employment. If the employment is part-time the decision rests upon whether the rate of remuneration for whole-time employment would exceed £420 per annum. It is surprising, however, that deductions have already been made from the farmer's salary, as the Act does not come into force until January, 1942.—ED., *B.M.J.*

"Pure Despotism"

SIR.—My experience of insurance practice has been directly contrary to that of Dr. J. C. Gillies (*Supplement*, September 27, p. 69). In thirty years I have met no despotie official, have prescribed what I liked, and wasted as little time as anybody on the useless—that is, non-clinical—side of record keeping. This I am convinced has been the experience of the scores of colleagues I have associated with, for I never heard any really serious complaint of tyranny under N.H.I.

Doubtless there have been occasional cases of injustice, but nothing to justify wild talk about "pure despotism." Had there been, there would have been far more complaints from doctors, and there have been very few. Indeed, we are witnessing now from considerable numbers a demand for not less but more State control. A large minority (or is it a majority?) of the profession seems now to be in favour of a State service.

Dr. Gillies appears to be violently prejudiced against the whole N.H.I. Act. Yet when one remembers working-class practice before the Act and the old club system there is no doubt that it represents an advance. It has been an immense boon, giving some security against sickness to the working class. It has raised, not lowered, the practice of the G.P. Few now would wish to scrap it and go back to the old conditions. It has worked fairly well perhaps because it has retained free choice of doctor and has been mixed with private practice, so competition and the old family practitioner relationship have remained. And yet among the conditions of a State service unanimously approved by North London practitioners (*Supplement*, September 13, p. 45) free choice of doctor was not included. Where do the interests and wishes of patients come in?

There seems to be a good case for State action in regard to the hospital service for the provision of smaller local hospitals, clinics, etc. Here, as in the case of working-class practice, private enterprise has been inadequate. But whatever system of medical service may be chosen, domiciliary medical practice will bulk largest, and will be such work as is done now under N.H.I.: for the most part tedious, trivial, routine, requiring patience and physical and mental endurance on the part of practitioners. Patients will still want free choice of doctor. It is in their interest that this should be retained, and with it the competition and financial inducement for which, for such work, no satisfactory substitute has so far been found.—I am, etc.,

Bradford-on-Avon, Sept. 27.

T. T. APSIMON.

Medical Forces of H.M. Services Appointments

ROYAL NAVY

Surgeon Lieut.-Commander S. Jenkinson to be Surgeon Commander.
Surgeon Lieut. D. Shute to be Surgeon Lieutenant-Commander.
Surgeon Lieut. M. G. Peever (Emergency) to be Surgeon Lieutenant-Commander (Emergency).

ROYAL NAVAL VOLUNTEER RESERVE

Probationary Surgeon Lieut. A. W. N. Oatway to be Surgeon Lieutenant.

Probationary Temporary Surgeon Lieuts. F. M. Fea, R. D. Royds, D. M. Armstrong, A. C. Blandy, D. C. Brown, G. McI. Forsyth, H. Fitzgibbon, P. J. Pugh, A. G. Buick, R. O. Holland, and C. R. Cone to be Temporary Surgeon Lieutenants.

ARMY

Colonel (Temporary Brigadier) M. J. Williamson, M.C., late R.A.M.C., has retired on retired pay and remains employed.

Colonel (Temporary Brigadier) A. D. Stirling, D.S.O., late R.A.M.C., has retired and remains employed.

Colonel W. A. Frost, O.B.E., late R.A.M.C., has retired on retired pay on account of ill-health.

Lieut.-Colonels (Temporary Colonels) S. D. Reid, from R.A.M.C., and E. A. Sutton, M.C., from R.A.M.C., to be Colonels.

Lieut.-Colonel E. Phillips, D.S.O., from R.A.M.C., to be Colonel.

ROYAL ARMY MEDICAL CORPS

Lieut.-Colonel S. P. Sykes has reverted to the rank of Major at his own request whilst employed during the present emergency.

Major and Brevet Lieut.-Colonel (Temporary Lieut.-Colonel) F. C. Tibbs to be Lieutenant-Colonel.

Major (Temporary Lieut.-Colonel) W. I. Robertson to be Lieutenant-Colonel.

Major J. E. Brooks to be Lieutenant-Colonel.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

The notification regarding Colonel L. E. H. Whitby, C.V.O., M.C., from T.A.R.O., in a *Supplement* to the *London Gazette* dated November 15, 1939, is cancelled.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

Major N. W. Hammer to be Lieutenant, and temporarily relinquishes the rank of Major.

War Substantive Captains H. R. Lillie and A. G. Aitken have relinquished their commissions on account of ill-health.

War Substantive Captain D. C. Clark has relinquished his commission on account of ill-health, and is granted the rank of Captain. (Substituted for the notification in the *Supplement* to the *London Gazette* dated September 17, 1940.)

To be Lieutenants: J. R. M. Johnston, J. Cumming, D. M. Dunn, E. M. Glaser, K. Harris, A. R. Harrison, N. S. Keneshington, M. B. Longinotto, W. E. Macdougall, J. F. Macgregor, A. G. Porter, W. Recht, E. T. Renbourn, J. Ribeiro, H. M. Smallwood, W. Anderson, G. A. W. Angus, R. B. Boal, G. Boyd, V. A. Brady, T. J. Butler, B. Carr, S. Citron, C. L. Collins, H. Dallas, R. B. Davidson, W. Dickson, P. Duncan, K. B. Fraser, G. M. Gibb, K. J. Grant, R. H. V. Hafner, R. W. Harries, S. T. Hayward, A. Henderson, N. G. C. Hendry, J. P. Irwin, A. C. V. Jones, G. A. Jones, J. A. Jones, T. Kerrigan, J. B. Kyle, S. A. H. Lesser, G. P. McGowan, R. L. McMillan, I. M. Macgregor, R. M. Marshall, S. B. Mathews, W. E. Mathie, A. Milne, R. Murray, J. P. Singer, R. Taylor, C. Thomas, M. G. Valentine, R. L. Walsh, W. C. D. Walmsley, J. F. Webb, J. Weir, C. S. Whitehouse, A. F. Williams, D. G. Wright, D. E. Barton, J. Browne, A. R. Elsom, S. C. Gold, G. K. Harrison, G. H. Harvey, D. D. Howell, A. M. Hutton, J. H. Keesey, A. M.-M. Payne, F. A. Simmonds, K. Taraba, A. D. Willis, G. I. Harding, G. G. C. Taylor, W. A. Young, I. G. Anderson, P. S. G. Barclay, R. A. Bowen, L. Chernaick, J. R. Elwell, J. D. O. Fearnley, W. McC. Graves-Morris, J. U. Human, E. W. Jarratt, E. K. Kalmar, L. Rau, H. A. Shaw, R. H. Hodges, J. B. Arthur, P. H. Barkey, J. N. Blair, C. M. Boucher, J. H. F. Brotherston, N. L. Crabtree, R. Dalrymple, N. M. B. Dean, E. M. Foster, W. S. Gardner, P. Haden, J. Halliday, N. J. Hogan, F. Kane, D. Macartney, E. B. P. Madden, A. Marsh, R. Maxwell, J. C. S. Paterson, J. R. Platt, T. L. Price, M. P. G. Rawlinson, V. H. Roberts, J. H. B. Round, P. W. J. Searle, J. Sheehan, J. K. Steward, K. Teevan, W. J. Twobig, H. D. Venning, G. B. Walker, A. Waymouth, J. Webster, L. K. Wills, P. D. de Speville.

To be Medical Officers with the relative rank of Lieutenant: Dorothy B. Hudson, Elizabeth R. Cairns, Stella M. Coen, Margaret Emslie, Sheila M. Harper, Rebecca Billig, Margaret M. Shepherd, and Eva Dolan.

ROYAL AIR FORCE

AUXILIARY AIR FORCE

Flight Lieutenant A. L. Cowan has relinquished his commission on account of ill-health and retains his rank.

POST OFFICE MEDICAL OFFICERS' CAPITATION FEE

The General Post Office announces that, in view of the increase in private expenses, it has been decided to grant a further temporary increase of 6d. a year as from January 1 next, in the capitation fee payable to Post Office medical officers. The revised capitation fee will accordingly be 12s. a year from January 1, 1942.

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following postgraduate courses in preparation for the January M.R.C.P. examination: (1) London Chest Hospital Course, 2 p.m. to 4 p.m., October 30 to December 2, alternate Tuesdays and Thursdays (one day weekly); (2) West End Hospital for Nervous Diseases hospital course, 2.30 p.m., Tuesdays and Fridays, November 25 to December 19; (3) it is hoped to arrange a course in general medicine, on Saturday afternoons for four weeks, starting about the middle of November.

A series of lectures on "War Surgery of the Chest" will be given at the British Postgraduate Medical School from Monday to Friday, October 27 to 31 (both days inclusive), beginning at 10 a.m. daily. The fee for the course is £1 1s. Officers of the armed Forces who wish to attend the lectures without payment of the fees should apply through their respective Director-Generals. Applications for admission should be addressed to the Dean of the British Postgraduate Medical School, Ducane Road, W. Further courses will be held as follows: November 10, War Surgery of the Nervous System; November 24, Operative Surgery in Wartime; December 15, War Surgery of the Extremities.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—Daily, 10 a.m. to 4 p.m., Medical Clinics and Operations and Obstetrical and Operations. Tues., 10 a.m., Daily, 1.30 p.m., Post-natal Clinic. Tues., 10 a.m., Paediatric Clinic, Dr. R. Lightwood; 11 a.m., Gynaecological Clinics, Mr. Green-Armytage. Wed., 11.30 a.m., Clinico-pathological Conference (Medical); 2 p.m., Lecture by Dr. T. H. Belt, The Pathology of Gastric Lesions. Thurs., 2 p.m., Radiological Clinic, Dr. R. T. Brain; 2 p.m., Radiological Demonstration, Dr. Duncan White. Fri., 12.15 p.m., Clinico-pathological Conference (Surgical); 2 p.m., Clinico-pathological Conference (Gynaecological); 3 p.m., Sterility Clinic, Mr. V. B. Green-Armytage.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—Royal Cancer Hospital, Fulham Road, S.W.: Daily, 10 a.m., Final F.R.C.S. Revision Course.

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—At Tennent Institute, Church Street, Glasgow, Wed., 8 p.m. Dr. J. N. Tennent: The Future of Ophthalmic Practice.

DIARY OF SOCIETIES AND LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—Mon., 2.30 p.m., Prof. A. J. E. Cave, Surgical Anatomy of the Nasal Fossa. Tues., 2.30 p.m., Mr. R. Davies-Colley, Diseases of the Testicle. Wed., 2.30 p.m., Prof. Cave, Surgical Anatomy of the Mouth and Jaws. Thurs., 2.30 p.m., Mr. C. E. Shattock, Tumours of the Kidneys. Fri., 2.30 p.m., Prof. Cave, Surgical Anatomy of the Pharynx and Larynx.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS, 58, Queen Anne Street, W.—Sat. (October 25), 2.30 p.m., William Blair-Bell Memorial Lecture by Mr. W. C. W. Nixon: Diet in Pregnancy.

B.M.A.: Branch and Division Meetings to be Held

NORTH OF ENGLAND BRANCH.—At Royal Victoria Infirmary, Newcastle-upon-Tyne, Thursday, October 23, 2.30 p.m., Dr. T. A. Munro: "Mental Defect and its Military Significance"; 3.45 p.m., ophthalmic demonstration by Mr. J. S. Arkle and Mr. A. MacRae and their clinics.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTH

HAMILTON.—On October 11, 1941, at Monk's Orchard, Beckenham, to Margaret Cecil (née Asbridge), wife of Dr. J. G. Hamilton, a son (Anthony John).

DEATH

DAVIDSON.—Suddenly, at The Kepties, Arbroath, on October 9, 1941, Fergus Macandrew Davidson, M.B., Ch.B.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 25, 1941

POLICY AND WORK OF THE BRITISH MEDICAL ASSOCIATION

The Executive Committee of the B.M.A., which, since the war began, has undertaken a great many of the duties that would have been carried out by the Council had more frequent meetings of that body been possible, met on October 14 under the chairmanship of Mr. H. S. SOUTTAR.

Industrial Medicine

An excellent piece of wartime work was laid before the Executive in the shape of the report of the Industrial Health Committee, appointed by the Council in 1940 to consider industrial medical practice in the light of the existing medical system and to discuss the possibilities of future development. This special committee, which was strongly representative of industrial medical practice, and also had observers from the Ministries of Labour and of Supply, has now produced a report running to forty-five foolscap pages, which the Executive Committee highly praised, authorizing its immediate publication, and its presentation by deputation to the Minister of Labour as soon as possible. A synopsis of the report and its recommendations will in due course be published in the *Journal*.

One member of the Executive said that he was disappointed that collieries had not been included within the committee's ambit. The committee's reference, however, was to the places covered by the Factory Act, and the committee was not constituted as it would have been if collieries were to be taken within its purview. The member who raised the point said that he would propose to the Council at its next meeting (on December 10) that a similar piece of work should be undertaken for collieries.

Resolutions from the Recent Conference

The various resolutions of the recent Conference of Representatives of Home Divisions were passed in review. Most of them were referred to the appropriate committees—the Insurance Acts, Hospitals, and Public Health Committees, and the Journal Board (those relating to certification, remuneration, and other matters had already been dealt with at a meeting of the General Practice Executive Committee on October 7).

A matter which was considered at length was the proposal for Discussion Groups to be organized within the Divisions. The idea was unanimously favoured, but it was felt that unless they were given "something to bite on" the result might well be diffuse and nebulous. The suggestion which found favour was that some of the problems now under consideration by the committees of the Medical Planning Commission might be set out in concrete form for discussion in the Divisions.

The method of issuing a periodical letter to all members of the Association, not to Divisional secretaries only, was favoured. Hitherto this has not been done because it was felt that members should look to the *Journal* for such information, but in wartime, with the restriction of the *Supplement*, it was thought that a letter written at intervals by the Secretary might be useful in maintaining interest in Association affairs.

On the resolution concerning the allowances paid to practitioners enrolled in the E.M.S. in coastal areas, the Secretary said that he had been advised that representations from practitioners in the coast towns were being forwarded. Another resolution urged that the Government be requested to provide adequate free medical attention for the dependants of those in the Forces. The Secretary said that representations to this effect had previously been made, and it was agreed that further representations be made at once to all three Departments concerned with the fighting Services and to the Ministry of Health.

The Advisory Role of the C.M.W.C.

One resolution from the Conference asked the Council to approach the appropriate authorities in order to make it clear that the Central Medical War Committee and the Local Committees are responsible for the allocation of medical personnel for recruitment for the armed Forces and for all branches of the E.M.S. and civil defence. It was felt that there was still some misunderstanding as to the role of the committees. The responsibility of the Central Medical War Committee and the Local Committees is advisory. In general, the Ministry does consult the Central Committee before making appointments, but the bodies are only expected to advise on allocation. It is obvious that the Government could not divest itself of its ultimate responsibility.

On the resolution which drew attention to what was described as "a dangerous extent of depletion" of the civilian medical profession and advocated part-time civilian practitioners for employment with isolated Service units, it was stated that the Central Medical War Committee had advocated the employment of part-time practitioners, and was doing all it could in that direction. As to "dangerous depletion," the view expressed by some members of the Executive was that while this might not be an entirely accurate description, such depletion was not far distant.

On the subject of petrol rationing, the Secretary read a letter he had received from the Petroleum Board setting out a scheme for an allowance of extra petrol in emergency cases. It was considered that although a certain delay in the supply of such petrol was apparently inevitable, this new arrangement, details of which are given elsewhere in this *Supplement*, would meet the difficulty in most cases.

The reply of the Ministry of Labour to the demand for the reservation of doctors' maidservants was also considered satisfactory. It promised that any representations which the employer might make would receive careful consideration before any woman registered under the Order was called for interview, that full account would be taken of the importance of her work and its actual nature, and, if it was decided that release should be made, every assistance would be given to the employer to find substitutes.

The final matter to engage the attention of the Executive was concerned with the Association's building, the south wing of which has suffered damage from enemy action. This damage will further delay the completion of the building operations when it is possible for these to be undertaken.

EMERGENCY PETROL FOR SUBSTITUTE CARS

The recent Conference of Representatives of Home Divisions of the B.M.A. discussed the difficulty in which a doctor who uses two cars for his professional work is liable to find himself when one of the cars breaks down and all the petrol coupons allocated to the other car have been used—a predicament which might well occur towards the end of a rationing period. The suggestion was made that the doctor might be permitted to use his supplementary allowance of petrol in either car, and the Council of the Association was asked to investigate this possibility.

Representations have been made to the Petroleum Department, and the following reply has been received:

"The solution suggested to you from within your Association would be very embarrassing to us, and might also land the practitioner himself in fresh difficulties. The Petroleum Board has been wholeheartedly and most effectively co-operating with us in a campaign to discourage dealers from supplying petrol against coupons in which any irregularity appears; and coupons marked in the special

way required under the scheme proposed to you would almost certainly be regarded as suspect and refused by dealers.

The following alternative proposal seems to me better both from your point of view and from ours. We should be prepared to issue a circular to D.P.O.s giving formal authority for what we know to be their practice in emergency cases, that when a medical practitioner whose car has broken down asks by telephone, telegram, or in person for an emergency ration for another car which he proposes to use as a substitute, the D.P.O. may grant immediately a small emergency supply of coupons bearing the number of the substitute car, on an assurance from the practitioner concerned that he has in his possession coupons for the broken-down car, at least equal to the emergency supply, and that he will return these as soon as possible with a written note of the circumstances.

The emergency practice to which I refer has not been confined by D.P.O.s to cases where the substitute car is the property of the applicant, and I do not propose to confine the formal authority to such cases: in other words, we should be prepared to make it applicable not only to those medical practitioners who have two cars of their own but to those who have only one and are compelled to borrow the substitute car from a colleague or a friend, provided in all cases that the emergency ration is sought only for a car used in substitution of one for which the applicant is receiving a supplementary ration and which has broken down."

The Department have been asked to issue the circular proposed in their communication, and it is hoped that this, although not an ideal solution, will go a long way towards meeting the difficulty.

MEDICAL WAR RELIEF FUND

TWENTY-FOURTH LIST

Previously acknowledged, £33,677 12s. 9d. and £100 3½% Conversion Stock, and £40 3% Defence Bonds

Individual Subscriptions

- £10.—Dr. J. H. H. Chataway, Mombasa.
 £5 5s.—Dr. H. C. Beck, Sallsbury.
 £3 3s.—Colonel R. E. U. Newman, Cambridge.
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 £437 5s. 5d.—Practitioners in Bournemouth Division—per Dr. E. Douglas Granger; Dr. G. J. McFarlane £1 1s.; Dr. O. C. Carter £3 3s.; Dr. J. A. Kendall £1 1s.; Dr. M. B. Scott £5 5s.; Dr. A. Munro £1 1s.; Dr. T. G. Stevens £5 5s.; Dr. D. G. Litherland £2 2s.; Dr. J. Milligan £1 1s.; Dr. F. B. Mulvany £1 1s.; Dr. A. R. Paterson £5 5s.; Dr. C. Edwards £1 1s.; Dr. F. M. Robertson £2 2s.; Dr. K. Rogers £3 3s.; Dr. D. A. Hutcheson £10 10s.; Dr. W. E. Hopkins £1 1s. 6d.; Dr. H. J. Marnier £2 2s.; Commander H. C. Arathorn £1 1s.; Dr. J. T. M. McDougall £3; Dr. J. H. Burniston £5; Dr. G. B. Thiff, £10 10s.; Dr. M. S. Mitchell £1 1s.; Colonel E. Eckersley £1 1s.; Mr. S. G. Luker £1 1s. (2nd donation); Dr. E. A. Duffield £1 1s.; Dr. A. S. Mackie £1 1s.; Mr. H. Morgan Williams £2 2s.; Colonel T. A. O. Langston £1 1s.; Dr. I. Duguid £2 2s.; Dr. W. A. Mills £1 1s.; Dr. C. J. Sandford £3 3s.; Dr. T. R. Aynsley £1 1s.; Dr. C. P. Charles £5 5s.; Major J. Ewing £5 5s.; Dr. W. Johnson Smyth £2; Mr. N. Ross Smith £3 3s.; Dr. C. R. Williams £1 1s.; Dr. G. A. Reid £5 5s.; Mr. J. Sherren £1 1s.; Mr. N. F. Adeney £26 5s.; Dr. W. O. Beddard £1 1s.; Colonel W. R. P. Goodwin £2 2s.; Dr. E. J. Moore £5 5s.; Dr. J. H. Griffiths £2 2s.; Lieut.-Colonel E. A. Charters £1 1s.; Dr. A. E. Sears £1 1s.; Surgeon Commander W. G. Westcott £5 5s.; Dr. W. McNaughton £3 3s.; Dr. J. G. McK. Grant £2 2s.; Dr. F. C. Bottomley £2 2s.; Dr. J. Robson £2 2s.; Surgeon Rear-Admiral A. Thomas £1 1s.; Major W. Bligh £2 2s. (2nd donation); Dr. E. Osborne £1 1s.; Dr. A. H. Miller £2 2s.; Dr. C. Shaw £2 2s.; Dr. D. Hardie £2 2s.; Dr. H. V. Mitchell £2 2s.; Dr. W. L. Garner £1 1s.; Dr. K. M. Andrew £5 5s.; Dr. J. Y. Walker £5 5s.; Dr. W. M. Bristow £4 4s.; Drs. G. L. Buckley and K. M. Henderson £3 3s.; Dr. L. H. Jenkins £2 2s.; Dr. P. J. McKinnay £2 2s.; Dr. R. H. Little £5 5s.; Dr. D. Symons £2 2s.; Dr. J. Dixon Green £1 1s.; Dr. E. Bond £1 1s.; Dr. F. J. H. Coutts £1 1s.; Dr. E. T. Walker £1 1s.; Dr. S. Devine £3 3s.; Dr. A. H. Davidson £2 2s.; Dr. F. W. H. Robson £1 1s.; Colonel P. MacKessack £1 1s.; Dr. J. Allison Glover £2 2s.; Dr. C. W. Davies £10 10s.; Dr. A. Stables £1 1s.; Dr. J. W. Nankivell £5 5s.; Dr. A. R. N. MacGillycuddy £1 1s.; Dr. W. R. Pratt £1 1s.; Dr. C. W. Branson £1 1s.; Dr. R. H. Reid £2 2s.; Dr. J. Sharp £3 3s.; Dr. R. S. Bennie £2 2s.; Dr. F. Hcasman £5 5s.; Dr. A. M. Ross £1 1s.; Dr. A. M. Barron £1 1s.; Dr. N. MacGillycuddy £1 1s.; Drs. H. J. and K. D. Ball £5 5s.; Dr. G. H. Pitt £5 5s.; Dr. T. M. Bell £1 1s.; Dr. S. W. Green £3 3s.; Dr. E. S. Bompas £1 1s.; Dr. L. Dobbey £2 2s.; Dr. E. Burstall £10; Major A. C. Ingram £2; Dr. C. H. D. Bartley £3 3s.; Dr. A. W. Hall £1 1s.; Dr. E. Courtin £1 1s.; Dr. J. Wood £1 1s.; Dr. S. A. Montgomery £1 1s.; Mr. E. Bowden £2; Dr. N. Matthews £5 5s.; Dr. F. Barker £2 2s.; Dr. C. J. Royston £1 1s.; Dr. P. J. Montgomery £10 10s.; Dr. C. E. Gautier-Smith £3 3s.; Dr. R. V. Howell £2 2s.; Dr. A. McCall £1 1s.; Mr. C. E. P. Markby £1 1s.; Dr. P. C. Cumber £1 1s.; Dr. C. T. Hawkins £2 2s.; Dr. C. F. Pedley £3; Dr. C. A. Baskin £1 1s.; Portion Entertainments Fund £8 8s.; Dr. E. C. Parker Williams £1 1s.; Dr. V. Robinson £1 1s.; Dr. S. F. Durrans £1 1s.; Dr. B. Graves £1 1s.; Dr. F. S. Coleman £1 1s.; Dr. G. W. Hall-Smith £3 3s.; Dr. M. Edwards £1 1s.; Dr. C. H. Osmond £1 1s.; Dr. J. K. Hunter £1 1s.; Dr. F. McDade £10s.; Dr. W. B. Postlethwaite £2 2s.; Dr. J. C. A. Norman and Partners £26 5s.; Dr. S. Watson Smith £10 10s. (2nd donation); Colonel H. S. Anderson £1 1s.; Dr. C. B. M. Aldridge £1 1s.; Mr. C. R. Salkeld £1 1s.; Dr. E. C. Adams £1; Dr. K. B. Clarke £1 1s.; Dr. M. Scott £1 1s.; Drs. R. and G. P. Charles £2 2s.; Dr. A. W. Weatherley-Mein £5 5s.; Dr. B. E. Thompson £1 1s. 6d.; Dr. T. B. Batchelor £5; Dr. H. E. Cookson £1 1s.; Lieut.-Colonel W. S. J. Shaw £10s.; Dr. R. O'Dolan £1; Dr. J. L. Reeve £1 1s.; Dr. C. F. Winkfield £1 1s.; Dr. L. Capper-Johnson £1 1s.; Dr. W. H. Nutt £1 1s.; Dr. C. D. Holdsworth £1 1s.; Dr. J. Black-Miloe £1; Dr. E. S. Bowes £1; Dr. R. G. Tuke £1 1s.; Dr. P. S. Baker £1 1s.; Colonel L. Deas £10s.; Dr. A. de W. Snowden £1; Dr. J. H. Bentley £1 1s.; Dr. E. D. Granger £10. (The cost of collection was £9 6s.)

£67 19s. 1d.—Cumberland Division—per Dr. H. C. MacLaren (amount already sent £114 11s. 6d.); Anonymous £1 17s. 6d.; Drs. H. P. Nelson, D. L. Nelson, and A. P. Bortwman £3 3s.; Mr. R. S. Venters £2 2s.; Dr. M. W. C. Watson £2 2s.; Carlisle Insurance Practitioners £58 14s. 7d.

£55 13s.—Members of Somerset Panel Committee (amount already sent £275); Subscribers to the total sum: Dr. G. Carter, Dr. R. A. Condon, Dr. L. Cutler, Dr. A. MacGregor, Dr. A. H. Morris, Dr. A. Pimm, Sir Wm. Savage, Dr. D. V. Hague, Dr. H. M. Halliday, Dr. V. C. Martyn, Dr. K. Anderson, Dr. G. B. Eserton, Dr. M. Gower, Dr. L. Gray, Dr. G. S. Hedge, Dr. E. N. Jupp, Dr. C. M. Marshall, Dr. H. J. Marston, Dr. J. W. Papillon, Dr. L. C. Thora, Dr. J. T. Willis, Dr. E. Romer, Dr. H. T. M. Alford, Dr. R. M. Alford, Mr. J. L. Birkett, Dr. R. J. Burton (2nd donation), Dr. E. R. Clutterbuck, Dr. A. H. Duckett, Dr. H. E. Gamlen, Dr. N. D. Gerrish, Major J. F. Grant, Dr. A. W. H. Holmes, Colonel A. W. Hooper, Dr. E. M. Oulvie, Dr. H. F. Kettle, Sir John Macpherson, Dr. P. S. Mann, Dr. E. M. Oulvie, Dr. H. F. Powell, Dr. A. S. Robertson, Dr. A. T. Rowley, Dr. J. Wallace, Mr. C. F. Walters, Dr. R. Warren, Colonel C. A. Webb, Dr. M. J. Cooke, Dr. A. E. Weaver, Dr. J. V. Blackford, Dr. G. B. Buckley, Dr. E. A. G. Dowling, Dr. C. F. Le Sage, Dr. G. H. France, Dr. G. H. Harrison, Prof. J. Swain, Colonel R. G. Turoer, Dr. H. M. Robson, Dr. R. M. Ainsworth, Dr. E. W. Ashworth, Dr. T. Aubrey, Dr. H. M. Ashworth, Dr. J. Barlow, Dr. L. H. Barlow, Dr. H. A. Bell, Dr. F. Blacklee, Dr. J. E. Bolton, Dr. W. E. Bracey, Dr. S. L. Brimblecombe, Dr. W. P. Brinkman, Dr. J. F. E. Burns, Dr. H. C. Bristowe, Dr. W. H. W. Cheyne, Dr. B. G. H. Christmas, Dr. S. C. Clapham, Dr. D. O. Clark, Dr. J. F. Coates, Dr. P. C. Collins, Dr. A. B. Creak, Dr. B. A. Crook, Dr. F. R. Daniel, Dr. K. E. D. Dauncey, Dr. A. W. Duncan, Dr. G. E. P. Davis, Dr. J. N. C. Eglinton, Dr. L. E. V. Every-Clayton, Dr. H. J. Eastes, Dr. R. A. Fawcett, Dr. A. H. Finch, Dr. R. T. Finn, Dr. N. Flower, Dr. J. F. P. Forster, Dr. K. Flew, Dr. W. A. Gonnall, Dr. D. G. Gower, Dr. J. L. Griffin, Dr. C. C. Harrison, Dr. J. Hewitt, Dr. A. C. Hincks, Dr. F. T. J. Hobday, Dr. R. P. Hordford, Dr. F. W. T. Hughes, Dr. R. G. W. Husband, Dr. A. W. Hyatt, Dr. G. S. Hodges, Dr. M. H. Harding, Dr. M. J. Ingram, Dr. R. Jackson, Dr. J. S. Kamester, Dr. R. St. J. Kemm, Dr. W. Kirkwood, Dr. A. Lane, Dr. R. Lee-Michell, Dr. G. Macleod, Dr. C. A. Marsh (2nd donation), Dr. B. Martin, Dr. E. R. Matthews, Dr. A. McDonald, Dr. J. C. McMaster, Dr. C. L. O. Miall, Dr. R. S. Millar, Dr. J. M. Mitchell, Dr. G. H. Moorhead, Dr. G. E. Mullins, Dr. W. P. H. Munden, Dr. H. Newsome, Dr. J. C. Nicholson, Dr. J. R. Nicholson-Talley, Dr. W. J. Petty, Dr. I. E. Phelps, Dr. W. F. Pini, Dr. E. D. Pincus, Dr. G. S. Pollard, Dr. J. C. Parker, Dr. W. H. Randolph, Dr. C. R. S. Jones, Dr. W. S. H. S. Sequeira, Dr. M. A. E. Somers, Dr. R. Sutherland, Dr. T. L. H. Shore, Dr. E. R. Thompson, Dr. W. Thompson, Dr. E. M. Tuslin, Dr. T. A. F. Tyrrell, Dr. H. R. Unwin, Dr. C. N. Vaisey, Dr. G. A. Valentine, Dr. A. R. Wade, Dr. J. W. Wilcox, Dr. E. R. Willis, Dr. M. V. Wood, Dr. A. H. Wright, Dr. C. Christie, Dr. W. G. Parker, Dr. C. H. F. Johnston, Dr. J. N. N. Robinson, Dr. J. Evans, Dr. U. W. Wood, Dr. A. S. Walely, Dr. J. Pardee, Dr. P. C. Rankin, Dr. R. G. Bartolet, Dr. P. Burns, Dr. A. Walker, Miss E. K. N. Marsh, Dr. D. Price, Dr. D. Bredie, Dr. J. C. G. Whitelaw, Dr. A. E. Giamvili, Dr. D. Struthers.

£16 4s. 6d.—Public Health and Municipal Hospitals' Staff, Borough of Gateshead—per Dr. James Grant; Dr. J. Grant £3 3s.; Dr. M. Herbst £2 2s.; Dr. S. D. Rowlands £1 1s.; Dr. S. Graham £1; Dr. J. M. Pratt £1 1s.; Dr. L. L. Westrope £3 3s.; Dr. G. G. Sharpe £2 2s.; Dr. G. E. Frances £1 1s.; Dr. A. Heymann £1 1s.; Dr. M. Anderson 10s. 6d.

£7 7s.—Practitioners in Buckinghamshire—per Dr. V. Lloyd Hart (amount already sent £493 6s. 6d.); Drs. Weaver-Adams, Miller, and Robinson £5 5s.; Dr. S. Turnbull £2 2s.

£5 5s.—South Shields Division—per Dr. J. I. Smith (amount already sent £30 9s.); Drs. G. F. Shepherd and R. Raffle.

Practitioners in the area of the Newcastle-upon-Tyne Division—per Mr. Weldon Watts (amount already sent £923 11s.); Dr. G. Hall (2nd donation).

£2 2s.—Practitioners in the area of the Marylebone Division—per Mr. F. MacG. Loughnane (amount already sent £109 7s.); Dr. Russell Brain.

Practitioners in Exeter Division—per Drs. Murray and Paget (amount already sent £223 6s. 6d.); Lieut.-Colonel A. L. Crookford.

Derby Division—per Dr. E. C. Dawson (amount already sent £201 14s. 7d.); Mr. C. D. Lochrane (2nd donation).

£2.—Grimsby Division—per Dr. T. J. T. Wilmot (amount already sent £67 14s.); Dr. W. Escombe.

Local Medical and Panel Committees

£44 2s. 10d.—Ayr County (3rd donation).

£40 3s. 6d.—Newcastle-upon-Tyne.

£25.—West Suffolk (2nd donation).

£17 19s.—Dumbarton County (3rd donation).

Carlisle (acknowledged under Cumberland Division).

Total—£34,437 9s. 7d. and £100 3½% Conversion Stock, and £40 3% Defence Bonds

CERTIFICATES FOR MILK FOR INVALIDS

The arrangements for the supply of fresh milk on a priority basis to certain classes of invalids have been revised in some important details since the statement published in the Supplement of October 4 (p. 73).

Lord Horder, as medical adviser to the Minister of Food, has sent a personal letter to each registered medical practitioner enclosing a confidential statement regarding the issue of medical certificates for the supply of milk on a priority basis under the Milk Supply Scheme. These two documents explain the reasons for the special arrangements and detail the conditions and procedure governing the issue of certificates for liquid milk to persons suffering from any of the prescribed medical conditions.

Under the arrangements as finally agreed, the medical practitioner will insert on the certificate the class number and letter of the medical condition by reference to the confidential statement referred to above. In this form the certificate will preserve in the fullest possible measure the confidential relation-

ship of patient and doctor. The certificate passes direct to the local Food Office, which issues the necessary documents to permit the supply and the purchase of the prescribed quantity of milk for the period authorized.

It is recognized that these arrangements impose upon members of the medical profession sole responsibility for the issue of medical certificates for milk in accordance with the Milk (Scheme of Supply) Order, which gives statutory authority to the arrangements and in accordance with the conditions prescribed by the Minister and circulated to doctors for their confidential use.

Correspondence

Extension of Health Insurance

SIR.—The *British Medical Journal* from time to time publishes letters from doctors criticizing approved societies, and it is unfortunate that some of the doctors who write letters do not always concern themselves with facts. In support of this statement may I draw attention to the letter signed "Observer" in your *Supplement* to the *British Medical Journal* of October 4, 1941. In referring to the extension of National Health Insurance to persons with an income limit of £420 he states: "No one so far seems to have grasped the real crux of the situation, which is a political and financial move by the approved societies to maintain their incomes." And he goes on to say: "This group, earning about £420 per annum, will certainly be made up of men above 45 years of age, whose incidence of disease is found to be high, consequently requiring considerable medical attention. This fact, combined with the loss of the young healthy men at present in the Army, war-rats an increased capitation fee."

It may be that the inclusion of this group in National Health Insurance was a political move, but "Observer" is quite wrong in attributing it to the approved societies, and if he will refer to the newspapers and Hansard he will be able to satisfy himself on this point. Further, if "Observer" is right in thinking that the incidence of disease will be found to be high, requiring considerable medical attention, it is a little strange for him to state that the approved societies welcome these members in order to maintain their incomes, for he must know that the illnesses of such members requiring "considerable" medical attention as foreseen by him will result in the payment of "considerable" sickness benefit by the approved societies and the loss to them of "considerable" contributions on account of such sickness.

In fairness to approved societies I hope that when next "Observer" pleads for an increase in the capitation fee he will not couple it with an unwarranted attack upon approved societies.—I am, etc.,

Oct. 13.

"ANOTHER OBSERVER."

Mobile Surgeries for Bombed Areas

SIR.—The circular letter of September 30 from the Local Medical and Panel Committee for the County of London shows that a real attempt is being made to continue civilian medical services when surgery premises are rendered untenable by enemy action. The scheme of mutual assistance in loaning premises to unfortunate colleagues deserves the full support of all London practitioners.

It is, however, possible that circumstances may arise when alternative surgery accommodation is not available. A few "travelling surgeries" on the lines of the mobile first-aid vans would seem a practical solution in these conditions. No doubt such an innovation would cause criticism, but since the provision of medical services is of national importance sentiments should be disregarded.

If each practitioner in the London area contributed to a central fund, a small fleet of mobile surgeries could be made available to those members who were unable to find alternative premises immediately. The Government might be induced to contribute to this fund.—I am, etc.,

Well. West, Oct. 7.

H. G. HOWITT.

Calling Up of Doctors' Maids

SIR.—Is it not time that the British Medical Association made serious representations to the Government about the need for domestic staff in the houses of medical men? I have been without a house-parlourmaid for over a fortnight, and was seriously considering the advisability of abandoning all attempt to continue practice without such necessary assistance; and I had spared no effort or expense to obtain one, but until to-day without avail. It is surely an undeniable contention that the house of a medical man cannot be maintained without domestic staff. A large proportion of the work done at my private house is essential Government work in connexion with the Forces. Some medical men will soon be compelled to give up practice because of the lack of candidates for domestic situations, and then it will be a serious matter for the Government and the people, and by that time an irremediable disaster. Certain Labour Party members stated in the House of Commons that we should be required to do our own domestic work, and we were to be levelled down to the same home conditions as those of "the working man." We can and shall be levelled down, but on that plane we cannot practise as specialists and had better obtain situations in armament factories; I have been on the verge of doing this.

This, like many other catastrophes of this war, will be realized too late, and something should be done now while there is still time.—I am, etc.,

Glasgow, Oct. 5

C. DE W. GIBB.

* This matter was the subject of a letter from the B.M.A. to the Ministry of Labour last July (*Supplement*, August 2, p. 18), and the Ministry's reply was published in the *Supplement* of September 27 (p. 70).—Ed., B.M.J.

Medical Forces of H.M. Services Appointments

ROYAL NAVY

ROYAL NAVAL VOLUNTEER RESERVE

Probationary Temporary Surgeon Lieutenants T. M. Wilson, C. Langmaid, W. A. Walker, G. W. Baker, A. E. S. Wood, P. Goodman, C. C. Gardner, W. R. Henderson, H. S. Hogg, J. D. Bradley-Watson, and P. T. Merlin to be Temporary Surgeon Lieutenants.

ARMY

Major-General A. D. Fraser, D.S.O., M.C., K.H.S., late R.A.M.C., and Major-General (Superannuation) R. C. Priest, C.B., K.H.P., late R.A.M.C., have retired on retired pay.

Colonel (Acting Major-General) C. M. Finoy, O.B.E., K.H.S., late R.A.M.C., to be Major-General.

Colonel (Temporary Brigadier) G. Wilson, O.B.E., M.C., late R.A.M.C., to be Acting Major-General.

Colonel H. C. Winckworth, retired, late R.A.M.C., has reverted to the rank of Lieutenant-Colonel at his own request whilst employed during the present emergency.

Lieut.-Colonels F. D. Annesley, M.C., from R.A.M.C., and C. D. M. Buckley, M.C., from R.A.M.C., to be Colonels.

ROYAL ARMY MEDICAL CORPS

Major (Temporary Lieut.-Colonel) F. R. H. Mollan, M.C., to be Lieutenant-Colonel.

Major G. O. F. Alley, M.C., to be Lieutenant-Colonel.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

Lieut. H. R. Findlay has relinquished his commission.

ROYAL AIR FORCE

ROYAL AIR FORCE VOLUNTEER RESERVE

To be Squadron Leader: C. A. E. I. Brownlee.

Flying Lieutenant H. Whittle has relinquished his commission on account of ill-health and retains his rank.

Flying Officers H. J. Lillie, C. W. R. Rayne-Davis, R. Robins-Browne, E. L. Ellis, J. Hoadley, F. E. Jowles, F. R. Philips, B. A. Stoll, C. F. Wright, C. D. L. Lycett, C. S. Grossmark, R. H. Anthony, P. F. Barwood, F. Constable, P. J. Kelly, D. C. Bodenham, W. A. Steel, T. P. O'Brien, R. G. Blackledge, W. W. A. Gibson, and D. Eoyars to be Flying Lieutenants (War Substantive).

Flying Officer R. W. Elliott has relinquished his commission on account of ill-health and retains his rank.

To be Flying Officers (Emergency): T. A. H. Monro, J. D. Anderson, J. A. Elliott, H. J. Fenn, S. Gibson, P. Haslam, A. A. Hill, K. W. B. Rostrom, and C. J. P. Seecombe.

To be Flying Officers: E. D. Arkell, J. F. Cartwright, J. P. Dodd, P. G. McE. G. Jones, W. T. S. McKean, C. J. K. Orr, and J. R. Hughes.

DENTAL BRANCH

T. G. Ward, L.R.C.S., L.R.C.P., to be Flying Officer (on probation).

INSURANCE ACTS COMMITTEE OF THE B.M.A.

Election of Direct Representatives for 1941-2

The following direct representatives upon the Insurance Acts Committee have been *elected unopposed* for the groups mentioned:

- Group C.—Dr. H. F. Hollis (Leeds).
Dr. W. H. Smailes (Huddersfield).
Group F.—Dr. L. J. Picton (Holmes Chapel, Cheshire).
Group H.—Dr. E. Lewis Lilley (Leicester).
Group I.—Dr. J. A. Brown (Birmingham).
Group J.—Dr. D. J. B. Wilson (High Wycombe, Bucks).
Group L.—Dr. D. O. Twining (Salcombe, Devon).
Group O.—Dr. J. L. McKenzie Brown (Walthamstow).
Dr. C. F. T. Scott (Willesden).
Group P.—Dr. F. Gray (London, S.W.18).
Dr. E. A. Gregg (London, N.W.1).
Group Q.—Dr. S. E. A. Acheson (Belfast).

In the contested groups—namely, A, B, D, E, G, K, M, and N—the results were as follows:

- Group A.—Dr. W. Jope (Blantyre, Lanarks). *Elected*.
Dr. W. M. Knox (Glasgow). *Elected*.
Dr. A. F. Wilkie Millar (Edinburgh). *Elected*.
Dr. A. Simpson (Hawick, Roxburghs).
Dr. F. McEwen Sinclair (Glencraig, Fife).
Group B.—Dr. P. V. Anderson (Shildon, Co. Durham). *Elected*.
Dr. T. H. Bates (Newcastle-upon-Tyne).
Group D.—Dr. R. G. McGowan (Manchester). *Elected*.
Dr. F. M. Rose (Preston). *Elected*.
Dr. S. A. Winstanley (Urmston, Lancs). *Elected*.
Dr. A. Campbell (Accrington).
Dr. C. Baxter (Liverpool).
Dr. R. Cranna (Bolton).
Group E.—Dr. J. C. Davies (Wrexham). *Elected*.
Dr. W. E. Thomas (Ystrad-Rhondda). *Elected*.
Dr. C. M. Burrell (Aberystwyth).
Group G.—Dr. J. Hallam (Burslem, Stoke-on-Trent). *Elected*.
Dr. G. E. Elkington (Newport, Shropshire).
Group K.—Dr. J. C. Pearce (Diss, Norfolk). *Elected*.
Dr. C. M. Stevenson (Cambridge).
Group M.—Dr. T. MacCarthy (Sherborne, Dorset). *Elected*.
Dr. G. H. Barendt (Southampton).
Group N.—Dr. A. T. Rogers (Bromley, Kent). *Elected*.
Dr. W. G. Thwaites (Brighton). *Elected*.
Dr. S. A. Forbes (South Croydon).
Dr. N. E. Waterfield (Little Bookham, Surrey).

Scottish Subcommittee

The following direct representatives upon the Insurance Acts Scottish Subcommittee have been *elected unopposed* for the Groups mentioned:

- Group A.—Dr. I. M. MacLeod (Inverness).
Group B.—Dr. R. Bruce (Cults, Aberdeenshire).
Group C.—Dr. D. M. McGillivray (Dundee).
Group E.—Dr. J. M. Johnstone (Leven, Fife).
Group F.—Dr. A. F. Wilkie Millar (Edinburgh).
Group G.—Dr. D. Gunn (Loanhead, Midlothian).
Group H.—Dr. J. J. McMillan (Melrose, Roxburghs).
Group I.—Dr. I. D. Grant (Glasgow).
Dr. J. R. Langmuir (Glasgow).
Group J.—Dr. G. MacFeat (Douglas, Lanarks).
Group K.—Dr. W. A. Milne (Greenock).
Group L.—Dr. R. C. Hamilton (Hurlford, Ayrshire).
Group N.—Dr. W. J. Logie (Falkirk).

Nominations for Groups D and M have not been received; the vacancies will be filled by the Insurance Acts Committee.

G. C. ANDERSON,
Secretary.

B.M.A.: Meetings of Branches and Divisions

LANCASHIRE AND CHESHIRE BRANCH: LEIGH DIVISION

At the annual meeting of the Leigh Division, held on October 12, the following officers were elected for 1941-2:

Chairman, Dr. S. H. Ryan. Vice-Chairman, Dr. A. Patton.
Honorary Secretary, Dr. J. H. Young.

The annual report adopted at the meeting stated that although activities of the Division had been necessarily curtailed owing to the war two meetings had been held during the year as well as two meetings to which all practitioners in the area of the Division were invited. Drs. A. McInnes, G. E. Hayward, and J. H. Young had been appointed medical officers to the Home Guard. The Protection of Practices Scheme had been extended so that a practitioner incapable of work owing to ill-health might receive benefit. Other subjects discussed during the year were private fees, the capitation fee, and medical certification. A suggestion, stated the report, that medical boards should be set up to examine persons desiring a change of occupation was rejected by the Ministry of Labour, Manchester.

B.M.A.: Branch and Division Meetings to be Held

NORTH OF ENGLAND BRANCH.—At Royal Victoria Infirmary, Newcastle-upon-Tyne, Thursday, October 30, at 2.30 p.m., Mr. L. R. Broster, "Some Biological Aspects of War"; 3.45 p.m., resuscitation demonstration by Dr. T. H. Boon and his clinic.

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following postgraduate courses in preparation for the January M.R.C.P. examination: (1) general medicine, King Edward Memorial Hospital, Saturdays, 2 p.m. to 4 p.m., November 22 to December 13 (strictly limited to six postgraduates); (2) West End Hospital for Nervous Diseases course, Tuesdays and Fridays, 2.30 p.m., November 25 to December 19.

A military hospital medical society has arranged a week-end course in war medicine, to be held on Saturday and Sunday, October 25 and 26. On October 25, at 1.45 p.m., following an introductory address by the officer commanding, Colonel A. McKie Reid, there will be medical and surgical rounds, a discussion on eye injuries, and an x-ray examination. On October 26, at 9.30 a.m., plastic ear, nose, and throat surgery will be considered, there will be a skin demonstration, and a discussion on dyspepsia and gastroscopy. At 2.30 p.m. the programme includes resuscitation, oxygen therapy, anaesthesia in the field, and nutrition in war.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—Daily, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrical and Gynaecological Clinics and Operations. Daily, 1.30 p.m., Post-mortem Demonstrations. Mon., War Surgery of the Chest series commences. Tues., 10 a.m., Paediatric Clinic, Dr. R. Lightwood. 11 a.m., Gynaecological Clinics, Mr. Green-Armytage. Wed., 11.30 a.m., Clinico-pathological Conference (Medical); 2 p.m., Lecture, Haemopoiesis and the Gastro-intestinal Tract (I), Dr. J. W. Clegg. Thurs., 2 p.m., Dermatological Clinic, Dr. R. T. Brain; 2 p.m., Radiological Demonstration, Dr. Duncan White. Fri., 12.15 p.m., Clinico-pathological Conference (Surgical); 2 p.m., Clinico-pathological Conference (Gynaecological); 3 p.m., Sterility Clinic, Mr. V. B. Green-Armytage.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—London Chest Hospital, Victoria Park, E.: Thurs., 2 p.m., M.R.C.P. Course in Chest Diseases.

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—At Tennent Institute, Church Street, Glasgow, Wed., 8 p.m. Dr. J. Pendleton White: The Oculist in the Law Courts.

DIARY OF SOCIETIES AND LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—Mon., 2.30 p.m., Prof. A. J. E. Cave, Surgical Anatomy of the Liver and Bile Ducts. Tues., 2.30 p.m., Mr. R. Davies-Colley, Tumours of the Intestines. Wed., 2.30 p.m., Prof. Cave, Surgical Anatomy of the Kidney and Ureter. Thurs., 2.30 p.m., Mr. C. E. Shattock, Tumours of Bone. Fri., 2.30 p.m., Prof. Cave, Surgical Anatomy of Certain Nerves.

ROYAL SOCIETY OF MEDICINE

Section of Odontology.—Mon., 2.30 p.m., Presidential Address by Mr. Harold Round: The Value of a Dental Department in a General Hospital.

Section of Physical Medicine.—Sat., Meeting at Bath. 12 noon, Demonstration of Cases and Clinical Material at the Royal National Hospital for Rheumatic Diseases; 1.15 p.m., lunch at Foorts Restaurant; 2.15 p.m., Demonstration of Hydrotherapy in the Royal Baths; 3 p.m., Discussion on the Value of Hydrotherapy in Rehabilitation; 4.30 p.m., tea in the Pump Room.

CHADWICK TRUST.—At Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., Tues., 2.30 p.m. Mr. J. C. Dawes (Ministry of Health): The Cleansing of Towns and Cities.

VACANCIES

EXAMINING FACTORY SURGEONS.—The following vacant appointments are announced: Stewarton (Ayrshire); Abercarn (Monmouthshire). Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by November 4.

MEDICAL REFEREE UNDER THE WORKMEN'S COMPENSATION ACT, 1925, for the County Court Districts of Downham Market, East Dereham, Fakenham, Holt, King's Lynn, North Walsham, Norwich, Swaffham, Thetford, and Wymondham (Circuit No. 32). Applications to the Under-Secretary of State, Home Office, Industrial Division, Room 37 (III), Cornwall House, Stamford Street, London, S.E.1, by November 4.

APPOINTMENTS

WATERS, H. S., M.B., F.R.C.S., F.R.C.O.G., Major, I.M.S., Professor of Midwifery and Gynaecology, Grant Medical College, Bombay.

WILSON, A. C., M.R.C.S., L.R.C.P., Consulting Psychotherapist to the State Criminal Lunatic Asylum, Broadmoor.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 1 1941

WAR NOTICE

National Register of Medical Personnel

It is of the utmost importance to the medical services of the country that the National Register of the profession maintained by the Central Medical War Committee should be kept up to date, and practitioners are asked, therefore, to help by notifying any change of address or of appointment. Up-to-date information regarding the following practitioners is requested for record purposes.

Name	Last Known Address
ALLEN, Cuthbert Alastair	Walton Lodge, Pural, Harrogate.
BUNDSIDE, Grace	9, Marloes Road, W.5.
BULLOW, Harry	"Wayside," Guildford Road, Woking, Surrey.
BAXTER, Flora Leslie	"Kentwood," Kellett Road, Southampton.
BEATTIE, Elizabeth Hall	41, Gayton Crescent, N.W.3.
BENTLEY, Merce	259, Goldhawk Road, W.12.
BENTON, Harry	Poplar House, Doncaster Road, Rotherham.
BOTHWELL, Alexander Fairweather	109, King's Avenue, S.W.4.
BROWNIE, Claude Black	56, Alma Road, Southampton.
CADWELL, Alfred George	57, Tooting Bee Gardens, S.W.17.
CHAPMAN, Katherine Mary	18, Cecil Court, Manor Street, S.W.3.
CHORDRY, Lakshmi Narain	66, Albion Avenue, S.W.20.
CLARK, Rosa Olive Jane	20, Addison Avenue, W.11.
CLIFF, Peter David	341, Old Kent Road, S.E.1.
CORWAY, Patricia Mary Joynt	41, Oakdale Road, Suretham, S.W.16.
COOKE, Alec	"Stroods," Fletcham, nr. Uckfield.
COOKE, Mary Margaret	24, Parkside, Wimbledon Common, S.W.19.
COVENTRY, Gladys Anna	42, Dorcas Road, Coulsdon, Surrey.
CRIGGION, John Alexander	34, Cavendish Road, N.W.6.
DICK-SMITH, William Henry	1, Pembroke Square, Kensington, W.8.
DUNN, William Sydney	16, Lyons Road, Harrow.
DILL, Pascal Salvador	c/o 16, Saville Street, South Shields.
DIXON, Margaret Maud	Milland, Cobham, Surrey.
DICKHOFF, Louise Frances Winifred	Warlingham Park Mental Hospital Upper Warlingham, Surrey.
EWIN, Michael	16, Chertsey Walk, Hendon, N.W.4.
FANNING, Patrick Roman	Tuberculosis Sanatorium, Cotingham, Hull.
FEE, Sarah Gwendoline	Park Avenue, Wolsington, Stoke-on-Trent.
GALLAGHER, Edward James Masterson	Queen Mary's Hospital, Roehampton, S.W.15.
GILLIE, Archibald Louis	Griffin House, Hanley, Stafford, Kent.
GILBY, Reginald John	Clapham Court, Seymour Road, Marnham, Plymouth.
GIMBLE, Alva Francis	c/o Barclays Bank, Commercial Road, Portsmouth.
GIMMER, George Kerr	25, Trinity Crescent, S.W.17.
GIMMER, Mary I. A.	25, St. Nicholas Road, S.W.17.
HAMILTON, James	162, Longlands Road, Sidcup, Kent.
HARDENBERG, Janet Anne	9, Cannon Place, Hampstead, N.W.3.
HARMAN, Samuel	15, St. George's Terrace, Leeds.
HAYTER, Robert	10, Imperial Square, Cheltenham, Glos.
HATHFIELD, Sylvia Annette M	19, Redlands Road, Reading.
HAWKES, Henry	18, Earlsfield Road, S.W.18.
HENDERSON, James Plenderleith	143, Uxbridge Road, W.12.
HIGHFIELD-JONES, Gabrielle Mary	3, Camp View, Wimbledon Common, S.W.19.
JAIN, Saka Marikar	26, Normanhurst Avenue, Beale Heath.
JAMES, Francis Perry Roesch	156, Larkhall Lane, S.W.4.
JAMES, Thomas Glyn	4, Cretory Road, Forth, Rhosdda, Glam.
JOGLEKAR, Shankar Ramchandra	8, Highfield Road, N.W.11.
JONES, David James	Arfryn, Gofre-coed Road, Quaker's Yard, Trebarris, Glam.
KUPAR, Yetta	Eagle House, Church Hill, Midhurst, Sussex.
LANE, Edith Mary Pauline	24, Hasted Road, N.21.
LANGDOVE, Greta Mary	56, Brunswick Road, Poplar, E.14.
LEWIS, Edward Gordon	11, The Cambridge Road, N.17.
LISTON, James Campbell	253, Lees Road, Otham, Lancs.
LIVSEY, Edgar William	Brackenhurst, Queens Road, Weybridge.
McCONNELL, John	27, Curwen Street, Workington, Cumb.
McENTIRE, Samuel Drummond Greer	Gl. Baddow Court, Gt. Baddow, Chelmsford.
McFIE, Ronald Bute	4, Head Street, Garston, Liverpool, 19.
McGEOUGH, Margaret Turner	93, Copse Hill, Wimbledon, S.W.20.
McLINTOSH, Charles Hush	24, Half Moon Lane, Herne Hill, S.E.24.
McNIFF, Michael	155, Marilla Road, Tooting Bee, S.W.17.

Name	Last Known Address
MAGUIAL, Joseph	51, West Ferry Road, E.14.
MAHONY, Joseph Stanislaus	1, Catherine Terrace, Liverpool.
MARTIN, William	"Bratmar," St. Helens Parade, Southsea.
MEALE, James Alfred	58, Croydon Road, S.E.20.
MILLS, Frank Andrie	Alverstead, Shortlands, Kent.
MORRIS, Martin	66, Wilmore Street, Manchester, 15.
MORRISON, Cecil John Rhodes	250, Ivydale Road, S.E.15.
MURPHY, Christopher	104, Bradford Street, Manchester, 4.
MURRAY, William	and 28, Vester Road, Fallowfield, Manchester.
NICHOLLS, Nicola	95, Cadogan Gardens, S.W.3.
NIXON, Max	18, Western Avenue, N.W.11.
O'CARROLL, Thomas Francis	Flat 3, 944, Lord Street, Southport, Lancs.
O'DONOGHUE, Thomas Francis	41, Plymouth Grove, Chorlton-on-Medlock, Manchester, 13.
PALMER, Maud	166, North Circular Road, N.13.
PARRY, Evan Ithel	Altermans Cottage, Knowl Hill, nr. Reading.
PENNY, Gwilym Rhys	Brindley, Upper Richmond Road, S.W.14.
PENNE, Joseph	West Glamorgan County Hospital, Neath.
QUINNELL, William Eyre Hamilton	Clerkbank House, Leek, Staffs.
RIFKIN, Hyman	Cluse, Sheffield, Essex.
ROBERTSON, Archibald Hector Maccoff	57, Pin Mill Brgw, Ardwick, Manchester, 12.
ROSE, Janet Muriel	33, High Beeches, Chesham, Kent.
ROSSAMON, Alfred	1, Grenville Place, N.W.6.
SCOTT, Elsie Janet Duff	42, Rupert Lane, Liverpool, 5.
SCOTT, Margaret Helen	Public Health Department, Town Hall, Wallasey, Cheshire.
SELBY, Edmond Wallace	Dunmyre, Mutchley Avenue, Sanderson.
SHARPLES, Joseph Percival	19, Sandford Road, Bromley, Kent.
SHELDON, James Philip	The Corner House, Hermitage, Newbury, Berks.
SHELDON, William James	25, Spencer Gardens, Egham, S.E.9.
SMELT, Louise	729, Ashton Old Road, Openshaw, Manchester.
SUGGITT, Winifred Powys	Barclays Bank House, Datchet, Bucks.
TAYLOR, William	20, Graham Gardens, N.W.11.
THOMPSON, Elizabeth Mary	44, Upper Richmond Road, S.W.15.
TURTON, Edward	Lissadell, Sugar Pit Lane, Knutsford, Cheshire.
WESTON, Henry James	Eastcott, North Ferry, Yorks.
WILLIAMS, Balfour	2, East Ascent, St. Leonards-on-Sea.
WOOD, Orby Russell Morgan	21, Trafalgar Avenue, Egremont, Wallasey.
WOODHEAD, Alice L.	c/o 15, Vicarage Road, Henley-on-Thames.
YOUNG, Henry William Pennyfather	21, Buckingham Road, Newbury, Berks.
YOUNG, Ruth Eleanor	2, St. Helens Road, Norbury, S.W.16.
	23, Sunnyside, Mill Hill, N.W.7.

CENTRAL MEDICAL WAR COMMITTEE.
B.M.A. House, Tavistock Square, W.C.1.

Members of the Swansea Division of the B.M.A. and of the neighbouring South-West Wales Division recently heard Prof. J. A. Ryle speak in appreciation of a "very keen and competent generation at work in hospitals in air raids," and of their eagerness to share experience and to profit by the lessons of air attack. Prof. Ryle, who described himself as a "rather academic physician," was addressing a meeting, at which Dr. Kingston Knight presided, on "Lessons of the First Year's Air-Raid Casualties." He had found that the usefulness of instructions issued centrally was limited: they could not be universally applied, because air-raid problems varied in different areas according to local geography, to the situation of hospitals in relation to the community, and to available personnel in casualty services and hospitals. There had, however, been tardiness in the exchange of experiences and useful information between one heavily raided area and another, and some of the provisions in the air-raid precaution services of places that had not suffered were still based on premises which experience had disproved. There was a lag between discovery and general application of new methods. In conclusion, Prof. Ryle said that of casualties admitted to hospital some 50% went to the operating theatre and 25% required resuscitation. About 10% required blood transfusion.

Correspondence

A. Medical Officer's Conscientious Objection

SIR,—I read with interest in the *Supplement* of to-day the correspondence relating to the action of the Dudley Council towards its M.O.H.

May I be permitted to say that I heartily approve of the action taken by the B.M.A., and it speaks well for the moral strength of the Association that it has acted in this manner. It proves its fairness and how judiciously it can act when circumstances demand it. It is not a question of bolstering pacifism, but an act of strengthening the position and view taken by the Government of the day, as you so well express it, in defending the liberty of action in accordance with expression of conscience relating to a member of the medical profession. I feel proud to say that I believe that this will strengthen the activity of the B.M.A. May I therefore tender my congratulations; I believe this firmness may be the means of bringing the Dudley Council to a realization of fair play and justice.—I am, etc.,

Cardiff, Oct. 18.

ARTHUR T. JONES.

SIR,—The County Borough Council of Dudley have suspended their medical officer of health on account of his conscientious objection to war. It is a strange instance of muddled thinking. There could hardly be stronger evidence of conscientiousness; and conscientious devotion to duty is a main requirement in a M.O.H. Is he suspended as a penalty for his action? Was it felt that an objector should be reduced at least to equal discomforts with those who serve? But Parliament in passing the Military Training Act determined that there should be no victimization of those who sincerely object to military service.

No, Sir, clearly the hearts of the Dudley councillors got the better of their heads. We may marvel, with them, at the mentality and moral courage of any man who can conceivably think it right to let others suffer untold hardship and die to bring him food, keep him in comfort, and prevent Nazidom from blotting out our civilization and reducing us to slavery, Prussian rule, and Nordic religion. But we are fighting for freedom, conscience included. We cannot go back on our word. The British public love a martyr. We may hope that the Dudley councillors may apply a wet towel to the head and reverse their decision.—I am, etc.,

House of Commons, Oct. 22.

FRANCIS FREMANTLE.

SIR,—The case for toleration is so well stated in the annotation on the subject of a medical officer's conscience that on the question of principle there can be nothing to add but grateful thanks for the stand the B.M.A. has taken.

But in this case the action of the local authority would seem to be not only wrong in principle but foolishly inappropriate, having regard to the procedure that has been set up for dealing with conscientious objectors. Registration as a conscientious objector is a first step, to be followed by interview by the tribunal. I know a case in which the objector was quite satisfied after this interview that his objection was in fact not a conscientious objection within the meaning of the Act. If the conscientious objection is upheld it is an excellent feature of the arrangements that the objector is given suitable work that will help the national effort. The councillors of Dudley, however, have no use for such finesse and do not hesitate to treat the whole of this carefully thought out procedure with contempt.—I am, etc.,

Oct. 21.

D.P.H.

SIR,—What about those doctors and councillors who have a conscientious objection to working with certain types of conscientious objectors? Let us save time and paper and get on with the war.—I am, etc.,

Wolverhampton, Oct. 20.

H. CAMPBELL ORR.

SIR,—As a member of the British Medical Association for over forty years, may I enter a protest against the action of the Association in refusing to insert the advertisement referred to in the *Supplement* of October 18 (p. 78). I submit that it is no part of the Association's functions to decide what are or are not the legal rights of a medical conscientious objector; that is surely a matter for the law courts. In the meantime this refusal to assist the borough council in getting a suitable medical officer might conceivably have grave consequences in the event of air raids or serious epidemics.

If Dr. McLennan has been suspended illegally he has a legal remedy. But while the legal issue remains undecided by an appropriate tribunal, the Association is, I think, not justified in trying to penalize the inhabitants of Dudley.

May I also suggest: (1) that Dr. McLennan had no need to register as a C.O., unless to escape service with the Forces; (2) that the quotation from Mr. Chamberlain's speech is irrelevant, as it deals with those "not prepared to undertake the ordinary combatant service"; (3) that a doctor serving with the Forces is not required to fight with or kill anybody: on the contrary he is given a unique opportunity to relieve suffering and save life among both friends and foes.—I am, etc.,

Manchester, Oct. 15.

J. STAVELEY DICK.

SIR,—Regarding the "spot of bother" between the Borough Council of Dudley and their M.O.H., is the B.M.A. wise in attempting a judgment at the present time? Surely the right procedure is for the doctor concerned to enter his protest and let it be judged by the tribunal which deals with objections by C.O.s. It is solely for this tribunal to decide in the first instance whether or not his reasons are sound. The argument in your leader based on a statement by the late Mr. Chamberlain can be counterbalanced by the fact that everyone who is not with us in this struggle is against us and therefore with Germany and all she stands for.—I am, etc.,

Tavistock, Oct. 20.

FRANK BRYAN.

* The Secretary of the B.M.A. states:

In regard to Dr. Staveley Dick's letter, the British Medical Association is not deciding a point "that is surely a matter for the law courts." Parliament has given the conscientious objector the right to register as such and to have his position considered by a tribunal established by law. Dr. McLennan has registered, and as no question of his recruitment has yet arisen his case has not yet been considered by a tribunal. Because he took a step which is his legal right—that of registering—he has been suspended from his office. His council has taken a step which, if not illegal, is contrary to the wishes of the Government as expressed by the late Prime Minister. The Association would not be justified in "trying to penalize the inhabitants of Dudley," but it is justified in trying to prevent the penalization of the inhabitants of Dudley and the victimization of its medical officer of health. In connexion with Dr. Staveley Dick's last paragraph, it should be pointed out that the War Office is unable to give assurance that an R.A.M.C. medical officer will not under any circumstances be required to assume combatant functions.

I agree with Dr. Bryan that the right procedure is to allow Dr. McLennan's case to be judged by the tribunal which deals with conscientious objection, and that "it is solely for this tribunal to decide in the first instance whether or not his reasons are sound." This is what the Dudley Council has not done. Following Dr. McLennan's registration, and without waiting for the consideration of his position by the tribunal established by law, the council has suspended him. The Association is not concerned with Dr. McLennan's conscience, and it is probable that the majority of its members will not agree with this point of view. But it must protest when a public body victimizes a medical officer because of his personal views and beliefs, religious or political, in spite of the fact that Parliament has established a tribunal for the consideration of such beliefs. In a war which is being fought to preserve freedom of belief the victimization by public authorities of medical officers on the ground of conscientious objection cannot be allowed to go unchallenged.

Halifax Division and a Circular Letter

SIR.—At a meeting of the Halifax Division of the B.M.A. held on October 12 the following resolution was passed:

"Whilst we do not condone the action of the Insurance Acts Committee in its negotiations with the Ministry of Health we disapprove the attempt of the Medical Practitioners' Union in a circular dated August 22, 1941, to capitalize the disaffection of members in the profession by asking them to withdraw their membership from the B.M.A."—I am, etc.,

L. GLICK.

Oct. 19. Hon. Sec., Halifax Division of the B.M.A.

Capitation Fee and New Entrants to Insurance

SIR.—Like most of my colleagues I am very indignant at the acceptance of the new capitation fee of 9s. 9d. a year and the inclusion of a new class of insured personnel with salaries up to £420 a year. The argument used that this is the maximum the fund would allow is not convincing; obviously the answer is if there is not enough in the fund to pay a living wage to the panel doctors the fund must be increased by additional levies on the insured and employers.

Another reason given was, I believe, that an increase in the capitation fee would set an example for increased salaries to higher-paid Civil Servants. If this is so we are entitled to pensions like the higher-paid Civil Servants; but when this was suggested to the Ministry of Health some years ago we were told we were not to be compared with Civil Servants, but were, in fact, contractors. Now which are we? We cannot be contractors when a pension is involved and Civil Servants when we ask for more pay; few contractors are expected to carry out their work at pre-war rates. Further, this attitude cannot be justified on the basis of payment in the 1914-18 war, or on the present cost-of-living figures as compared with the pre-1914 figures. As the new scheme includes a new class for which we are not under contract, I see no reason why we, as individual panel doctors, cannot refuse to accept the cards of these new entrants, and if everyone took up this attitude we might arouse some interest in the minds of those who are supposed to represent us.

Many labourers on my panel who earned under £3 a week in 1939 now get from £9 to £12 on work of national importance, but still they remain on the panel. How can this be justified, or how can the increase which they receive and which comes indirectly from the Exchequer be a part of the economy which allows no increase to panel doctors? I use the words "no increase" because I think the so-called increase of 9d. a head, in my own case at any rate, will prove to be a decrease when the loss of private fees due to the inclusion of the new class is taken into consideration. I should have thought that if a new class was considered for inclusion in N.H.I. the dependants of men in the Forces should have received the first preference. As it is the poor doctors have to attend many of them free because they cannot afford to pay. The B.M.A. has recently suggested that fees to private patients should be increased by 20% to cover increased practice costs: why are all increased practice costs charged to private patients and none to panel patients?—I am, etc.,

Noted. Penzance, Oct. 19.

J. A. KENNETH DOUGLAS.

State Medical Service

SIR.—May I, quite unofficially, add a remark or two to your correspondence on a State Medical Service.

For almost the whole of my professional career I have been associated with a Government Department that provides free medical service, and has done so for nearly a century, for many thousands of its employees all over the country subject to a salary limit. This service is of a general medical practitioner type, and every effort is made to obtain the most suitable and conveniently placed medical officers. In most cases the majority of the staff entitled to free medical attendance avail themselves of these medical services. But it is not compulsory for them to do so, and they are at liberty, if they wish and are prepared to pay the fees, to attend any other doctor of their choice. Experience has shown that, however able and kindly an official

doctor may be, there is generally a minority who prefer, for personal or professional reasons, to attend some other doctor. But if every doctor were to be a State servant, to whom could these people turn?

Again—though I see no reason, given the right seniors, why medical officers in a State service should not have very considerable freedom and initiative in the treatment of patients—there are bound to be cases in which patients feel themselves to have been improperly or inadequately treated. In my own service all such patients have the right of appeal, either personally or through their unions or associations, and to furnish outside independent medical evidence on their behalf. But if every doctor were to be a State servant, to whom could such people turn?

Personally I feel that, whatever form of State Medical Service is adopted, there should be some "pool" of outside independent general practitioners and specialists from whom—both in the true interests of the public and the efficiency of the State Medical Service itself—salutary criticism could be forthcoming, and who would be capable of looking at the State Medical Service from outside. This would also provide an outlet for young men and women who wish to embrace medicine as a career but who may not wish—as an obligatory condition of becoming practising doctors at all—to be salaried State servants.—I am, etc.,

London, E.C., Oct. 17

H. H. BASHFORD.

This Certification Business

SIR.—In a mood of irritation, later changing to amusement, I made a list of certificates which I, a general practitioner, am expected to issue—most of which I have issued. It may be of interest to other members of the profession who do not have this responsibility.

Panel: First; intermediate; final; convalescent; voluntary 40F; monthly; sight-testing.

Public health and other authorities: Birth; death; stillbirth; disinfection; vaccination; infectious diseases, general; puerperal pyrexia; measles and whooping-cough; school, "unable" and "now able"; pensions, old age; pensions, Service, etc.; soldiers, grants of pay to wives and relatives; relieving officer, letters to.

Employers: Work, "unable, continues," and "unable, now able for."

Confinement: Reason for necessity to go to hospital or maternity home; maternity benefit.

Friendly societies: On; continuation; final.

Railway company: Rebate on season ticket on account of illness.

Hospital: Letters.

Connected with war: War injuries: Forms O. 1667; R.A.F. 1667; Navy S. 26. Masks, gas, special; fire prevention exemption; shelters, indoor; to enter prohibited areas; petrol for special reasons; workers, transfer from one area to another, and from one occupation to another. Food.—Milk, children and mothers; milk, extra, for invalids; eggs; glucose; olive oil, etc. Clothing.—Mothers, expectant; surgical belts, boots, etc.

Certificates of character.

—I am, etc.,

Oct. 19.

A. R.

Wartime Medical Certification

SIR.—In view of the attitude taken by the Ministry of Health in increasing the scope of National Health Insurance without the consent of the profession, I wish to draw attention to the very great increase in our work caused by the filling in of various Government forms—for example, milk forms, dependants' allowance forms, fire-watching exemption forms, certificates of the stage of pregnancy for extra wool rations, certificates recommending extra rations, etc. Have the Government Departments concerned obtained the consent of the B.M.A. before thus adding to our already grievous burdens, and has the question of payment for any of these services been considered?—I am, etc.,

Halesowen, Worcs, Oct. 15.

HERBERT W. BLAND.

* The Secretary of the B.M.A. states that the Association is at present in negotiation with the appropriate Government Departments on questions of wartime medical certification. Hitherto many certificates have been issued by Departments without consultation with the Association, but it is expected that this practice will now cease. A comprehensive statement on the whole subject will shortly be made by the Association.

N.H.I.: New Certificate Books

SIR.—Is it possible for you to publish the cost to the National Health Insurance of the recent change in certificate books?

When the organizing genius—a Civil Servant, I presume—has decided that such a change might still further curb the restless spirit of general practitioners, does he approach any representative body of medical men? If so, who concurred with the idea of scrapping a perfectly sound book containing, in one cover, first, intermediate, and final certificates, for three different ones? How many of the old books have been scrapped? Don't say it has been done to save paper, for we shall not believe that. We never were pestered by so many forms in the history of Britain.

Let the B.M.A. take the problem of certificates in hand and issue simple forms for every purpose with a definite charge to be made for each. Even then I suppose we shall occasionally meet the client to whom we refuse a certificate emerging from a neighbouring surgery with a form in his hand and his tongue scraped out. Forgive me if I seem bitter, but I have just been told that the cost of the change comes out of the pool which should have given us a "bob" instead of "ninepence." Is this the case?—I am, etc.,

Tarleton, Oct. 17.

L. CROFT.

** The Insurance Acts Committee of the B.M.A. was consulted in regard to the changes in the size and form of National Health Insurance medical certificates, as well as the proposal to eliminate the counterfoils. On being assured that the saving in paper would be substantial—some thirty tons per annum—the committee agreed to the changes as a wartime measure of economy. The saving in cost is not known, but it is certain that there will be no extra charge on N.H.I. funds.—ED., B.M.J.

Medical Forces of H.M. Services Appointments

ROYAL NAVY

Acting Surgeon Lieut.-Commander B. W. Walford has been transferred to the Permanent List.

Surgeon Lieuts. F. P. Ellis, G. C. Denny, G. H. C. R. Critien, G. L. Hardman, L. R. Norsworthy, W. H. E. McKee, J. F. Meynell, R. M. Latta, W. Wilson, W. J. Latham, M. F. Sheehan, C. D. Coode, M. M. J. Enright, R. T. May, L. H. Duthie, and J. H. Mitchell have been transferred to the Permanent List.

ROYAL NAVAL VOLUNTEER RESERVE

Acting Surgeon Lieut.-Commander E. M. Buzzard to be Surgeon Lieutenant-Commander.

Probationary Temporary Surgeon Lieuts. G. A. Ballance, W. D. G. Troup, F. J. Brice, and D. Horton to be Temporary Surgeon Lieutenants.

ARMY

Colonel J. T. Simson, late R.A.M.C., having attained the age for retirement, has retired on retired pay, and remains employed.

Lieut.-Colonel (Temporary Colonel) J. C. A. Dowse, M.C., from R.A.M.C., to be Colonel.

ROYAL ARMY MEDICAL CORPS

Major (Temporary Lieut.-Colonel) A. J. Beveridge, O.B.E., M.C., to be Lieutenant-Colonel.

Major J. M. Morrison has retired on retired pay on account of ill-health.

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Major J. Hare, O.B.E., has ceased to belong to the Reserve of Officers on account of ill-health, and has been granted the rank of Lieutenant-Colonel.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Lieut.-Colonel C. Booth-Jones, T.D., having attained the age limit, has relinquished his commission and retains his rank.

Major J. F. Fraser, from supernumerary for service with O.T.C., to be Major. (Substituted for the notification in the *Supplement* to the *London Gazette* dated October 6, 1939.)

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

A. C. Dalzell to be Lieutenant without pay and allowances, and has been granted the unpaid acting rank of Major.

War Substantive Captain C. H. Atkinson, M.C., has relinquished his commission on account of ill-health, and has been granted the rank of Major.

Lieuts. E. B. Berry and J. C. Carson have relinquished their commissions on account of ill-health, and retain their rank.

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following M.R.C.P. course in preparation for the January examination: Neurology, West End Hospital for Nervous Diseases, Tuesdays and Fridays, 2.30 p.m., November 25 to December 19.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—Daily, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetric and Gynaecological Clinics and Operations. Daily, demonstrations. Tues., 10 a.m., Paediatric; 11 a.m., Gynaecological Clinic, Mr. J. L. 11.30 a.m., Clinico-pathological Conference. p.m., Lecture, Intestinal and Pancreatic Function and their Investigation, Dr. E. J. King. Thurs., 2 p.m., Dermatological Clinic, Dr. R. T. Brain. Fri., 12.15 p.m., Clinico-pathological Conference (Surgical); 2 p.m., Clinico-pathological Conference (Gynaecological); 3 p.m., Sterility Clinic, Mr. V. B. Green-Armytage.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—*London Chest Hospital*, Victoria Park, E.: Tues., 2 p.m., M.R.C.P. Course in Chest Diseases.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

General Meeting of Fellows.—Tues., 3.30 p.m. Ballot for election to the Fellowship.

Section of Surgery.—Wed., 2.30 p.m. Discussion: Streptococcal Cross-infection in Wards. Openers, Prof. A. A. Miles, Prof. J. Paterson Ross, Dr. M. van den Ende, and Colonel L. Colebrook.

Section of History of Medicine.—Wed., 3 p.m. Paper by Prof. A. T. Jurasz: The Foundation of the Polish Medical Faculty within the University of Edinburgh. Members of the Sections of Epidemiology and State Medicine, Medicine, Pathology, Surgery, and Therapeutics and Pharmacology are specially invited to attend the meeting.

Section of Otolaryngology.—Fri., 10.30 a.m., Presidential Address by Mr. F. Watkyn-Thomas: Otitic Meningitis.

Section of Laryngology.—Fri., 2.15 p.m. Presidential Address by Mr. E. D. D. Oto-laryngologist in War. Surgeon Major D. Guthrie. Mr. V. E. Negi take part in the D. D. Dickson will

Section of Anaesthetics.—Fri., 2.30 p.m. Presidential Address by Dr. A. D. Marston: The Centenary of Ether as an Anaesthetic.

APPOINTMENTS

EXAMINING FACTORY SURGEONS.—J. S. Bailey, M.R.C.S., L.R.C.P., for the Eye District (Suffolk); W. G. Brand, M.B., Ch.B., for the Adlington District (Lancashire); C. McDonald, M.B., Ch.B., for the Kilwinning District (Ayrshire); E. C. W. Maxwell, M.R.C.S., L.R.C.P., for the Robertsbridge District (Sussex).

LONDON COUNTY COUNCIL.—The following appointments in the Council's mental health services at the hospitals indicated in parentheses are announced. *Temporary Deputy Medical Superintendent*: Doreen P. Firmin, M.B., B.Ch., M.R.C.P., D.P.M. (Caterham). *Temporary First Assistant Medical Officer*: S. Le R. Switzer, M.R.C.S., L.R.C.P., D.P.M. (Tooting Bec).

B.M.A.: Branch and Division Meetings to be Held

KENT BRANCH: TUNBRIDGE WELLS DIVISION.—At Kent and Sussex Hospital, Tuesday, November 4, 8 p.m. Debate: "That in the opinion of this Meeting the Medical Profession would welcome the establishment of a State Medical Service." All medical practitioners and their wives are invited to attend.

NORTH OF ENGLAND BRANCH.—At Royal Victoria Infirmary, Newcastle-upon-Tyne, Thursday, November 6, 2.30 p.m., Mr. G. F. Rowbotham: "Acute Head Injuries"; 3.45 p.m., surgical clinical demonstration by Mr. G. Y. Feggetter and his clinic.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTHS

JONES.—On October 14, at Highbury Nursing Home, Neath, to Audrey (née Turner), M.R.C.S., L.R.C.P., wife of Capt. J. Michael Jones, R.A.M.C., a daughter.

MONRO.—On October 19th, in Singapore, to Landon Carter (née Reed) and J. K. Monro, M.Ch., a daughter.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 8 1941

Correspondence

State Medical Service

Sir.—I have read your correspondence on Medical Planning and State Medical Service, and feel that medical practitioners, even at this critical stage of the war, ought to organize themselves into a position to demand satisfactory conditions of service in the future, and not leave it entirely to the B.M.A. The Local Medical and Panel Committees would be a good rallying point. I am sure that those of us who have had a long experience of all types of practice favour a private contract between patient and doctor. The relation is frequently a very happy one, and the doctor usually receives more consideration than when under contract. Panel patients frequently take the doctor's services for granted, and the chronic patient is often overfastidious on the doorstep, whereas the paying patient usually only comes when he feels it necessary. It is obvious that the Government has no intention of offering contract terms equal to private practice of pre-war days, and there is very little prospect of the pay in a whole-time service being any better than the inadequate panel-capitation fee.

In my view an improved N.H.I. service (without the Approved Societies) and administered by the profession would be more acceptable and produce better work than a whole-time service. It would enable those doctors who wish to undertake private practice to participate in both systems, instead of leaving the entire private field to osteopaths, herbalists, and the like! Practitioners should have beds and diagnostic facilities at their disposal in local hospitals and clinics, and be able to call in specialists when required. The capitation fee should not be less than £1, and, say, 1,500 patients should be the maximum for a doctor doing private work. This figure could be reduced if the practitioner was giving too much time to other professional work. Those who prefer contract practice could elect to do panel only, and could be allowed to accept more patients. A pension scheme should be instituted by deduction from the quarterly cheques and a contribution from the State. Better pay would enable the doctor to employ efficient secretarial help, so as to be more free for professional duties. Midwifery, child welfare, and other fields of work stolen by the Ministry of Health should be restored to those G.P.s able and willing to do the work in co-operation with specialists.

The majority of our able-bodied private patients, especially women, are being forced on to the panel by the Government and A.R.P. authorities. Many of them can still afford, and would prefer, to be private patients, but they become eligible for the panel because they are in receipt of a salary. There ought to be a total income limit for N.H.I. We all know that sociology will be linked to medical work in a greater degree after the war, whatever the economic system may be; but surely this can be achieved without whole-time State service, which, in my view, will be unjust to patient and doctor alike if introduced while capitalism and private enterprise continue in other walks of life.—I am, etc.,

LEICESTER, W.14, Oct. 17.

C. WATNEY ROE.

Sir.—There were interesting letters in the *Supplement* of September 27, and I should like to take this opportunity of making some comments thereon. Dr. R. P. W. Shackleton thinks that vested interest in disease is all wrong, and I quite agree with him. The distinction between the Public Health Service and general practice is a purely artificial one, and the better some combination of both is brought about the better for all sections of the community. Most general practitioners

will, I think, agree that no small amount of their patients' ailments are due to a combination of bad housing and a faulty mode of living, yet the only remedy that a good many of us can offer is the traditional bottle of medicine with a certificate for a "week on the club." In other words, instead of dealing boldly with causes we are simply tinkering with effects.

Now Dr. J. M. McInnes makes the rather controversial statement that the N.H.I. Act has raised neither the reputation nor the professional standard of the general practitioner. Well, this may be his opinion, but it is certainly not that of most of my colleagues who were in practice in the pre-panel days. If Dr. McInnes could only hear their decidedly pungent views on the bad old days of pettifoggery "sick clubs" and "medical aid societies" he might be induced to modify his opinions. There is, I think, little doubt that the present-day insured person gets much better value for his money than did his father in the free-and-easy days of thirty years ago.

Then Dr. C. A. H. Franklyn, in connexion with his remarks about a State Medical Service, says that almost everyone would prefer to be treated as a private patient, but what worries them is how to pay their medical expenses. No doubt it does, because by the time most of them have paid their instalments on the house, furniture, car, radiogram, etc., there is not much left for the doctor, who is proverbially the first to be called and the last to be paid. Moreover, these people are quick to realize that if they do not keep up their payments as regards the items mentioned they will soon find themselves in the county court, whereas they know full well that the doctor will seldom, if ever, take such an extreme step. In other words, the doctor asks for it and invariably gets it!

And, finally, there is the letter of Dr. J. H. Moore, who thinks that there is such an appalling lack of unanimity, etc., in the profession. But, after all, is there anything so remarkable about this when one considers the diversity in type of general practice? Take, for instance, the much-debated subject of a State Medical Service. The average doctor in giving his opinion on this matter is bound to be influenced to a certain extent by the type of practice in which he is engaged. It would be, I think, safe to say that support for a National Service is definitely stronger in industrial areas than in rural ones. In semi-industrial districts and the smaller towns opinion would seem to be more or less evenly divided. It is also significant that the younger men are much keener on the idea than are their seniors; here, no doubt, again the personal equation is the deciding factor. There is, however, practical unanimity that the present N.H.I. scheme is unsatisfactory, the principal grounds of complaint being (1) the insufficient capitation rate and (2) the non-inclusion of dependants.—I am, etc.,

LEICESTER, Oct. 28.

E. J. O'SULLIVAN.

War Formulary for National Health Insurance Purposes

The attention of insurance practitioners is directed to the announcement in the *Journal* this week (p. 656) of the publication of the *National War Formulary*. A summary of its contents will be found on page 662. A copy of the *Formulary* is shortly to be issued free of charge to every doctor and chemist under contract with an Insurance Committee. It will be distributed through Insurance Committees, and will come into operation for National Health Insurance purposes on December 1 next.

Part VII of the Drug Tariff will be discontinued and Part III of the Tariff will be correlated to the *National War Formulary*. There will be a special issue of the Drug Tariff for December, and with it will be issued a list of the principal amendments necessitated by the new *Formulary*.

Medical Forces of H.M. Services Appointments

ROYAL NAVY

Surgeon Lieut. N. M. McArthur to be Surgeon Lieutenant-Commander.

Surgeon Lieut. W. F. Viret (Emergency) to be Lieutenant-Commander (Emergency).

ROYAL NAVAL VOLUNTEER RESERVE

Probationary Temporary Surgeon Lieuts. J. McClintock, F. S. Melville, G. A. Dingemans, G. S. Thomas, C. M. H. Rotman, W. R. D. Seymour, J. J. Foley, W. M. Douglas, B. R. Mitchell, and C. H. F. Wood to be Temporary Surgeon Lieutenants.

ARMY

Major-General R. C. Priest, C.B., K.H.P., has relinquished the appointment of Inspector of Medical Services.

ROYAL ARMY MEDICAL CORPS

The following Captains (Short Service Officers) have been appointed to permanent commissions: A. B. Dempsey, R. S. Hunt, G. B. Heugh, W. N. L. Haynes, and I. N. Fulton; (Acting Major) C. L. Lewis; (Temporary Majors) J. F. Wilson, W. Stewart, M.B.E., E. A. Smyth, J. R. Kellett, and K. G. F. Mackenzie; (War Substantive) Major (Temporary Lieut.-Colonel) J. A. Davidson.

War Substantive Captain F. R. How has relinquished his temporary commission on account of ill-health, retaining the rank of Captain.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

T. Tennent to be Lieutenant, without pay and allowances, and has been granted the unpaid acting rank of Lieutenant-Colonel.

D. J. O'Connell to be Lieutenant, without pay and allowances, and has been granted the unpaid acting rank of Major.

War Substantive Captain P. A. H. King has relinquished his commission on account of ill-health, and has been granted the rank of Major.

Lieuts. G. A. F. Quinell and D. I. C. Milton have relinquished their commissions on account of ill-health.

The notifications regarding Lieuts. J. C. R. Buchanan and R. C. Le Masle in *Supplements to the London Gazette* dated July 16, 1940, and August 26, 1941, respectively are cancelled.

To be Lieutenants: W. R. G. Atkins, C. J. R. Aubrey, C. W. G. Bryan, C. R. Ribband, A. Watt, R. Platt, J. Allan, W. J. Barclay, W. J. Hughes, J. L. Kirk, H. Acton, J. Beech, T. Y. Bennie, C. A. Birks, J. R. Boyd, C. S. Campbell, J. C. Coates, R. S. Dewar, G. M. Edington, S. C. Edwards, J. J. A. Embleton, E. M. Ensor, C. L. Ferguson, J. French, J. Gauld, M. B. H. Golden, M. H. K. Haggie, W. Hayes, J. F. K. Hutton, D. J. McL. Irvine, A. Jack, H. M. Jamison, A. K. Jones, N. U. Khan, W. Lamb, D. Lehan, N. S. Levantine, J. Livingstone, K. C. MacKellvie, A. McAllister, A. W. McBain, K. J. MacGinty, J. S. Main, G. E. Milne, N. C. Mond, D. G. Morris, A. P. Motley, H. A. Oatley, R. W. Orton, T. G. Owen, J. F. Perry, G. Platt, P. V. Pucci, I. Reubin, H. V. Sansom, G. Smith, W. C. Smith, D. C. Taylor, W. J. Taylor, A. P. Thomson, S. Tomback, W. S. Tulloch, P. Tytler, A. J. Walker, K. M. Wheeler, B. A. M. Williamson, C. H. Wood, J. Zigmond, W. Anderson, O.B.E., J. C. Hawks.

Dorothy M. J. Emslie has been granted an emergency appointment as medical officer, with the relative rank of Lieutenant. (Substituted for the notification in a *Supplement to the London Gazette* dated October 7, 1941.)

SOUTH AFRICAN MEDICAL CORPS

Lieut. H. J. Knight, 1st Rhodesia Motorized Field Ambulance, to be Temporary Captain.

ROYAL AIR FORCE

ROYAL AIR FORCE VOLUNTEER RESERVE

G. A. Smart to be Flight Lieutenant (Emergency).
Flying Officers R. S. Carpenter, J. D. Craig, R. W. K. Purser, R. G. Robinson, B. Roditi, J. L. Lawrence, G. A. Mandow, J. W. Pooley, A. Russell, M. I. Cookson, G. Cormack, T. P. Hopkins, F. W. T. Davies, G. M. Jones, D. Macpherson, A. D. Messent, S. Rosehill, J. M. Smith, J. C. A. L. Colenbrander, P. P. Brown, W. L. James, I. G. Lennox, D. C. Russell, J. Spears, J. H. Ward, D. W. Boatman, L. Nanciekievill, D. P. O'Sullivan, J. Colover, A. G. Edwards, L. C. Liddell, and R. G. Crawford to be Flight Lieutenants (War Substantive).

To be Flying Officers (Emergency): P. H. Bell, H. Avery, F. T. P. Bergin, D. Cowan, H. V. W. Elwell, R. C. Fraser, Q. St. L. Myles, J. R. Slessor, A. Standeyan, J. M. Wilkin, I. G. Williams, J. L. Boyd, T. I. Gordon, W. D. Smith, P. W. G. Sutton, N. J. Burnand, G. H. Flack, A. T. Hawthorne, D. L. Henderson, E. H. B. Hopkins, R. W. McDowell, and H. Zinobor.

DENTAL BRANCH

A. G. Beaton, M.R.C.S., L.R.C.P., to be Flying Officer (Emergency).

B.M.A.: Branch and Division Meetings to be Held

NORTH OF ENGLAND BRANCH.—At Royal Victoria Infirmary, Newcastle-upon-Tyne, Thursday, November 13, 2.30 p.m., Dr. J. C. Spence: "National Food Policy in Wartime"; 3.45 p.m., medical clinical demonstration by Dr. A. G. Ogilvie and his clinic.

B.M.A.: Meetings of Branches and Divisions

SHROPSHIRE AND MID-WALES BRANCH

At the annual general meeting of the Shropshire and Mid-Wales Branch, held at Shrewsbury on October 14, with Dr. C. U. Whitney in the chair, the following officers were elected for the ensuing year:

President, Dr. J. Aubrey Ireland. Vice-President, Dr. Whitney. Chairman of Clinical and Pathological Section, Dr. R. N. Urwick. Honorary Secretary, Dr. D. A. Urquhart. Representative in Representative Body, Dr. G. Elkington.

A tribute was paid to Dr. George Mackie for long service faithfully rendered as the representative of the Branch at Annual Representative Meetings of the Association. Dr. Ireland delivered his presidential address on "The Work of a Medical Board," which was much appreciated and for which he was heartily thanked.

POSTGRADUATE NEWS

The Fellowship of Medicine announces an M.R.C.P. Course in Neurology to take place at the West End Hospital for Nervous Diseases, on Tuesdays and Fridays, at 3 p.m., from November 23 to December 19.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—Daily, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetric and Gynaecological Clinics and Operations. Daily, 1.30 p.m., Post-mortem Demonstrations. Mon., Course on War Surgery of Nervous System commences. Tues., 10 a.m., Paediatric Clinic, Dr. R. Lightwood; 11 a.m., Gynaecological Clinic, Mr. V. B. Green-Armytage. Wed., 11.30 a.m., Clinico-pathological Conference (Medical); 2 p.m., Lecture, Pathology of the Intestinal Tract (I), by Prof. J. H. Dible. Thurs., 2 p.m., Dermatological Clinic, Dr. R. T. Brain, Fri., 12.15 p.m., Clinico-pathological Conference (Surgical); 2 p.m., Clinico-pathological Conference (Gynaecological); 3 p.m., Sterility Clinic, Mr. V. B. Green-Armytage.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1 Wimpole Street, W.—London Chest Hospital, Victoria Park, E. Thurs., 2 p.m., M.R.C.P. Course in Chest Diseases.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Sections of Therapeutics and Pharmacology, and Medicine.—Tues., 2.30 p.m. Discussion: The Kidney and Hypertension. Openers, Prof. Arthur Ellis, Dr. Clifford Wilson, Prof. G. W. Pickering, and Dr. Robert Platt. Followed by Dr. Geoffrey Evans and others.
Clinical Section.—Fri., 2.15 p.m. Meeting at St. Mary's Hospital, W. Section of Ophthalmology.—Fri., 3.30 p.m. Paper by Dr. A. J. Ballantyne: Angiomas of the Retina: Account of a Case, including the Histological Result of X-ray Treatment.
Section of Neurology.—Sat., 10.30 a.m. Clinical and pathological meeting at Chase Farm Hospital, The Ridgeway, Enfield.

CHADWICK TRUST.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., Tues., 2.30 p.m., Mr. F. R. Hiorns: Hygiene Technique in Building, or the Economic, Psychological and Health Aspects of Surface Treatment.

PADDINGTON MEDICAL SOCIETY.—At St. Mary's Hospital, W., Tues., 3.45 p.m. Debate: How to Solve the Night Call Problem in London.

APPOINTMENTS

BOND, K. E., M.B., B.Chir., F.R.C.S., Temporary Surgeon to Outpatients, Hampstead General and North-West London Hospital.
MORLEY, H. S., M.D., M.R.C.P., Examining Factory Surgeon for the Midhurst District (Sussex).

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTH

MORTON.—On October 9, to Florence J. R. Beattie, D.Sc., wife of Captain W. R. M. Morton, R.A.M.C., a son.

ENGAGEMENT

MATTISON—DUNCAN.—The engagement is announced between Flying Officer Leslie H. Mattison, M.R.C.S., L.R.C.P., D.P.H., elder son of Mr. and Mrs. Ellis Mattison of Manchester, and Miss Sheila Duncan, elder daughter of Mr. and Mrs. D. K. Duncan of Ilendon, residing at "Avoncliffe," Alveston, Stratford-on-Avon.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 15 1941

ECONOMY IN DRUGS IN WARTIME SUPPLEMENTARY LIST BY THE THERAPEUTIC REQUIREMENTS COMMITTEE

Earlier this year the Therapeutic Requirements Committee of the Medical Research Council issued a memorandum on Economy in the Use of Drugs in Wartime,¹ which was published in these columns on March 22 (p. 33). The committee has now issued a first supplement to that memorandum, which we print below.

[As before, to facilitate reference the drugs have been grouped in their respective categories.]

* Indicates that the classification has been changed.

A. Drugs which are at Present either Regarded as Essential or are Readily Available

Drug	Substitute or Equivalent and Remarks
Amethocaine	
Diphenan	
Hexazole	
Metaphothone	Synthetic Vitamin K, 2-methyl-1:4-naphthoquinone
Mesulphen	
Oleum Cocos	
Orthocaine	
Phenacynium-Solubile	Sodium Diphenylhydantoinate
Picofadine	
Piracetin	
Pirparv	
Pyrithium	
Sifrol	
Sera and Vaccines, Veterinary (listed separately as 32 items, but not included here)	

B. Drugs which are Essential for Certain Purposes but not for Others, and in the Use of which Strict Economy should be Observed

Drug	Substitute or Equivalent and Remarks
*Acidum Acetylsalicylicum	Strict economy is essential. Phenol (q.v.) is the raw material
*Acidum Phosphoricum	
*Acidum Salicylicum	Strict economy is essential. Phenol (q.v.) is the raw material
*Coccus Gonadotrophic Hormone from pregnant mare's serum	
Gonadotrophic Hormone from pregnancy urine	
*Hamameli	
*Lobelia	
*Prenol	Required for the manufacture of munitions. Strict economy is essential. Substitutes: Chlorocresol, chloroxylenol
Progesterone	
*Sodi Phosphas	
*Sodi Phosphas Acidus	
*Sodi Salicylas	Strict economy is essential. Phenol (q.v.) is the raw material
Sulphacetamide	This drug is in short supply
Sulphadiazine	Supplies are strictly limited
Sulphaguanidine	Supplies are strictly limited and should be reserved for the treatment of intestinal infections
*Sulphathiazole	Supplies are strictly limited and should be reserved chiefly for the treatment of staphylococcal infections

C. Drugs which are not Essential and do not justify Importation or Manufacture for Home Use in Wartime

Drug	Substitute or Equivalent and Remarks
Acidum Hypophosphosum and its salts	
Celery Seed	
Cummin	
Euphorbia	
Extractum Hepatis Liquidum	
Extractum Hepatis Siccum	
Galangal	
Grindelia	
Kola nuts	
Leptandra (Black root)	
Mandrake	<i>Mandragora autumnalis</i>
Pennyroyal	
Prunus Serotina	
Quince Seeds	
Raspberry Leaves	
Rubiazol	Substitute: Sulphanilamide
Sarsaparilla	
Sassafras	
Serpentary	
Skullcap	
Slippery Elm Bark	

List of Equivalents

Acaprin	Pirevan and Pirparv are identical
Albucid	Diphenan is identical
Butolan	Diphenan is identical
Cignolin	Dithranol is identical
Decicaine	Amethocaine is identical
Liver	See Extractum Hepatis Liquidum
Mitigal	Mesulphen is identical
Orthoform	Orthocaine is identical

Notes on Prescribing

Liquid Paraffin.—There is a serious shortage which is not likely to be relieved under present conditions.

Glycerin.—The use in medicine is now limited to the manufacture of preparations of the B.P. and B.P.C., and to the dispensing of prescriptions used by medical practitioners.

Sulphonamides.—Sulphanilamide is the most economical drug for general use. Sulphadiazine, sulphaguanidine, sulphapyridine, and sulphathiazole should be prescribed only when there are special indications.

Early this year local authorities were asked by the Ministry of Health to supply simple four-weekly totals of new notifications of tuberculosis (*Journal*, February 8, p. 207). The Ministry now asks in Circular 2498 that special steps should be taken to ensure that the returns reach the Department not later than six days after the end of the four-weekly period to which the return relates. Considerable importance is attached to these statistics, and failure to furnish returns immediately after the end of each four-weekly period appreciably reduces their value.

Correspondence

A Medical Officer's Conscientious Objection

SIR,—I cannot believe that the attitude of the B.M.A. towards the Dudley County Borough Council will, as you state in your annotation (October 18, p. 553), "no doubt be endorsed by the medical profession generally." The M.O.H. of a county borough has important and responsible duties in the war effort in connexion with the E.M.S. and A.R.P. organizations, and these duties in the case of air raids or invasion might differ little, if at all, from those of a senior R.A.M.C. officer under active service conditions. If a M.O.H. has conscientious objections to serving "with the armed Forces," what is to be his attitude in the event of hostilities, aerial or otherwise, in the vicinity of his own town, when, presumably, defensive measures by armed Forces would be in progress? Would he cease to direct his organization because he would have to act in conjunction with the armed Forces? In this war the people of Britain are united in one great effort, and they cannot allow anyone to hold a responsible position in which he might conceivably be driven by his conscience to detract, however little, directly or indirectly from that effort.

Your refusal to insert an advertisement for a temporary successor in what you recognize as a key post is, I think, merely obstructive.—I am, etc.,

The University, Sheffield, Oct. 20.

G. A. CLARK, M.D.

SIR,—In your description of the action the British Medical Association has taken over the case of Dr. McLennan you proclaim your confidence that this action will be endorsed by the profession generally. I believe that confidence to be misplaced. A considerable section of the profession, of whom I am one, most emphatically do not endorse it; in fact we deplore it.

The spectacle of Dr. McLennan "looking deeply into his conscience" and making the difficult decision to continue in the job he obviously prefers deserves closer examination. To what exactly does Dr. McLennan's conscience object? The accepted basis of conscientious objection is surely an inability to justify the taking of human life. What, then, is the doctor's case? No one is asking him to kill under any circumstances. If his objection is that service in the armed Forces sustains the war effort, how can he reconcile service in any other Government Department? You yourself appreciate his value in this respect when you mention the shortage of civilian doctors.

On analysis it would seem that you are protesting against the logical answer to Dr. McLennan's action. If he cannot bear to co-operate in the national war effort he has obviously no place in the service of a Government entrusted with the prosecution of the war. The County Borough Council of Dudley have simply recognized this fact and acted upon it. It is their decision which deserves endorsement, a more difficult and invidious one under the circumstances even than Dr. McLennan's.—I am, etc.,

Waterbeach, Cambridge, Oct. 28.

D. STAFFORD CLARK.

SIR,—I am contented to leave other points dealt with in my letter (*Supplement*, November 1, p. 86) to the judgment of my colleagues. I think, however, it would be of general interest to learn whether all medical officers in the Forces now receive training to fit them for "combatant functions." I have good reason for believing that in 1914-18 some medical officers received no such training; whether others had that advantage I do not know.—I am, etc.,

Manchester, Nov. 1.

J. STAVELEY DICK.

SIR,—Regarding the controversy at Dudley, however much individual opinions may differ it is the duty and privilege of the B.M.A. to support its members against local bodies when that action is contrary to the law of the land, as in this case. The same position sometimes arose in the early days of national

health insurance when local Insurance Committees tried to override central regulations. The B.M.A. is to be congratulated on the courageous action it has taken.—I am, etc.,

Bath, Oct. 30.

CHARLES A. MARSH.

SIR,—We wish to say how entirely we approve of the line the B.M.A. have taken in the matter of the Dudley M.O.H. and of the example that they have set to the country in its general vindictive attitude towards conscientious objectors. We know they will be inundated with criticisms from the belligerent patriots, so we wish to show appreciative encouragement from some of the more broad-minded.—We are, etc.,

MADELINE MALCOLMSON.

E. W. MALCOLMSON.

Hereford, Oct. 25.

SIR,—May I congratulate the B.M.A. in their criticism of the action of the Dudley Borough Council in dismissing its medical officer of health for his conscientious objection? I am sure no one would be foolish enough to construe their action as that of an Association whose members' views all agree with those of the doctor concerned. All the more credit is due in that they can recognize and support the liberty of conscience of their members.—I am, etc.,

Anglesey, Oct. 31.

F. CHARLOTTE NASH.

"Present Discontents"

SIR,—In the days of our innocence when we guilelessly pondered on the status of the "Beloved Physician" our opiate was duly administered by tutors out of touch with workaday medicine. In moments of semi-wakefulness we may have noted that though sophisticated hypocrites referred to members of the nursing services as "ministering angels," these same "angels" were being mercilessly worked to death. When we each in turn took our spade to make a job well done we looked in vain for "the honour and the glory." Our first "locums" oft revealed genteel poverty and sometimes worse.

We have our politicians, our scilicet celebrities, and most unfortunately a superabundance of "Peter Pans" who are still babbling in schoolboy and tutorial fashion; delivering up our professional brethren, to be imposed upon at every turn; and acquiescing in the steady destruction of our status. It is evident that there is "something rotten in the state of Denmark." In this our Parliament we are still treated as schoolboys; not to be trusted with the bigger things of life, but to be presented with plans already cut and dried, and without adequate opportunity for discussion or expression of opinions; regimented by autocratic officials who assume the role of self-appointed arbiters within the professional fold.

What is the remedy for our present discontents? Is it possible to infuse habits of mind and action, more in keeping with democratic ideals, into the workings of our Association? Can we remove the entrenched "diehards" and the "Peter Pans" without destroying the worthwhile edifice, and in time to save us from degradation into slavery?

In its present public form our *Journal* cannot be regarded as providing a free and natural forum for the exchange of views between professional colleagues. The *Supplement* should be published as a separate "News Letter" entirely apart from the *Journal* and for private circulation to the medical profession only. It should serve for free exchange of news, views, and ideas, with freedom to criticize adversely; and no censorship, official or otherwise. This is a real necessity in these difficult days, with restricted travel and small opportunity for personal contacts. We must be told the facts, freely, fully, and without restraint; left to decide on our own paths as free men; not presented at each turn with a *fait accompli* emanating from a secret conclave. Reforms are long overdue, and must come now! It will not suffice to say "the times are out of joint."—I am, etc.,

Birmingham and Midland Eye Hospital, Oct. 28. M. TREE, F.R.C.S.

District Medical Officers' Duties

SIR,—Has the B.M.A. noted the feeling of district medical officers caused by the very large numbers of holders of supplementary pensions being placed in the position of having free medical attendance, many in the past having paid their doctors

all fees, and a number were paying quarterly contributions local medical services? How is it that these extra duties, about any extra salary and indeed with loss of private fees of public medical service, have been put on to the district medical officers all over the country? These extra duties are only now being realized by the district medical officers as pension officers go round telling the pensioners that they are entitled to free medical attendance and how to obtain it. Under paragraph 7 of Circular 2105 Ministry of Health strict nurses are recommended for extra payment. Why not district medical officers?—I am, etc.,

SIDNEY MATTHEWS.

22nd OCT. 23.

B.M.A.: Diary of Central Meetings

DECEMBER

Wed. Council, 10 a.m.

B.M.A.: Branch and Division Meetings to be Held

ABERDEEN BRANCH: CITY OF ABERDEEN DIVISION.—At Royal Infirmary, Foresterhill, Aberdeen, Thursday, November 20, 8.30 p.m. M.A. Lecture, Dr. A. F. Wilkie Millar: Medical Planning—Present Provisions, the Problem, General Principles. Members of Aberdeen and Kincardine Counties Division and non-members of the Association are invited to attend.

BATH, BRISTOL, AND SOMERSET BRANCH: BRISTOL DIVISION.—At Bristol University, Thursday, November 20, 3 p.m. Prof. J. A. Lloyd: "The Treatment of Gas Casualties." 5.30 p.m. meeting: "The Galenicists." Drs. I. G. Davies and K. E. Cooper: "Tracking Down an Epidemic." All medical practitioners will be welcome at both meetings.

NORTH OF ENGLAND BRANCH.—At Royal Victoria Infirmary, Newcastle-upon-Tyne, Thursday, November 20, 2.30 p.m. Address to be arranged later. 3.45 p.m., clinical demonstration of oral pathology at Newcastle-upon-Tyne Dental Hospital by Prof. R. V. Bradlow.

NORTHERN IRELAND BRANCH.—At Whitla Medical Institute, Thursday, November 20, 12 noon. Presidential address by Dr. F. P. Montgomery: "The Future of the Hospitals."

B.M.A. LIBRARY

The following books were added to the Library during August and September:

- Amor, A. J.: *An X-ray Atlas of Silicosis*. With translations into French by R. E. Horne. 1941.
- Barford, F.: *Poisons, their Isolation and Identification*. 1940.
- Bassett, J. Y.: *The Medical Reports of John Y. Bassett, the Alabama Student*. 1941.
- Black, K.: *Haemorrhoids and the Treatment*. 1940.
- Bowley, J.: *Personality and Mental Illness: An Essay in Psychiatric Diagnosis*. 1940.
- Brinkus, P. J.: *Your Teeth: Their Past, Present, and Probable Future*. 1941.
- Burgess, P.: *Who Walk Alone: The Life of a Leper*. 1941.
- Cornock, G. C. (editor): *Hospitals under Fire: But the Lamp Still Burns*. 1941.
- Darling, H. C. Rutherford: *Surgical Nursing and After-treatment*. Seventh edition. 1941.
- Edly, W. H., and Daldorf, G.: *The Avitaminoses: The Chemical, Clinical, and Pathological Aspects of the Vitamin Deficiency Diseases*. Second edition. 1941.
- Finlay, C. E.: *Carlos Finlay and Yellow Fever*. Edited by M. C. Kahn. 1940.
- Franchiger, E., and Hofmann, W.: *Die Nervenkrankheiten des Kindes*. 1941.
- Heater, E. E.: *Textbook of Histology for Medical Students*. Second edition. 1941.
- Holmes, W. H.: *Bacillary and Rickettsial Infections, Acute and Chronic*. 1940.
- Hurst, A. F.: *Medical Diseases of War*. With the co-operation of H. W. Barber, H. B. F. Dixon, et al. Second edition. 1941.
- Kovacs, R.: *Physical Therapy for Nurses*. Second edition. 1940.
- Kruse, F. H.: *Physical Medicine: The Employment of Physical Agents for Diagnosis and Therapy*. 1941.
- Laubert, D. P.: *The Medico-Legal Post-Mortem in India*. Second edition. 1941.
- Leaman, W. G.: *Management of the Cardiac Patient*. 1940.
- Lewis, C. S.: *The Problem of Pain*. 1940.
- MacLennan's *Physiology in Modern Medicine*. Ninth edition. Edited by P. Bard et al. 1941.
- Norbury, L. E. C.: *Carcinoma of the Rectum*. 1941. (Hunterian Lecture.)
- Reiser, M.: *Manual of Clinical Chemistry*. 1941.
- Sandison, A., et al.: *Escape into Activities. Flight into Normality, etc.* 1940.
- Sierst, H. E.: *Medicine and Human Welfare*. 1941.
- Starling's *Principles of Human Physiology*. Eighth edition, edited and revised by C. Lovatt Evans. 1941.
- Taylor, F. S.: *The Conquest of Bacteria: From 606 to 693*. Second edition. 1940.

- Trotter, W.: *Collected Papers of Wilfred Trotter, F.R.S.* 1941.
- Walshe, F. M. R.: *Diseases of the Nervous System*. Second edition. 1941.
- Warwick and Tunstall's *First Aid to the Injured and Sick*. Edited by N. Hammer. 1941.
- Wilson, Sir A., and Mackay, G. S.: *Old Age Pensions*. 1941.
- Zechmeister, L., and Chlofnok, L.: *Principles and Practice of Chromatography*. 1941.
- Zoethout, W. D., and Tuttle, W. W.: *Textbook of Physiology*. Seventh edition. 1940.

B.M.A.: Meetings of Branches and Divisions

CEYLON BRANCH

The Ceylon Branch celebrated its fifty-fourth anniversary, by holding sectional meetings on July 22, 23, 24, and 25. The president, Dr. G. COOKE, occupied the chair at the opening proceedings on July 22 and addressed the meeting. The Section of Medicine then met under the chairmanship of Dr. P. C. C. DE SILVA. Dr. E. M. WILKINSON read a paper on "Pneumonia" and gave statistics of cases in all the Ceylon hospitals before and after treatment with sulphapyridine. Drs. J. R. BLAZE, V. GABRIEL, G. A. W. WICKREMESINGHE, V. E. P. SENEWIRATNE, P. R. THIAGARAJAH, G. COOKE, G. S. SINATAMBY, S. R. GUNWARDENE, S. L. NAVARATNAM, MAY RATNAYAKE, and P. C. C. DE SILVA took part in the subsequent discussion. On July 23 the Section of Obstetrics met, with Dr. MAY RATNAYAKE in the chair. Dr. RICHARD CALDERA read a paper on "The Occipito-posterior Position" and Dr. G. A. W. WICKREMESINGHE, P. DE S. WILSEKERE, S. L. NAVARATNAM, P. R. THIAGARAJAH, G. COOKE, and the CHAIRMAN took part in the discussion which followed. The Section of Surgery met on July 4, Dr. J. H. F. JAYASURIYA presiding, when papers were read by Dr. G. S. SINATAMBY on "Modern Methods in the Diagnosis and Treatment of Syphilis"; by Dr. MAY RATNAYAKE on "Venereal Diseases in Women"; and by Dr. D. P. BILIMORIA on "The Ophthalmic Aspect of Venereal Diseases." Drs. A. S. RAJASINGHAM, P. B. FERNANDO, W. G. WICKREMESINGHE, and P. C. C. DE SILVA contributed to the general discussion. On July 25 the Section of Public Health met under the chairmanship of Dr. W. G. WICKREMESINGHE. Papers on "Venereal Diseases" were read by Dr. M. J. A. SANDARANGERA (the public health aspect) and Dr. P. B. FERNANDO (the physician's point of view). Dr. C. J. L. MISSE gave a summary of the routine treatment given at the out-patient department of the Colombo General Hospital. Drs. C. D. AMERESINGHE, G. COOKE, S. L. NAVARATNAM, G. A. W. WICKREMESINGHE, D. DE SILVA, and W. M. DE SILVA took part in the subsequent discussion.

DORSET AND WEST HANTS BRANCH: BOURNEMOUTH DIVISION

At a special meeting of the Bournemouth Division, held at the Royal Victoria and West Hants Hospital, Boscombe, on October 1, with Dr. C. A. BASKER in the chair, Dr. D. M. BIGBY (Southampton) gave an address on "The Clinical Aspect of Air-raid Casualty Work."

Dr. Bigby, confining his remarks to air-raid casualty work up to the time of the patient's admission to hospital, first described the organization in his area. He referred to work at the site of the incident, at the clearing zone, and at the evacuation zone, and then dealt with the co-ordination of various services, including the duties of wardens, police, rescue parties, and first-aid parties. He stressed the importance of rescue parties, inasmuch as 30 to 40% of the casualties were trapped, and he described how one man had been buried for fifty-three hours and yet had been rescued alive. The mobile first-aid posts, he said, had been amply justified. The maximum number of casualties passing through any one fixed post in any one raid had been seventy-six, and they had plenty of emergency casualty beds in the town. In his opinion, in spite of some little delay in treatment, all casualties should go to first-aid posts before being admitted to hospital; the condition of patients was much better where they had been transported in an ambulance rather than in lorries or any other type of vehicle. Dr. Bigby then circulated an analysis, of about 1,000 casualties treated at first-aid posts, describing the various types and the site of the injuries.

After the address questions were asked by members, and a hearty vote of thanks was accorded to Dr. Bigby for the interesting and valuable talk he had given.

KENYA BRANCH: MOMBASA DIVISION

At a meeting of the Mombasa Division, held at Mombasa on July 9, with Dr. J. M. LISTON in the chair, Dr. G. V. JUYEKAR showed a case of diabetes in a child of 6, and Dr. A. U. SHETII the following cases: (a) an unknown congenital disease of the bones; (b) hemiplegia in a child of 10; (c) chronic diarrhoea in a child of 2; and (d) silent coronary thrombosis in a man of 62.

NORTH OF ENGLAND BRANCH

At a meeting of the North of England Branch, held at Newcastle-upon-Tyne on October 16, with Prof. R. J. WILLAN in the chair, Mr. E. ROCK CARLING gave an address on "The Care of Air-raid Casualties." He outlined the scheme for the care of air-raid casualties from the time they were reported by the warden until they arrived at the stage of convalescence. He spoke from personal experience of the creditable way in which the rescue squads, first-aid parties, ambulance personnel, and reception hospital staffs carried out their duties, and he stressed the importance of the first-aid posts in relieving the casualty reception hospital of the care of trivial injuries, when all precautions were taken to avoid overlooking deeper underlying damage. At the reception hospital an amply large reception room, a well-equipped resuscitation ward, and adequate protected theatre accommodation were essential. Additional centres for specialized branches of surgery should be provided in accordance with the local needs and the staff available, and the policy of dispersal should be followed when practicable if the reception hospital was near to the danger area. In conclusion he paid tribute to the work of medical officers of health in the local organizations, and referred to the extensive investigations being done by the Medical Research Council with a view to improving the technique for the treatment of casualties. A vote of thanks to Mr. Rock Carling for his address, proposed by the president, Dr. F. W. GRANT, was enthusiastically supported by the meeting. After the address some demonstrations of orthopaedic cases were given by Mr. GORDON IRWIN and members of his clinic.

At a further meeting of the Branch, held at Newcastle-upon-Tyne on October 23, with Colonel W. WALKER, R.A.M.C., in the chair, Dr. T. A. MUNRO gave an address on "Mental Defect and its Military Significance." Dr. Munro said that men of low intellect, instead of being incorporated in the Army, should be given a suitable occupation by the Ministry of Labour, acting on the advice of a psychiatrist, because the feeble-minded not only made inefficient units in any combatant team but also hindered the working of others. After entry into the Army dullards should be grouped with men of like intelligence for work suited to their mental standard, usually of a non-combatant nature. A vote of thanks to Dr. Munro for his address was proposed by Dr. M. W. STEWART-SMITH and carried with acclamation. A number of ophthalmic cases were later demonstrated by Mr. J. S. ARKLE and Mr. A. MACRAE with their clinics.

Medical Forces of H.M. Services Appointments

ROYAL NAVY

ROYAL NAVAL VOLUNTEER RESERVE

Probationary Temporary Surgeon Lieuts. T. Pearce and E. R. Roseveare to be Temporary Surgeon Lieutenants.

ARMY

Major-General F. Casement, D.S.O., K.H.S., late R.A.M.C., has retired on retired pay, and remains employed.

Colonel (Acting Major-General) G. Wilson, O.B.E., M.C., late R.A.M.C., to be Major-General.

Colonel A. G. Biggam, O.B.E., K.H.P., late R.A.M.C., to be Major-General (supernumerary).

Lieut.-Colonel (Temporary Colonel) H. B. F. Dixon, M.C., from R.A.M.C., to be Colonel.

ROYAL ARMY MEDICAL CORPS

Major (Temporary Lieut.-Colonel) D. Fettes, O.B.E., to be Lieutenant-Colonel.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Major J. Charnley has relinquished his commission on account of ill-health, and retains the rank of Major. (Substituted for the notification in a *Supplement* to the *London Gazette* dated April 16, 1940.)

Supernumerary for Service with Edinburgh University (Senior Division) Training Corps (Medical Unit).—J. G. Selater to be Lieutenant.

Supernumerary for Service with Glasgow University (Senior Division) Training Corps (Medical Unit).—To be Lieutenants: J. W. Chambers and A. C. Lendrum.

Supernumerary for Service with Liverpool University (Senior Division) Training Corps (Medical Unit).—W. J. Dilling to be Lieutenant.

ROYAL AIR FORCE

ROYAL AIR FORCE VOLUNTEER RESERVE

Flying Officers J. F. Cooper, J. R. O'Dowd, A. M. Horsnell, R. E. W. Oliver, C. N. Faith, C. J. Griffin, R. H. Carpenter, and F. S. Kelleher to be Flight Lieutenants (War Substantive).

INDIAN MEDICAL SERVICE

Lieut.-Colonel H. E. Shortt, C.I.E., to be Colonel.
Lieut.-Colonels H. Chand, M.C., N. J. Gai, and C. N. Ganapathy, M.C., have retired.

Captain D. K. L. Lindsay to be Major.

EMERGENCY COMMISSION

W. N. O. George to be Lieutenant.

COLONIAL MEDICAL SERVICE

The following appointments are announced: J. W. P. Harkness, M.B., Ch.B., D.P.H., Director of Medical Services, Nigeria; J. B. Kirk, M.B., Ch.B., D.P.H., Director of Medical Services, Gold Coast.

POSTGRADUATE NEWS

The Fellowship of Medicine announces that an M.R.C.P. course in neurology will be given at the West End Hospital for Nervous Diseases on Tuesdays and Fridays at 3 p.m. from November 25 to December 19.

A military hospital medical society has arranged a week-end course in war medicine, to be held on Saturday and Sunday, November 29 and 30. On November 29, at 1.45 p.m., following an introductory address by the officer commanding, Colonel A. McKie Reid, there will be medical and surgical clinics, x-ray demonstrations, and a discussion on respiratory infections. On November 30, at 9.30 a.m., there will be skin demonstrations, and eye injuries and anaerobic infections will be discussed. At 2.15 p.m. the programme includes resuscitation, oxygen therapy, an otological demonstration, and recent advances in anaesthetics. The visiting lecturers will be Mr. B. W. Williams and Dr. S. C. Dyke.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily*, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetric and Gynaecological Clinics and Operations. *Daily*, 1.30 p.m., Post-mortem Demonstrations. *Tues.*, 10 a.m., Paediatric Clinic, Dr. R. Lightwood; 11 a.m., Gynaecological Clinic, Mr. V. B. Green-Armstrong. *Wed.*, 11.30 a.m., Clinicopathological Conference (Medical); 2 p.m., Lecture, Bacteriology of the Coli-Typhoidal Groups, Dr. M. Barber. *Thurs.*, 2 p.m., Dermatological Clinic, Dr. R. T. Brain. *Fri.*, 12.15 p.m., Clinicopathological Conference (Surgical); 2 p.m., Clinicopathological Conference (Gynaecological); 3 p.m., Sterility Clinic, Mr. Green-Armstrong.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—*Brompton Hospital*, S.W.: Mon. and Thurs., 3 p.m., M.R.C.P. Course in Chest Diseases. *London Chest Hospital*, Victoria Park, E.: *Tues.*, 2 p.m., M.R.C.P. Course in Chest Diseases. *King Edward Memorial Hospital*, Ealing, W.: Sat. (Nov. 22), 2 p.m., M.R.C.P. Course in General Medicine.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of Pathology.—*Tues.*, 2.30 p.m. Short papers by Dr. W. W. Kay, Dr. A. M. Barratt, Dr. M. Hynes, and Dr. E. B. Hudson. Demonstration by Dr. A. B. Rosher.

Section of Dermatology.—*Thurs.*, 2 p.m. Clinical Meeting.

Section of Orthopaedics.—*Sat.*, 11.15 a.m. Meeting at Orpington Emergency Hospital. Presidential Address by Mr. C. Lambrinudi: The Role of Orthopaedics in Medical Education. Papers by Mr. K. M. McKeown, Mr. J. S. Batchelor, Mr. T. T. Stamm, and Dr. E. J. Crisp. Cases will be shown in the afternoon.

VACANCIES

EXAMINING FACTORY SURGEON.—The appointment at Larbert (Stirlingshire) is vacant. Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by November 25.

APPOINTMENTS

HALLIWELL, ERIC O., M.R.C.P., Temporary Honorary Physician, Hull Royal Infirmary.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

DEATH

MONRO.—On November 3, 1941, at 7, Berwyn Road, Richmond, Surrey, James Donald Rae Monro, M.D., formerly of Muswell Hill, after a long illness, bravely borne.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 22 1941

SOCIALIZATION OF THE MEDICAL PROFESSION IN NEW ZEALAND

[FROM OUR CORRESPONDENT IN WELLINGTON]

The Social Security Act of 1938 made provision for taxation of 1s. in the £ on all wages and salaries for the purposes of "social security." This tax covered the cost of free treatment in public hospitals, maternity services, old age, invalidity, and unemployment pensions, free medicine from pharmacists, but not until now medical service in the homes of the people or at doctors' consulting rooms. [A full account of the working of the hospital and maternity services under the Act was published in the *Supplement* of March 23, 1940.]

Recently the Social Security Amendment Bill of 1941 was introduced, when the war situation was critical and when between one-quarter and one-third of the medical profession were serving in the Army over-seas or in camps in New Zealand. This amending Bill of 1941 contained briefly the following provisions: For the purposes of the Act the expression "general medical services" meant all proper and necessary services of medical practitioners for persons entitled to any of the benefits provided, except "medical services involving the application of special skill and experience of a degree or kind that general medical practitioners as a class could not reasonably be expected to possess."

The services excluded were the administration of anaesthetics, maternity services, and such other services as might be excluded by the Minister of Health by regulations. The fees were to be 5s. (equal to 4s. sterling) for a consultation at the surgery and 6s. 6d. for a visit, these payments to be made directly out of the Social Security Fund under Government control. Payment for mileage was to be at the rate of 1s. 3d. for every mile up to twenty miles; for distances of more than twenty miles the doctor might recover mileage fees from the patient. The medical officer of health was to decide in all cases if the attendance was necessary, and he was given power to disallow the claim wholly or partly. All claims for medical fees had to be sent to the M.O.H., and had to be accompanied by a certificate from the patient or some responsible person that the service had been performed. The amount paid out of the Social Security Fund as specified above had to be accepted by the doctor in full satisfaction of all claims. Under the Bill the Minister of Health was to decide which practitioners were to be classed as "specialists." Finally, except with the consent of the Minister no doctor could sue for fees. If the patient did not give the necessary certificate the Minister, if he thought fit, might authorize the doctor to sue for fees, but only at the rate of 5s., 6s. 6d., and for mileage. If any person, including the doctor, made a misleading statement he was liable to a fine of £100 or to imprisonment for twelve months.

Before this Bill was tabled a voluntary capitation scheme was introduced offering a capitation fee of 15s., but very few doctors accepted it; one of the few is reported to have put 6,000 patients on his list.

Successful Opposition

It is obvious that this Bill sought to abolish private practice and put the whole profession, except "specialists" in the meantime, under the control of the Minister of Health and his officers. The doctors would be on duty for twenty-four hours a day without holidays, and the most capable and experienced would receive the same payment as juniors and with never a hope of bettering their position. The B.M.A. protested against this coercive Bill, and public indignation meetings were held. The politicians throughout the controversy affected to believe that their scheme was akin to the British panel system. The New Zealand Branch of the B.M.A. put forward a scheme

much more liberal than the British one, with a high wage limit, and covering specialist services and preventive medicine.

Confronted by determined opposition the New Zealand Government changed front and brought forward new amendments which got rid of the most objectionable provisions of the Bill, but not quite all. These new amendments were passed by Parliament and are now law. They give doctors freedom to practise in the old way, but the fees are 7s. 6d. for a consultation at the surgery, 7s. 6d. for a visit, and 12s. 6d. for a visit at night or on Sundays. The doctor charges the patient on the basis of these fees, and the patient gets a receipt and recovers the amount paid from the Social Security Department or from a post office. There is nothing to prevent the doctor from charging more than these fees from patients who are able and willing to pay.

The two remaining objections to the modified Act are: (1) The fixing of doctors' fees by Parliament; to fix fees by Act of Parliament is unprecedented, and contrary to all trade union principles. The doctors have asked for a tribunal, which has not been granted. (2) One section of the community—namely, the medical profession—is debarred from access to the courts in respect of claims against patients for payments higher than those mentioned in the Act. This is also unprecedented and probably unconstitutional; at any rate, it will be generally conceded that it outrages the principles of British justice and strikes a blow at freedom.

The profession will probably not oppose the scheme and will find no fault with patients under allegedly "free" medical service obtaining a refund of 7s. 6d. a consultation from the Social Security Fund created from a 1s. in the £ tax. Under the amended law doctors of the Dominion will have no direct contact with the State, but they bitterly resent their fees being fixed by Parliament. Most of all they resent being denied access to the courts, especially when patients may still bring actions against doctors for alleged negligence. Therefore the medical profession cannot cordially co-operate.

Commenting on the Protection of Practices Scheme in Scotland the Executive Committee of the Scottish Association of Insurance Committees, in its report for 1940-1, states that the information at its disposal indicates that the scheme has been successful and its wide adoption has been beneficial to both committees and the medical profession. The Executive, however, has been unable to agree to the term "absentee practitioner" being applied to doctors who are incapacitated or have died in the ordinary course of Nature. It considers that death or permanent incapacity in the case of a doctor in whole-time emergency service is adequately covered by the present arrangements. A proposal to extend the period of temporary residence of insured persons from three to six months has been agreed to by the Executive and is being considered by the Department of Health. The Executive, with other interested bodies, has made repeated representations during the year to the Department of Health on the subject of the hospital waiting lists, and a scheme is now in operation which, according to some reports, is partially relieving the situation. Briefly the scheme aims at utilizing to a limited extent the E.M.S. hospitals. Doctors will send all cases to voluntary hospitals in the usual way; the subsequent transfer of cases (with the patient's consent) and admission to an E.M.S. hospital will be for the decision of the two hospitals concerned. Doctors will also refer acute surgical cases to voluntary hospitals in the first instance, but the medical superintendent may, at his discretion, divert them to an E.M.S. hospital. The Executive comments that the arrangements are involved and cumbersome, but it is too early yet to say whether they will be effective in reducing the waiting lists.

MEDICAL WAR RELIEF FUND

TWENTY-FIFTH LIST

Previously acknowledged, £34,437 9s. 7d. and £100 3½%
Conversion Stock and £40 3% Defence Bonds

Individual Subscriptions

- £15 15s.—Drs. Moran, Cooper, and McCloy, East Loche.
£10 10s.—Lieut.-Colonel C. W. Gordon Bryan, R.A.M.C.
£5 5s.—Anonymous; Dr. R. H. P. Clark, Upper Burma; Dr. Dorothy M. Howse, Dorchester; Dr. H. A. F. Wilsen, Ringwood.
£3 3s.—Surgeon Rear-Admiral R. J. McKewen, R.N. (ret.), Portsmouth.
£3.—Lieut.-Colonel E. E. Holden, R.A.M.C., Burma.
£2 2s.—Dr. W. Russell Scott, Weymouth.
£2.—Dr. H. F. Blood, Belper (2nd donation).
£1 1s.—Dr. T. Benson Evans, Prestalyn (8th donation); Dr. L. B. Shelton, Surbiton; Major S. R. F. Whitaker, R.A.M.C.
£1.—Dr. B. W. Alexander, Gillingham, Dorset.
£265 0s. 7d.—North Pacific Society of Internal Medicine, Seattle, U.S.A.
£56 1s. 6d.—Luton and Dunstable Medical Society—per Dr. F. E. Seymour Lloyd.
£22 7s.—Ross and Cromarty Division—per Dr. J. R. Anderson; Dr. D. E. Pyle £3 3s.; Dr. C. Mackenzie £2 2s.; Dr. J. A. Murray £2 2s.; Dr. J. G. Hunter £2 2s.; Dr. J. L. Horne £2; Dr. J. Cameron £2; Dr. R. J. Lunisdun £1 1s.; Dr. D. Wallace £1 1s.; Dr. D. J. Macrae £1 1s.; Dr. H. Ross £1 1s.; Dr. W. C. Fraser £1 1s.; Dr. N. L. Auchterlonie £1 1s.; Dr. R. Maclean £1 1s.; Dr. J. R. Anderson £1 1s.; Major J. H. Horne 10s.
£22 1s.—Practitioners in area of Consett Division—per Dr. K. M. Macdonald; Dr. J. Charles £3 3s.; Dr. R. Parry £3 3s.; Dr. D. A. Dewar £3 3s.; Dr. F. M. Fyfe £1 1s.; Dr. J. Hepburn £1 1s.; Dr. C. Fenwick £1 1s.; Dr. C. J. B. Fox £1 1s.; Dr. M. D. Mackenzie £1 1s.; Dr. G. Ewen £1 1s.; Dr. J. Murray £1 1s.; Dr. K. M. Macdonald £1 1s.; Dr. S. J. B. Fox £1 1s.; Mr. G. F. Duggan £1 1s.; Dr. E. McKinney £1 1s.; Dr. T. Lyon £1 1s.
£11 6s.—Per Dr. A. D. Frazer and Mr. N. P. R. Galloway, Nottingham (amount already sent £291).
£10 10s.—Practitioners in Crewe and District—per Dr. M. Parkes (amount already sent £133 7s. 8d.); Dr. J. M. D. Brydson, Per-Dr. Mabel Ramsay, Plymouth (amount already sent £302 7s. 6d.); Mr. H. F. Vellacott (3rd donation).
£8 1s.—Practitioners in Lothians Division—per Dr. R. H. Thomson (amount already sent £6); Dr. C. Cameron £5; Dr. H. W. Howieson £1 1s.; Dr. R. H. Thomson £2 (2nd donation).
£5 5s.—Practitioners in the Macclesfield and East Cheshire Division—per Dr. F. E. Lomas (amount already sent £48).
£4 2s.—Practitioners in area of East Suffolk Division—per Dr. H. Henry (amount already sent £119); Lieut.-Colonel H. E. Staddon £2 2s.; Dr. S. W. Hayland £2.
£3 3s.—Collected at meeting of Colchester Medical Society (amount already sent £33 9s.); Dr. M. J. Brookes £2 2s.; Dr. B. Upton-Jones £1 1s.
£2 8s.—Blyth Division Unaccompanied Children's Evacuation Fund—per Dr. Wilbur C. Lowry.
£2 2s.—Practitioners in area of East Norfolk Division—per Dr. J. A. Eddy (amount already sent £84 9s.); Dr. V. J. Duigan.
£1 1s.—Practitioners in the North Middlesex Division area—per Dr. J. R. Richmond Ritchie (amount already sent £178 12s.); Dr. L. J. de Gebert.

Total, £34,926 3s. 8d. and £100 3% Conversion Stock and
£40 3% Defence Bonds

Malaya Branch.—The following were the contributors to the donation of £321 3s. 6d. acknowledged in the Supplements of August 23 and September 20:
Dr. W. L. Blakemore \$10; Sir David Galloway \$1,000; Dr. M. Hikosake \$20;
Dr. A. Viswalingam \$25; Prof. J. K. Monro \$100; Dr. C. D. Williams \$200;
Colonel W. H. Cornelius, R.A.M.C., \$10; Dr. H. O. Hopkins \$25; Dr. Loh Seng Tak \$20; Dr. Hu Tsai Kuen \$25; Dr. D. R. McPherson \$25; Dr. J. M. Milne \$10; Dr. Mona H. Whyte \$20.25; Dr. Ethel Morris \$50; Dr. S. C. Howard \$200; Dr. E. S. Lawrie \$100; Dr. E. Goldberg \$25; Dr. V. T. Patwardhan \$5; Dr. J. M. A. Lawson \$50; Dr. R. M. B. Lewis \$50; Dr. Margaret Gibson-Hill \$50; Dr. J. E. McMahon \$20.25; Dr. O. E. Fisher \$20; Dr. Ho Sul Khan \$25; Dr. A. S. McKern \$100; Dr. Tong Lai Yee \$15; Dr. L. Sammy \$10; Dr. W. S. Leicester \$10; Dr. Kwong Kim Cheong \$10; Dr. A. E. Bedell \$25; Dr. Lim Yew Poh \$10; Dr. L. MacKintosh \$25.25; Dr. E. D. Wolfe \$20.25; Dr. J. V. Landor \$25; Prof. E. K. Traiman \$10; Dr. J. M. Dugdale \$50; Dr. Chae Set Chew \$50; Dr. J. F. Mitchell \$25; Dr. C. Nadarajah \$5; Dr. F. E. F. Routley \$5; Dr. M. A. Gabriel \$10; Dr. H. R. Dive \$25; Mr. S. J. Campbell \$26; Dr. E. M. Rex \$50.31; the Hon. R. B. MacGregor \$25; Dr. B. Cross \$20.

Correction.—The amount credited to Dr. Russell Brain in the twenty-fourth list under "Practitioners in the area of the Marylebone Division" was incorrectly stated as £2 2s. The amount should have been stated as £5 5s.

Medical Forces of H.M. Services Appointments

ROYAL NAVY

Surgeon Captain E. C. Holton, O.B.E., has been placed on the retired list.

ROYAL NAVAL VOLUNTEER RESERVE

Surgeon Lieut. T. D. G. Wilson to be Surgeon Lieutenant-Commander.

Probationary Temporary Surgeon Lieuts. W. W. Hutton, R. St. C. Mooney, E. Kavanagh, A. W. Hagger, J. G. Reynolds, A. J. Innes, A. M. Desmond, G. C. Blackham, G. S. C. Sowry, H. H. Kirk, and A. P. Bates to be Temporary Surgeon Lieutenants.

ARMY

Colonel K. Comyn, late R.A.M.C., has retired on retired pay and remains employed.

Lieut.-Colonel (Acting Brigadier) W. G. Hartgill, O.B.E., M.C., from R.A.M.C., to be Colonel.

Major A. C. H. Gray, O.B.E., late R.A.M.C., has reverted to retired pay and resumes the rank of Colonel on ceasing to be re-employed.

ROYAL ARMY MEDICAL CORPS

Major (Temporary Lieut.-Colonel) T. Menzies to be Lieutenant-Colonel.

Lieut. J. P. Crawford to be Captain.

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Captain K. L. O'Sullivan to be Brevet Major, under the provisions of Article 163, Royal Warrant for Pay and Promotion, 1940.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—Daily, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetric and Gynaecological Clinics and Operations. Daily, 1.30 p.m., Post-mortem Demonstrations. Mon., 2.30 p.m., Course on Operative Surgery in Wartime commences. Tues., 10 a.m., Paediatric Clinic, Dr. R. Lightwood; 11 a.m., Gynaecological Clinic, Mr. V. B. Green-Armytage. Wed., 11.30 a.m., Clinico-pathological Conference (Medical); 2 p.m., Lecture, Diagnosis of Typhoidal Disease, Dr. M. Barber. Thurs., 2 p.m., Dermatological Clinic, Dr. R. T. Brain. Fri., 12.15 p.m., Clinico-pathological Conference (Surgical); 2 p.m., Clinico-pathological Conference (Gynaecological); 3 p.m., Sterility Clinic, Mr. Green-Armytage.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—Brompton Hospital, S.W.: Tues. and Thurs., 3 p.m., M.R.C.P. Course in Chest Diseases. London Chest Hospital, Victoria Park, E.: Thurs., 2 p.m., M.R.C.P. Course in Chest Diseases. King Edward Memorial Hospital, Ealing, W.: Sat., Nov. 29, 2 p.m., M.R.C.P. Course in General Medicine. West End Hospital for Nervous Diseases: Tues. and Fri., 3 p.m., M.R.C.P. Course in Neurology.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of Odontology.—Mon., 2 p.m. Paper by Surgeon Lieut.-Commander (D) J. Bunyan: Treatment of Mouth Infections, with Particular Reference to the Use of Electrolytic Sodium Hypochlorite.

Section of Urology.—Thurs., 2.30 p.m. Discussion: Rupture of the Urethra and its Treatment. Openers, Mr. Clifford Morson, Mr. Charles Wells, and Mr. Hugh C. Barry.

Section of Disease in Children.—Fri., 2.30 p.m. Discussion: Effects of Wartime Rationing on Child Health. Openers, Dr. E. M. Widdowson, Dr. D. C. Wilson, and Dr. W. W. Payne.

Section of Epidemiology and State Medicine.—Fri., 3 p.m. Paper by Dr. Melville Mackenzie: Some Practical Considerations in the Control of Louse-borne Typhus Fever in Great Britain, in the Light of Experience in Russia, Poland, Rumania, and China. Dr. G. W. M. Findlay, Prof. P. A. Buxton, and others will take part in the subsequent discussion.

BIOCHEMICAL SOCIETY.—At Courtauld Institute of Biochemistry, Middlesex Hospital, W., Sat., 11 a.m. Discussion: The Mode of Action of Chemotherapeutic Agents. To be opened by Dr. G. M. Findlay.

CHADWICK TRUST.—At Westminster Hospital Medical School, 17, Horseferry Road, S.W., Thurs., 2.30 p.m. Dr. S. Ernest Dore: Advances in Dermatology during the Past Forty Years.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.—Mon., 3.30 p.m. Discussion on three short papers: Heart Attacks, by Dr. John Parkinson; Congenital Shortening of the Oesophagus, by Mr. V. E. Negus; and Regional Ileitis, by Mr. Guy Blackburn.

VACANCIES

EXAMINING FACTORY SURGEON.—The appointment at St. Blazey (Cornwall) is vacant. Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by December 2.

B.M.A.: Branch and Division Meetings to be Held

STIRLING BRANCH.—At County Offices, Viewforth, Stirling, Sunday, November 23, 2.45 p.m. Dr. Charles Melville: General discussion on the post-war organization of the medical services of the county.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTHS

PARRY.—On October 25, at Penylan Nursing Home, Cardiff, to Margaret (née Edwards), M.R.C.S., L.R.C.P., wife of F/O Keith Parry, R.A.F.V.R. (Med.), a daughter.

WEDDELL.—On November 8, at Hagley, Worcs, to Margaret Weddell, M.B., Ch.B., wife of Ralph Weddell, a son.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 29 1941

INCOME LIMITS IN NATIONAL EYE SERVICE

RECOMMENDATIONS OF OPHTHALMIC GROUP COMMITTEE OF B.M.A.

A meeting of the Ophthalmic Group Committee of the British Medical Association was held on November 14 to consider the position in relation to the National Eye Service of the Government's proposal to extend the income limit for non-manual workers under the National Health Insurance Act from £250 to £420 per annum. Mr. N. Bishop Harman presided, and there was a full and representative attendance, fifteen members out of the total of seventeen being present. Dr. Alfred Cox attended as acting secretary of the N.O.T.B.

At its previous meeting in June the Committee decided, in view of the dissatisfaction of many ophthalmic medical practitioners at the inadequacy of the present fee, the increase in practice expenses, and the prospective inclusion of a new group of insured persons with higher incomes, to circularize practitioners on the National Eye Service list asking whether they were in favour of raising the fee in the case of incomes up to £420, with certain consequent questions. The results of the questionnaire, which revealed a very large majority in favour of raising the fee, were carefully considered by the Committee, but the question was now discussed *de novo* in view of the resolution passed by the Special Conference of Representatives of Home Divisions on September 11, that the inclusion of non-insured persons and dependants with incomes between £250 and £420 for treatment under the National Eye Service would create an unwarranted restriction on private practice and be an unfavourable precedent in future extension of specialist services.

In preliminary general discussion one member stated that during the last two years he had done a very large amount of half-guinea work, having assumed responsibility for the list of an absent practitioner, as well as taking many Service cases, and in the end he found that the amount received barely covered expenses. He moved (but subsequently withdrew his motion) that the fee be raised, irrespective of income limit, to one guinea. Another member could not agree to the universal application of the guinea fee. There were people to whom it would be a great hardship; on the other hand, there were people with incomes above £250 who could well afford more than half a guinea, and the inclusion of such people on the lists would take away a fair amount of private practice. It seemed to this member that there was something to be said for a sliding scale of fees, depending on income. He urged that until the armistice the present income limit be maintained—that is, £250—and that no change of policy be agreed to until all oculists, including men on Service, had been consulted.

The chairman said that he had endeavoured to ascertain from those who could speak for Approved Societies whether a distinction could be made, so far as ophthalmic benefit was concerned, between the existing group of insured members and the

new group, and he gathered that although such a distinction would be greatly disliked it would be possible to make it. He then put forward for discussion not a resolution but what he called a target, some parts of which were shot away as the discussion proceeded. He reminded the Committee that any recommendations they made must go before the Council of the Association at its meeting on December 10.

One proposal, which found little favour, was that the fee for insured persons below £250 should be 10s. 6d., but for non-insured 15s. 6d., the reason for the differentiation being that the latter did not have to pay certain insurance dues, and that for all above £250 the fee should be one guinea. It was also pointed out that there were a large number of people with unearned incomes up to £250, which meant that they had capital at the back of them: also that there were people whose incomes were nominally below that limit, but actually far in excess of it owing to allowances such as free rent, board and lodging, etc.

Eventually it was agreed to recommend the Council that until further notice the following conditions shall apply in connexion with the National Eye Service:

1. Insured persons whose incomes do not exceed £250 per annum and their dependants will be accepted for treatment at a fee of 10s. 6d. each.
2. Non-insured persons other than dependants mentioned in (1) above whose incomes do not exceed £250 per annum may be considered as applicants for treatment at a fee of 10s. 6d. each.
3. For all other insured persons (including all manual workers and voluntary contributors with an income exceeding £250) the fee for an ophthalmic medical examination shall be £1 1s. each person.
4. The fee for all persons who do not fall within the above categories shall be at the discretion of the ophthalmic medical practitioner.

The passage of these recommendations one by one through the Committee was practically unanimous, though one or two members demurred here and there, but when the recommendations were put as a whole they secured the approval of every member present. It was agreed that they be sent to all medical practitioners on the National Medical Eye Service list, and that an endeavour be made to elicit their replies before the meeting of the Council. The Committee also decided that its decisions, if approved by the Council and by practitioners on the National Eye Service list, should be conveyed to the Ministry of Health and to Approved Societies.

Conference with Association of British Ophthalmologists

A report was laid before the Committee of a recent conference between representatives of the Committee and of the Association of British Ophthalmologists regarding possible improvements of the present administration of the National Eye Service and associated matters affecting ophthalmologists in general.

The Committee agreed that two members of the Association of British Ophthalmologists be invited to attend its meetings as observers (several members of the Group Committee are also members of that Association). Certain matters brought forward at the conference were referred to the N.O.T.B., being questions of detailed arrangements for referring patients and for convenience in dealing with prescriptions. One member stated that sight-testing opticians appeared to be able to obtain their material more quickly than dispensing opticians, but experience in different parts of the country was shown to vary in this respect.

On the wider matter of possible impending changes in the conditions of medical practice, a member proposed that the Committee should proceed to formulate a scheme for the ophthalmic examination and treatment of the community. It was pointed out, however, that one of the committees of the Medical Planning Commission was concerned with special practice, and should it appear to them that ophthalmic problems called for special consideration apart from those affecting other specialist sections of the profession, the matter would doubtless be referred to the Group Committee. The member professed himself satisfied and withdrew his proposal.

The final matter dealt with by the Committee concerned the employment of sight-testing opticians by certain industrial organizations. On this it was pointed out from the chair that whatever might be the position in certain individual factories, the propaganda work of the N.O.T.B. had undoubtedly taught those in control of factories that all their examinations should be carried out by medical men. Attention was drawn to the report, just issued, of the Industrial Health Committee of the Association, and the propositions there put forward, which, the chairman said, if carried through would ensure that eye work in the factories in the future would be carried out on proper lines.

Reorganization of hospital services and a State Medical Service were the subjects discussed at the health session of a recent conference at Bath on the reconstruction of post-war Britain. Mr. R. S. Trueman, in an opening address, said that one of the difficulties of our present hospital system was the inadequate provision for the middle classes. The rich and poor were catered for, but treatment for the middle classes depended on how much could be spared from the family budget. He advocated a Royal Commission of five members, all under 40 years of age, to consider the problem. What was needed, he said, was a national hospital system on a regional basis, each region run by a hospital officer. Staff appointments should be made by a board of university professors of medicine; hospitals should be enlarged and opened to all classes, each patient paying what he could afford; and all nursing homes should be closed. Mr. Trueman considered that voluntary hospitals "were finished and should become State-controlled," but earlier in his address he had entered a caveat that "the Civil Service should be prevented from playing ball with proposals put to them." Mr. C. E. Kindersley considered that planning should be on what we have at present; we should not try to sweep away the voluntary hospitals, which were some of the biggest institutions in the country. Hospitalization had to be paid for by taxation and by voluntary effort, and in his view it should be by "a little of both." The medical profession should get on with its job—the investigation and treatment of disease, and, if possible, its prevention. There was no greater damper to enthusiasm than bureaucratic control. Miss Maud Forrester-Brown contended that industry should carry the cost of the health of its population, while Dr. Elizabeth Casson appealed for an organized mental health scheme. Summing up the debate, Dr. Barnes Burt deplored the suggestion that doctors should become civil servants. In a State Medical Service on the lines of the Civil Service, promotion, he said, would be by seniority. Moreover, a board sitting in London could know nothing of local medical men and conditions. In his view a State service run entirely by Whitehall would be a failure.

Correspondence

Capitation Fee

SIR,—I read Dr. Douglas's letter in the *Supplement* (November 1, p. 87) and found it most interesting. I fail to see how the B.M.A. can reconcile its advice to practitioners to increase their private fees by 20% with the action of the committee in accepting a paltry 9d. a head increase in the capitation fee, more especially since the latter was far too low before the war.

Since the war began wages of all workers have been increased or bonuses given to meet increased costs of living, yet the B.M.A. appears to refuse to make a firm stand to obtain even adequate remuneration for its members, who have, in addition to the ordinary increased costs of living, also the increased costs of running practices and of additional unpaid work. As an example of the latter I will mention only two instances: attendance on the wives and families of men in the Forces, who out of their Army allowance cannot afford to pay ordinary fees, let alone with a 20% addition; and, secondly, the increased number of certificates we are bound to give, in the majority of cases free of charge. If the Government want people to get certificates for milk, clothing, war injuries, etc., free of charge they should be prepared to pay practitioners a fee for these certificates. And while we are on the subject of certificates, may I point out how some local authorities deliberately give us extra and absolutely unnecessary work. As illustration I will cite only one recent case. I gave a certificate to an expectant mother to obtain coupons for the baby's clothing; this was returned to her with an official form to be again signed by me, and yet all the information required on the official form had been given in my certificate! If local authorities have time and paper to waste in this manner it should be explained to them that medical practitioners have not.

As the vast majority of practitioners are very dissatisfied with the proposed increase in the capitation fee and with the inclusion of those with incomes up to £420 a year in national health insurance, also with the absence of a wartime bonus, why do they not unite together and send a petition to their local Panel Committee, with copies to the B.M.A. and Ministry of Health, requesting revision of the capitation fee at once and postponement of inclusion of the higher-wage earners until after the war, at the same time pointing out that the inclusion of the higher-wage group would be infringement of our contract, and that if satisfactory terms were not granted we should all terminate that contract? It is up to us to do this, and surely it is about time we did show that we are able to present as united a front as any other body of workers.—I am, etc.,

Wetherby, Nov. 5.

S. TERRY PYBUS.

SIR,—Before accepting new terms for national health insurance work attention must be paid to the financial aspect as it affects practitioners. It should not be impossible to employ well-qualified actuaries, as all insurance companies do, to investigate the amount of work likely to be incurred and the premium per insured person that would honestly remunerate the doctor for his services. There must be no guessing. It is obvious that each client accepted under N.H.I. is lost to private practice, and if there is a discrepancy the profession will suffer proportionately. Has any comparison between N.H.I. and private practice been made? Twenty-eight years' experience since 1913 should make that possible.

My panel is very small—assessment easy—and on calculating for last month I find that in the borough it works out at 10½d. per attendance, including visits, and in the country, where mileage is not allowed, the return is nil, as petrol consumption absorbs the pay; only my private practice enables, nay, compels, me to undertake this work. There cannot be two standards of work.

Recently the local Division asked us to conform to this minimum scale of charges for adults from January 1, 1941: Consultation at the surgery, with medicine, 6 oz., 3s. 6d.; visit, 3s.; visit with medicine, 6 oz., 6s. 6d.; special visit up to 10 p.m., 5s.; night visit, 10s. 6d.; and add 20% to each account

during the war. If the remuneration I am receiving from the State were fair these charges would be preposterous, which is absurd.

It would be more reasonable if the B.M.A. insisted on all members conforming to just and equitable fees, not only for the dependants but for the workers themselves, including contract practice, otherwise we may find ourselves in a worse position than the old sixpenny doctor, for the tanner of 1900 was worth as much as the bob of to-day. The old "sixpennies" did no book-keeping, and had no bad debts and no Gestapo. I rather fear that our leaders are idealists, and would have us rise to the high standard of the Greeks, but those Greeks were men of independent means when living was cheap. We live in a very different world of business facts.—I am, etc.,

Bolton, Nov. 7.

WM. HARVEY BENNETT.

State Medical Service

SIR—I have read most of the correspondence on this subject, and I have been quite unable to discover what is meant by a "State Medical Service." I doubt, indeed, whether either its advocates or its opponents are quite clear about the matter.

Before a rational discussion can take place on any subject it is first necessary to define that subject, and my object in writing is to try to extract from the sponsors of the idea an unequivocal statement on the exact extent of what they call a State Medical Service. To me the term implies that the whole medical profession with its auxiliaries—hospitals, dentists, nurses, opticians, pharmacists, etc.—should become salaried servants of the State to be used in any capacity for which the State may deem them fitted; that the individual subject should become the patient of the State and should be treated by the doctor detailed for the purpose in such manner as may be prescribed by the State; that the practice of healing, whether qualified or not, by other than State servants and the sale of appliances and substances used in the treatment of disease should be prohibited.

A "State" Medical Service can, logically, mean no less than this, but it is possible and, indeed, probable that the enthusiasts may mean a good deal less. Perhaps one of them will be tempted to tell us what modifications, if any, of the above may be in their minds.—I am, etc.,

Jarrow-on-Tyne, Nov. 17.

F. W. GRANT.

B.M.A. : Meetings of Branches and Divisions

DORSET AND WEST HANTS BRANCH: BOURNEMOUTH DIVISION

At a special meeting of the Bournemouth Division, held at Boscombe on November 5, with Dr. A. R. N. MACGILLICUDDY in the chair, Sir ROBERT ARCHIBALD, Group Co-ordinating Officer for the Casualty Services in the Bournemouth, Poole, and Christchurch Joint Area, and adviser on these services to the Group Controller, gave an address on "The Medical Organization of the Civil Defence Services for the Area."

Sir Robert first described the administrative side of Civil Defence. He then referred to invasion, and outlined the action which doctors would have to take. Practitioners going to an air-raid "incident," he said, should always report to the "incident officer," whose whereabouts should be clearly indicated. After the address several questions were put to Sir Robert, one or two practitioners stating that they were still not clear as to what part they would have to play in an invasion. Sir Robert suggested that any practitioner who wanted information on any one definite point should write to him, and if he was unable to answer it himself he would try to get a ruling.

A hearty vote of thanks was accorded to Sir Robert Archibald for his address.

GLASGOW AND WEST OF SCOTLAND BRANCH

The Glasgow and West of Scotland Branch had a very successful meeting on November 2, when Prof. C. F. W. ILLINGWORTH gave a lecture on "The Treatment of Air-raid Casualties." The attendance was about 200, and a collection which was made afterwards resulted in a substantial sum being sent to the Royal Medical Benevolent Fund.

NORTH OF ENGLAND BRANCH

At a meeting of the North of England Branch, held at Newcastle-upon-Tyne on October 30, with Mr. T. A. HINDMARSH in the chair, Mr. L. R. BROSTER read a paper on "Some Biological Aspects of

War." He likened a nation to a body composed of cells, each with a part to play, and upon the harmonious working of which the survival of the whole depended. Discord would lead to disruption. In man, he said, conduct depended on inherited instinct and environment, and in a civilized community primitive impulses such as rage and terror were normally kept under control beneath intelligent behaviour. In time of war such qualities as discipline, endurance, courage, and self-sacrifice arose, but these were to a great extent overshadowed by the primitive conflicting urges—such as anger, pugnacity, brutality, and destruction—then roused. Propaganda stimulated rage on one side and fear on the other. The herd instinct tended to bring peoples together for their mutual protection, while fear and intense nationalism both kept them apart and prevented a united stand against a common enemy. A vote of thanks to the speaker was proposed by Dr. C. N. ARMSTRONG and enthusiastically supported by an appreciative audience. After the lecture a demonstration of methods of resuscitation was given by Dr. T. H. BOON and members of his clinic.

STAFFORDSHIRE BRANCH: NORTH STAFFORDSHIRE DIVISION

There have been several successful meetings of the North Staffordshire Division, as follows: September 28, address by Prof. A. D. MACDONALD (Manchester) on "Drugs: The Present Position and the Outlook"; October 19, Dr. A. LINE (Birmingham) on "The Clinical Aspects of Air-raid Casualty Work in the Aid Post"; October 26, Prof. SEYMOUR BARLING (Birmingham) on "The Treatment of Shock in Air-raid Casualties." The sum of £17 was collected at the last two meetings for the R.M.B.F. Christmas Fund, and a further collection was made on November 2, when Dr. S. WARD (Birmingham) gave an address.

SUFFOLK BRANCH: EAST SUFFOLK DIVISION

At a meeting of the East Suffolk Division, held at Ipswich on September 26, with Dr. K. W. MACKENZIE in the chair, Prof. J. A. RYLE gave a lecture, by arrangement with the Ministry of Health, on "Gas Poisoning (Phosgene and Mustard): Clinical Recognition, Complications, Treatment, Sorting, and Evacuation." On the motion of Dr. F. R. STANSFIELD, seconded by Dr. J. W. HUNTER, Prof. Ryle was accorded a hearty vote of thanks for his address.

Medical Forces of H.M. Services Appointments

ROYAL NAVY

Surgeon Lieuts. C. J. P. Pearson, I. C. MacDonald, F. W. Baskerville, P. G. Burgess, and W. H. C. M. Hamilton to be Surgeon Lieutenant-Commanders.

ROYAL NAVAL VOLUNTEER RESERVE

T. Thornton to be Temporary Surgeon Lieutenant-Commander. Probationary Temporary Surgeon Lieuts. A. L. Phillips, J. M. Williams, and C. Remington-Hobbs to be Temporary Surgeon Lieutenants.

ARMY

Colonel R. J. Blackham, C.B., C.M.G., C.I.E., D.S.O., retired pay, late R.A.M.C., has been granted the local rank of Major-General.

ROYAL ARMY MEDICAL CORPS

Major D. Fettes, O.B.E., to be Lieutenant-Colonel. (Substituted for the notification in the *Supplement to the London Gazette* dated October 31, 1941.)

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Lieut.-Colonel A. MacG. Duff, M.C., from supernumerary for service with O.T.C., to be Lieutenant-Colonel, next below Lieut.-Colonel R. I. Poston. (Substituted for the notification in the *Supplement to the London Gazette* dated October 6, 1939.)

Lieut.-Colonel G. P. Crowden, from supernumerary for service with O.T.C., to be Lieutenant-Colonel. (Substituted for the notification in the *Supplement to the London Gazette* dated October 6, 1939.) Captain (now Temporary Major) N. J. Logie, from supernumerary for service with O.T.C., to be Captain, next below Captain W. S. Harvey. (Substituted for the notification in the *Supplement to the London Gazette* dated October 6, 1939.)

Captain (now Temporary Major) I. Gordon, from supernumerary for service with O.T.C., to be Captain. (Substituted for the notification in the *Supplement to the London Gazette* dated October 10, 1939.)

The notifications regarding the transfer of the following officers from T.A.R.O. in the *Supplements to the London Gazette* dated as follows are cancelled: September 14, 1939.—Captain R. A. M. Scott and Lieut. (War Substantive Captain) (now Temporary Major) D. L. Grieg. October 10, 1939.—Lieut. (War Substantive Captain)

(now Temporary Major) R. E. Pleasance, and Lieut. (War Substantive Captain) L. H. Crosskey. October 17, 1939.—Captain H. Miller. November 1, 1939.—Lieut. (War Substantive Captain) (now Temporary Major) E. A. Sparks. November 15, 1939.—Captain (now Temporary Major) E. A. Downes, and Lieut. (War Substantive Captain) (now Temporary Major) H. R. Vernon.

War Substantive Captain G. W. Campbell has relinquished his commission on account of ill-health, and has been granted the rank of Major.

Supernumerary for Service with Edinburgh University Contingent, Senior Training Corps (Medical Unit).—J. B. Borthwick to be Lieutenant.

Supernumerary for Service with Leeds University Contingent, Senior Training Corps (Medical Unit).—W. E. Adams to be Lieutenant.

Second Lieut. P. Turner, from Royal Artillery, Territorial Army, to be Lieutenant. (Substituted for the notification in the *Supplement to the London Gazette* dated June 20, 1941.)

TERRITORIAL ARMY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Lieut.-Colonel A. H. D. Smith, M.C., T.D., has relinquished his commission on account of ill-health, and retains his rank.

War Substantive Lieut. S. E. Kraul has resigned his commission.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

G. Riddoch to be Lieutenant, and is promoted to the rank of Acting Colonel.

War Substantive Captains A. M. Brannan, W. T. Andrews, L. M. Curtis, R. Wylie-Smith, and D. G. Price have relinquished their commissions on account of ill-health and retain their rank.

The notification regarding Lieut. R. Hunter in the *Supplement to the London Gazette* dated March 5, 1940, is cancelled.

Lieut. T. G. Wilson has relinquished his commission on account of ill-health and retains his rank.

Lieut. M. G. Valentine has relinquished his commission on account of ill-health.

To be Lieutenants: R. F. de Luz, A. I. Bowie, J. L. Douglas, J. B. Adam, P. B. Angus, R. G. Benians, J. R. Borg, J. Breckenridge, A. Brown, J. Bruce, W. D. Buchanan, G. V. Burns, A. H. Campbell, J. C. Comline, P. Cosgrave, J. Crealey, B. R. Cumbo, W. J. Curran, E. M. E. Decottignies, S. Effenbogen, C. Exell, J. L. Grant, H. G. Griffin, R. S. B. Hamilton, G. Harkness, A. E. T. Hart, J. R. Hewitt, E. Hindon, G. B. Hirst, C. E. Holden, F. L. Ingram, J. G. Jones, W. K. Laing, J. T. A. Lloyd, J. T. MacBrayne, T. B. S. McDougall, G. D. H. McQuitty, R. N. Mathur, T. Miles, R. H. B. Mole, I. W. Monie, A. J. Moss-Blundell, J. P. J. Paton, R. Percy-Lancaster, L. D. Philp, R. G. Richards, C. W. R. Roseby, R. A. Sammons, R. S. Saxton, L. J. Segal, A. G. Smith, E. R. Smith, A. L. B. Stevens, W. Stewart, T. S. Stone, M. G. Sutton, T.-L. Tan, R. W. Tibbetts, W. R. Trotter, E. G. Tuckwell, H. Walmsley, J. Wills, H. M. O. Wolff, H. D. Wyse, P. T. Yonge, C. A. Young, R. M. Young, J. A. Reid, J. H. Strahan, O. F. Warner, J. K. Slater.

Dr. G. A. Johnson, Medical Officer with the relative rank of Lieutenant, has relinquished her appointment on account of ill-health.

The following have been granted Emergency Appointments as Medical Officers with the relative rank of Lieutenant: Elizabeth M. Rees, Esme M. Grant, Margaret J. Honeywill, Kathleen Neville, and Thelma M. Ward.

ROYAL AIR FORCE

Miss B. A. Briant and Miss A. C. Clark have been promoted to the relative rank of Flight Lieutenant (War Substantive).

To be Medical Officers (Emergency) for employment with the R.A.F. with the relative rank of Flying Officer: Barbara S. Gordon, Mary E. G. Sherwell, Rhoda M. Taylor, Mollie C. Walsh, Daphne Smith, and Clarice Hughes.

RESERVE OF AIR FORCE OFFICERS

Flight Lieut. J. F. S. Wiseman has relinquished his commission on completion of service.

ROYAL AIR FORCE VOLUNTEER RESERVE

R. R. Macintosh to be Group Captain (Emergency).
To be Flight Lieutenants (Emergency): C. P. Petch and S. S. Yudin.

Flying Officers R. McP. Cross, T. E. Whitby, C. G. Bisley, J. V. O'Sullivan, C. D. Cormac, J. C. Bryce, J. S. Howitt, W. Huey, A. F. Rutherford, A. L. Basham, A. H. Pritchard, B. J. O. Winfield, W. B. Parker, L. J. Simon, R. Cargill, H. B. Forrest, A. Greenwood, D. P. Harris, R. W. J. Maclure, J. W. Magill, E. F. Mulcahy, M. M. Fraiss, R. M. Corker, and I. A. Donaldson to be Flight Lieutenants (War Substantive).

Flying Officer K. Froome has relinquished his commission on account of ill-health and retains his rank.

To be Flying Officers (Emergency): J. H. B. Cantley, D. McCaw, I. B. Millar, M. Gold, C. M. Liddell, W. N. MacLay, J. F. Martin, A. R. Nettleton, W. T. Ross, and S. T. Winter.

INDIAN MEDICAL SERVICE

Major-General (local Lieut.-General) W. H. Hamilton, C.B., C.I.E., C.B.E., D.S.O., K.H.P., has retired.

Lieut.-Colonel G. Covell, C.I.E., to be Colonel.

Major P. V. Karamchandani to be Lieutenant-Colonel.

Captains J. D. Murdoch, R. D. MacRae, A. T. Andreasen, D. G. McCaully, R. K. Muir, W. S. Morgan, M. S. Purvis, and M. E. Kirwan to be Majors.

EMERGENCY COMMISSIONS

Lieuts. W. H. S. St. John-Brooks, J. M. French, M. Shaw, W. R. Smith, G. C. Tresidder, and R. H. Vasey to be Captains.

To be Lieutenants: D. S. M. Euraght-Mooney and M. Seager.

COLONIAL MEDICAL SERVICE

The following appointments are announced: J. H. Bowyer, M.B., B.Ch., D.P.H., Superscale Officer, Grade A, Malaya; T. C. Wakefield, M.B., Ch.B., Superscale Officer, Grade B, Malaya; J. O. Shircore, M.B., Ch.B., Medical Officer, Nyasaland.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE ... 10 a.m. to 4 p.m., ... Clinics and Operations, Obstetric and ... Demonstrations. *Tues.*, 10 a.m., Paediatric Clinic, Dr. Lightwood; 11 a.m., Gynaecological Clinic, Mr. V. B. Green-Armytage. *Wed.*, 11.30 a.m., Clinico-pathological Conference (Medical); 2 p.m., Lecture, Pathology of the Intestinal Tract (II), by Prof. J. H. Dible. *Thurs.*, 2 p.m., Dermatological Clinic, Dr. R. T. Brain. *Fri.*, 12.15 p.m., Clinico-pathological Conference (Surgical); 2 p.m., Clinico-pathological Conference (Gynaecological); 3 p.m., Sterility Clinic, Mr. Green-Armytage.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION. 1, Wimpole Street, W.—*Brompton Hospital*, S.W.: *Tues.* and *Thurs.*, 3 p.m., M.R.C.P. Course in Chest Diseases. *London Chest Hospital*, Victoria Park, E.: *Tues.*, 2 p.m., M.R.C.P. Course in Chest Diseases. *King Edward Memorial Hospital*, Ealing, W.: *Sat.*, December 6, 2 p.m., M.R.C.P. Course in General Medicine. *West End Hospital for Nervous Diseases*: *Tues.* and *Fri.*, 3 p.m., M.R.C.P. Course in Neurology.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

General Meeting of Fellows.—*Tues.*, 3.30 p.m. Candidates for election to the Fellowship.

Section of Surgery.—*Wed.*, 2.30 p.m. Discussion: Effects on the Kidney of Trauma to Parts other than the Urinary Tract, including Crush Syndrome. Openers, Dr. E. G. L. Bywaters and Mr. R. Belsey, followed by Dr. J. McMichael, Mr. D. H. Patey, and Mr. V. H. Riddell.

Section of History of Medicine.—*Wed.*, 2.45 p.m. Exhibit by Dr. J. F. Halls Dally: Portrait in oils of Sir Astley Cooper (1768-1841), painted by Daniel Maclise, R.A. Paper by Mr. C. E. Elcock: Hospital Building—Past, Present, and Future. Members of the Section of Epidemiology and State Medicine are specially invited to attend the meeting.

Sections of Laryngology and Otology.—*Fri.*, 10.30 a.m. Discussion: Effects of Flying on the Nose and Ear. Opening papers by Wing Commander J. F. Simpson, Group Captain E. D. D. Dickson, and Squadron Leaders D. B. Fry, J. E. McGibbon, and R. H. Winfield.

Section of Anaesthetics.—*Fri.*, 2.30 p.m. Discussion: Present Position of Ether. Openers, Dr. Z. Mennell and Dr. R. Jarman.

ROYAL INSTITUTION, 21, Albemarle Street, W.—*Tues.*, 2.30 p.m., Prof. J. C. Drummond: Recent Advances in the Science of Nutrition and their Significance in Wartime. *Thurs.*, 2.30 p.m., Prof. Benjamin Farrington: The Hand in Healing: A Study in Greek Medicine from Hippocrates to Ramazzini.

APPOINTMENTS

BINCLIFFE, E. W., M.S., F.R.C.S., Senior Surgeon, Rinkwood Hospital, Worcester.

LONDON COUNTY COUNCIL.—The following appointment in the Council's mental health services has been made at the hospital indicated in parentheses. *Temporary Specialist*: D. Shaw, M.D., M.R.C.P. (Sutton Emergency).

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first past Monday morning to ensure insertion in the current issue.

MARRIAGE

WILKIE—DUFFY.—On November 29, at Upminster, Essex, Duncan Richard Primrose Wilkie, Captain, R.A.M.C., to Mary Duffy, S.R.N.

Correction

Through a printer's error the list of equivalent drugs published in the *Supplement* of November 15 (p. 91) states that diphenan is identical with albucid. The equivalent of albucid is sulphacetamide.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 6 1941

INSURANCE ACTS COMMITTEE OF THE B.M.A.

ECONOMIC POSITION OF INSURANCE PRACTITIONERS

A fully attended meeting of the Insurance Acts Committee was held on November 20, with Dr. E. A. Gregg, who was unanimously re-elected to that position, in the chair. In reappointing the Executive Committee three new members (Dr. T. A. Rogers, Dr. S. Wand, and Dr. J. B. Wilson) were added, making nine in all. The various resolutions of the recent Special Panel Conference and the still more recent Conference of Representatives of Home Divisions, all bearing on the insurance capitation fee and the revision of the income limit for non-manual workers, were before the Committee. There were also other resolutions and communications from Panel Committees and Divisions, some of them criticizing the action taken by the Insurance Acts Committee in recent events.

Contact with the Individual Practitioner

Before these were considered the question was raised by one member to what extent members of the Committee were accustomed to meet their constituents. Of the members of the Committee, twenty-six represent the seventeen groups of Panel Committees covering Great Britain and Northern Ireland, and it was felt that if the members met their constituents in their respective groups, gave them an account of their stewardship, and informed them of the progress of any negotiations, a great deal of suspicion would be allayed and misunderstanding avoided—in other words, that lack of contact, not negligence or lack of wisdom in the handling of the main business, was the cause of existing friction. Members were reminded that group machinery was in existence, although it appeared to be unused in many areas, members meeting their own Panel Committee but not the group. It was agreed that the group machinery should be overhauled.

The Isle of Wight Panel Committee suggested a personal communication at regular intervals from the Insurance Acts Committee to each individual practitioner regarding any major issue likely to come forward for consideration. In this connection the Secretary (Dr. Anderson) said that, acting on the instructions of the Executive Committee of the Association, he had recently addressed a letter to every member, and he hoped to send a copy of the letter also to insurance practitioners who were not members. It was recognized that in the absence of the normal number of meetings some such method of spreading information was desirable.

One point of obvious misunderstanding appeared in a resolution from the Norfolk Panel Committee, wherein dissatisfaction was expressed at the action of the Insurance Acts Committee, in "recommending" a capitation fee of 9s. 9d. The Committee, of course, made no recommendation to the Conference, and had previously made it abundantly clear to the Minister that it would not do so.

Question of Cost-of-living Bonus

The chairman reminded the Committee of the three aspects of the situation from the economic point of view: the first, a reconsideration of the basic capitation fee, which was promised, without delay, immediately after the war; the second, an increase due to the rise in cost of living (it had been promised that this would be dealt with when such an increase was given to comparable sections of the community); and the third, an increase due to rising practice expenses, which had already been obtained. Practice expenses, however, were still rising, and it might be necessary to ask for a further increase under this head.

With regard to a cost-of-living bonus, it was explained that "comparable sections of the community" meant persons of like economic status to general practitioners. The Deputy Secretary (Dr. Hill) said that at the time when the Executive began its consideration of this subject the upper salary limit of Government employees who were receiving bonus was £250. During the discussions, however, it rose to £350 and since the Conference it had risen to £500. Taking 100 as representing the cost of living in July, 1914, the figure in August, 1939, was 155, in January, 1940, it had risen to 174, in September, 1940, to 187, and at the present time it stood at 200. The index figure for working-class families had risen by 45 points, or 29%, since the outbreak of the present war, and the increase for middle-class families would be approximately one-half of that, though this would need to be recalculated. It was also stated that in the last war the first war bonus, a differential one of 12½% where the net income did not exceed £500, and of 10% for incomes between £500 and £1,000 (with a £60 maximum), was not given until the last year of the war, 1918.

It was agreed that a case might usefully be presented for consideration, even if only for a section of the profession, and the Executive was requested to explore the matter and lay proposals before the next meeting.

Consultation with the Profession

One matter of complaint in certain of the resolutions concerned the lack of consultation by the Ministry with the representatives of the profession regarding the proposed inclusion of the higher income group. The chairman stated that when the deputation met the Minister of Health they told him frankly of this dissatisfaction, and in the most explicit way he expressed regret and gave assurances. It was pointed out, however, that the present Minister and his advisers would not always occupy their present positions, and it was thought well to have a resolution asking for the assurance not of the present Minister but of the Ministry that adequate opportunity would be given for consultation in the event of any future change in which the medical profession was affected. It was explained that by "consultation" was meant not only consultation with the Committee but opportunity for consultation with the Committee's constituents.

It was decided that such a resolution deserved specially careful drafting, and it was remitted to the next meeting for this to be done. A request by the Glasgow Panel Committee for a full inquiry into the machinery of collective bargaining was also remitted to the Executive.

On another resolution, this time from Stoke-on-Trent, a member of the Committee asked whether there was any plan of campaign at headquarters in case practitioners wished at any time to refuse service. The need for more publicity in order to ensure an understanding in the minds of the public of the profession's case was also ventilated. The comprehensive publicity campaign which was prepared before the war has necessarily had to be placed in cold storage. The Committee thought it desirable that a plan of campaign should be considered by the Executive. It was mentioned that the last such plan was evolved in 1917.

Medical Benefit for Dependents and for War Workers

On the question of bringing in dependants of insured persons, the feeling of the Committee appeared to be—and it was said

COURSE FOR HOME GUARD MEDICAL OFFICERS

A further course for medical officers of the Home Guard has been arranged to take place at St. John's College, Cambridge, from December 18 to 23, 1941, inclusive. The places in this course will be filled from unsuccessful applicants for the September course, and no fresh applications can now be considered. Successful applicants have been communicated with direct through military channels.

RANK OF HOME GUARD BATTALION MEDICAL OFFICER

In August last instructions were issued by the War Office stating that the rank of battalion medical officer should be that of major, *or such lower rank as may be considered desirable*. In October, however, the War Office rectified the position, by stating that battalion medical officers should hold the rank of major.

Correspondence**Democratic Machinery**

SIR,—The B.M.A. Secretary's call for greater trust in our elected representatives does not reduce my fear of cavalier treatment by the Ministry of Health. Our position might be improved if he recognized what Ministers of Health seemed to know—that our democratic machinery is decrepit.

Annual general meetings of a B.M.A. Division largely consist of committee-men re-electing themselves. The silence of their constituents gives consent.

A meeting of panel doctors, called to consider the proposed ninepenny increase of the capitation fees, had little to say. After the mover of rejection had summed up, the panel representative in the chair urged the meeting to accept the offer. It is not likely that the mover of the motion will again accept an invitation from the chair to break the silence that gives consent.

Satisfied and dissatisfied doctors alike silently allow our democratic machinery to rust. Chairmen, secretaries, and other elected representatives inevitably grow to resemble autocrats. Astute bureaucrats take advantage of this.

Perhaps a cause of this dangerous decline of democratic practice is our excessive acceptance of the priestly role imposed on doctors by their patients. Mere deacons and priests might maintain our decorous silence in the presence of high priests. If the suggestion that specialists are, after all, more akin to dentists than to doctors produces a reaction such as blasphemy might elicit, then it may be suspected that fundamentally we are at the mercy of high priests and hampered by hypocrisy and its attendant corruption.

Our situation might be improved if matters of importance were habitually decided by the postal votes of all doctors concerned, and if more and smaller branches of the B.M.A. were encouraged to cherish the privileges and duties of democracy.—I am, etc.

Llanbadach, Glam. Nov. 27.

WILLOUGHBY CLARK.

Supplementary Milk Certificates

SIR,—Could something be done to bring to an end the most unsatisfactory state of affairs which now exists in the matter of the signing of these certificates? The public are told that if they are ill they can get an official form signed by their doctor, which, when presented to the local Food Office, will enable them to get extra milk. Actually this is entirely erroneous, as the doctor is only allowed to sign these certificates if the patient is suffering from a scheduled disease. The fact that the patient has been ill for a long time, or that the doctor thinks the patient ought to have more milk, is not recognized by the Minister of Food as sufficient reason for the patient to have extra milk unless the ailment from which he is suffering is in the short list of diseases which the Minister of Food has placed on his schedule.

In actual fact, therefore, all that a doctor is allowed to do is to decide whether a patient's disease is, or is not, on the official schedule, and beyond this he has no power to influence the supply of milk. A doctor, therefore, should not have to fill

in milk forms at all, but simply give the patient who asks for it a statement saying that his ailment is, or is not, on the list of specified diseases, and all the rest of the work entailed, whether in discussion or in the filling in of forms, should be done at the local Food Office by the officials who are paid to do this work.

As things are at present, general practitioners are being regarded by the public as autocratic and heartless in their refusal to give milk certificates to those of their patients who think they ought to have them, and this bad feeling is growing daily, while an enormous amount of precious time is wasted in discussion, simply because the doctor is trying to carry out conscientiously the official instructions, he has received personally.—I am, etc.

Slough, Nov. 27.

H. TUDOR EDMUNDS.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—Daily, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetric and Gynaecological Clinics and Operations. Daily, 1.30 p.m., Post-mortem Demonstrations. Tues., 10 a.m., Paediatric Clinic, Dr. Lightwood; 11 a.m., Gynaecological Clinic, Mr. V. B. Green-Armytage. Wed., 11.30 a.m., Clinico-pathological Conference (Medical); 2 p.m., Lecture, Haemopoiesis and the Gastro-intestinal Tract (II), by Dr. J. Clegg. Thurs., 2 p.m., Dermatological Clinic, Dr. R. T. Brain. Fri., 12.15 p.m., Clinico-pathological Conference (Surgical); 2 p.m., Clinico-pathological Conference (Gynaecological); 3 p.m., Sterility Clinic, Mr. Green-Armytage.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—West End Hospital for Nervous Diseases: Tues. and Fri., 3 p.m., M.R.C.P. Course in Neurology. King Edward Memorial Hospital, Ealing, W.: Sat., Dec. 13, 2 p.m., M.R.C.P. Course in General Medicine.

DIARY OF SOCIETIES AND LECTURES**ROYAL SOCIETY OF MEDICINE**

Section of Proctology.—Wed., 2.30 p.m., Presidential Address by Mr. A. Lawrence Abel: Proctology's Debt to Living Surgeons. General Meeting of Fellows.—Fri., 2.30 p.m., Paper by Sir Almoth Wright: The Need for Abandoning Much in Immunology that has been Accepted as True.

ROYAL INSTITUTION, 21, Albemarle Street, W.—Tues., 2.30 p.m., Prof. J. C. Drummond: Recent Advances in the Science of Nutrition and their Significance in Wartime.

CHADWICK TRUST.—At Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W., Tues., 2.30 p.m., Mrs. Blaise Gillie: Post-war Housing in the Light of Wartime Experience.

VACANCIES

EXAMINING FACTORY SURGEON.—The appointment at Birmingham North (Warwickshire) is vacant. Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by December 16.

APPOINTMENTS

HODGE, R. Sessions, M.R.C.S., L.R.C.P., Consultant Psychiatrist to Somerset County Council.

B.M.A.: Branch and Division Meetings to be Held

METROPOLITAN COUNTIES BRANCH: WESTMINSTER AND HOLBORN DIVISION.—At B.M.A. House, Tavistock Square, W.C., Friday, December 12, 1.30 p.m., General meeting. Brigadier J. C. A. Dowse (Inspector of Medical Services) and Dr. E. A. Gregg: "Medical Man-power."

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTHS

AIREY.—On November 25, at Stonegate Nursing Home, Leicester, to Florence Anne, wife of Francis Stuart Airey, M.B., Ch.B., M.R.C.P.Ed., a son.

HAYWARD-BUTT.—On November 11, 1941, at Doocot Park, Crail, Fife, to Kay (née Howarth), wife of Surgeon Lieutenant Peter Hayward-Butt, Royal Navy, a son.

SHAW.—On November 21, 1941, at the Grange Nursing Home, Bournemouth, to Daphne (née MacColl), wife of Dr. C. Carter Shaw, a son.

DEATH

NASH.—On Friday, November 28, Elwin Herral Thomas Nash, M.R.C.S., M.R.C.P., D.P.H., aged 69, for forty-two years much-loved husband of Mary Monica Nash. Any communications to Beaufort Flat, Canford School, Wimborne, Dorset, telephone Wimborne 166.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 13 1941

GENERAL MEDICAL COUNCIL

WINTER SESSION

The winter session of the General Medical Council ended on November 28 after a four-days meeting. Mr. H. L. EASON was re-elected President for a further term of two years. The business before the Council was almost entirely concerned with disciplinary cases, of which there were twenty on the programme.

REPORTS OF COMMITTEES

The committee reports presented during the recent session of the General Medical Council were only on routine matters. Mr. Ritchie, who presented the report of the Public Health Committee, said that the committee had been considering the comments made by licensing bodies on the general report of the Council on the visitation (1938-9) of the examinations for the D.P.H. The Universities of Manchester and St. Andrews, the London School of Hygiene and Tropical Medicine, and the Scottish Branch of the Society of Medical Officers of Health had not yet sent in their comments, but the committee hoped to receive them as soon as possible.

Dr. Campbell, who presented the report of the Pharmacopoeia Committee, said that the British Pharmacopoeia Commission had carefully considered the modification of certain pharmacopoeial formulae with a view to effecting economy in the use of alcohol. Experiments on this subject were proceeding, and it was probable that another Addendum—the fifth—to the *British Pharmacopoeia, 1932*, would be necessary in order to give effect to the recommendations. The Commission had continued its policy of giving names to chemical substances now being made in this country, and he hoped that manufacturers here who obtained the patent rights to make these substances would use the names suggested, so that the same substance would not be known by half a dozen different names.

DISCIPLINARY PROCEEDINGS

Restorations to Register

After consideration *in camera* it was announced that the following names had been restored to the *Medical Register* after penal erasure: John William Paterson Collyer, William Joseph Doody, William Aloysius Kenoedy, Francis Stedman Poole, and James Pearson Thierens.

Cases in which Judgment had been Postponed

The Council first dealt with certain cases in which the facts alleged against the practitioner had been proved at a previous session, but judgment had been postponed. In the case of Reuben Denny, against whom a conviction of driving a motor car while under the influence of drink and another of being drunk and incapable had been proved, a medical certificate was put in stating that Dr. Denny was suffering from nervous breakdown, and the Council postponed the case until next session. In the case of Christopher Bastible, against whom a conviction of being in charge of a motor car while under the influence of drink had been proved, a letter was received from the respondent stating that he would prefer not to ask for testimonials in a small country town and run the risk of injuring his reputation, but he enclosed a satisfactory testimonial from another doctor who was employing him. The Council again postponed judgment until November next. In the case of Henry McNeill, against whom the charge had been proved that on one occasion he was so far under the influence of drink that he was incapable of properly carrying out his professional

duties, a number of testimonials were put in. It was also stated that Dr. McNeill at the end of last year had his house and surgery completely destroyed by enemy action. The Council decided not to proceed to erasure, and dismissed the case.

Alleged Misleading Certification

The first of several cases which had to do with certificates was that of Albert Alexander Gunn, registered as of Pownall Park, Wilmslow, Cheshire, who was summoned on the charge that on March 5 last he gave certificates, notifications, reports, or documents of similar nature in his professional capacity for subsequent use for administrative purposes under the National Service Acts in the cases of six youths, inmates of an institution, when in fact he had not seen or examined these persons on the date mentioned or at all.

Dr. Gunn was represented by Mr. A. Pereira, counsel.

The Council's Solicitor (Mr. Winterbotham) said that the six persons mentioned were youths of the 19-year-old class, inmates of a mental home near Ludlow, who were summoned for examination by the Hereford Medical Board. Certificates with regard to them, given by Dr. Gunn, then of Ludlow, were handed to the chairman of the board, Dr. Bulman, together with a typewritten sheet giving a short account of each of the boys to be examined. On questioning the boys it appeared that none of them (with one doubtful exception) had ever been examined or attended professionally by Dr. Gunn, and it seemed that the lay person in charge of the home, a Mr. G. H. Lyward, had furnished the details of the six cases in the form of a typewritten sheet which had been copied verbatim by Dr. Gunn in the form of medical certificates. It was added, however, that apart from this irregularity of certification the cases appeared to be quite genuine, for each candidate, following upon his examination by the board, had been examined by the consultant psychiatrist and graded IV as a result. Dr. Gunn, in a letter to the Council, stated that he was very ill at the time and had failed to appreciate the purpose for which the documents were desired. The boys belonged to a school in Kent which was evacuated to Shropshire, and the doctor in Kent, who had been doing any necessary service for the school, gave a letter of introduction to the doctor in Ludlow whose practice was being looked after by Dr. Gunn in his absence. It was contended by Dr. Gunn that the documents were not certificates, but even so, the Council's warning notice referred to "certificates, notifications, reports, or documents of a similar nature."

Mr. Pereira, for Dr. Gunn, said that the doctor had understood from the schoolmaster, Mr. Lyward, that most of these cases had been sent to the school by well-known psychiatrists. He thought he would first look at the case papers, which he did, and then would see the boys, and in fact he did see one of them. Then he was taken ill, and while ill he received an urgent letter from Mr. Lyward saying that the boys were being called up for a military board and asking him to give a résumé of their medical history and condition for the use of the board, and he did so from the notes sent to him. He fully appreciated now that he should not have done so, but he did not "certify" anything.

The Council found the facts proved, but in view of the explanation Dr. Gunn had given they did not see fit to instruct the Registrar to erase his name.

A Question of School Certificates

The Council next considered the case of Israel David Black, registered as of 649, Leeds Road, Bradford, who appeared on the charge of having issued three certificates in February and March last to the effect that Ronald Hindle, a boy aged 12, was suffering from chill—or on one of the dates from influenza debility—and was unable to attend school, whereas in fact Dr. Black had not examined the boy on any date mentioned or at all, and that the boy was quite able to attend school on each occasion.

Mr. A. Pereira, on behalf of the London and Counties Medical Protection Society, defended Dr. Black.

Mr. Winterbotham, the Council's Solicitor, said that in Bradford compassionate school leave was given if circumstances arose in the home which made it necessary for the mother to have the temporary help of an older child. In this case, owing

to the illness of a married daughter, two grandchildren were added to the care of Mrs. Hindle, who sent Ronald to Dr. Riley, then Dr. Black's assistant, and he certified that the daughter was ill and that it would be a help if the boy were excused school. Later on another certificate was required, and the boy saw Dr. Black, who gave him the first of the certificates mentioned in the charge, stating that the boy was suffering from a chill, although at the time he was perfectly well. This certificate was accepted and endorsed by the school medical officer, as was a second certificate, but when a third was issued the senior school medical officer got in touch with Dr. Black, who agreed that the boy was fit for school.

Evidence was given by Mrs. Hindle to the effect that on all these occasions the boy was perfectly well and that Dr. Black never examined him. Dr. Black, who was her married daughter's doctor, attended at the house to treat her grandchild; he never examined Ronald. A bill for 14s. for Dr. Black's services had been presented; she herself did not see the bill until a week ago. Ronald Hindle also testified that Dr. Black did not examine him.

Dr. Black, in evidence, said that he was an alderman of the city of Bradford. This boy and his mother had not been patients of his. He was called to see the granddaughter on February 7, and Mrs. Hindle then complained of the condition of the house, which she said was damp. He inspected the house and promised to report it. Mrs. Hindle said that the house gave all the family colds and that Ronald had been coughing. He opened Ronald's shirt, listened to his chest, and took his temperature. He found signs of bronchial catarrh, and in view of his condition and of the severe weather at the time he thought it would be better if he stayed away from school. He also dispensed some medicine for him. He continued to visit the grandchild at the house, and on the second occasion Mrs. Hindle gave him a form which had been left by the school attendance officer with regard to Ronald, and this he filled in after again examining the boy. On the third occasion similarly he examined and treated him and gave a certificate, but a few days later he refused a request for a further certificate, having heard that in the meanwhile the boy was employed delivering newspapers. His accounts were rendered either quarterly or half-yearly, and particulars were given to his collector. The account for 14s. which Mrs. Hindle said that she had seen only on the previous Saturday had in fact been rendered some weeks previously, and half of it had been paid in small instalments by Mrs. Hindle's daughter.

In reply to questions by Dr. Bone and other members of the Council Dr. Black said that he made up his account book from his visiting lists, which he destroyed after such entry. He admitted that he had thus destroyed any direct evidence of his attendance on Ronald Hindle, although he knew that an inquiry had been made by an education subcommittee in Bradford at which his statement that he had examined this boy had been challenged; but he said that he did not destroy the lists until about a month after the inquiry, when, having heard no more, he considered the incident closed. He had had no idea at that time that the matter would come before the General Medical Council.

The Council, after deliberation *in camera*, found that the facts alleged against Dr. Black had not been proved to their satisfaction, and the case was dismissed.

Alleged Agreement to Break Rules in a Maternity Ward, Falsification of Temperature Records, and Failure to Notify Pyrexia.

The Council considered charges against William Blackwood, D.S.O., registered as of Camborne, and Harry Lee Shimmin, registered as of Redruth, of wrongfully agreeing together to commit a breach of the rules made by the county medical officer of health for Cornwall for the management of the maternity ward provided under a scheme of the county council at the Camborne-Redruth Miners' and General Hospital, of which they were medical officers, and of falsifying or causing to be falsified the records of temperatures of patients in the wards for whom they were responsible, and failing to notify the county medical officer of health as required by those rules. It was further charged against Dr. Shimmin that in a specified case he had failed to notify the medical officer of health for the district as required by the Puerperal Pyrexia Regulations, 1939.

Mr. G. M. Howard, counsel, instructed by Waterhouse and Co., solicitors, in outlining the facts of the case, drew attention to the Puerperal Pyrexia Regulations which came into operation on April 1, 1939, in particular to Section 2 (1), which specified the meaning of the term "puerperal pyrexia." He also referred to rules made by Dr. Curnow, as county medical officer of health for Cornwall, for the maternity ward of this hospital. One of these rules read:

"Any rise of temperature in a patient, however slight, may be a warning sign of impending puerperal sepsis. Therefore, a rise of temperature to 99.4° with proportionate quickening of the pulse rate or any other symptoms or signs suggestive of sepsis is sufficient to require the removal of the patient to an isolation ward. . . . Such a case must be regarded from the beginning as infectious until the contrary is known. . . . If the pyrexia recurs to 99.4° for three successive days or reaches 100.4° and is maintained or recurs within 24 hours then the case is definitely infectious and must be removed as soon as possible to the Tuckingmill Clinic or to one of the Plymouth hospitals."

A further rule stated:

"If any of the incidents [including the significant rise of temperature] specified above occur the county medical officer of health must be notified at once by telephone and the appropriate procedure immediately undertaken."

Not only was the attention of these doctors called to these rules, but they were consulted with regard to them and apparently expressed their entire agreement. In a letter dated September 26, 1939, Dr. Blackwood wrote to Dr. Curnow with regard to two cases to which his attention had been drawn, and said *inter alia*: "I fully realize the necessity of carrying out the regulations laid down by you." The sister in charge of the ward from September, 1939, to March, 1941, was a Miss Commerford, who would say that the doctors agreed together that they would not follow Dr. Curnow's rules in the respect that if a patient had a temperature of 99.4° F. which recurred or reached 100.4° F., they would wait to see what happened, and if nothing further happened then the temperature chart could afterwards be falsified so as to make it appear that the patients had not come within these rules. This evidence would be supported by two other sisters. Dr. Blackwood was charged with falsifying temperature records in two cases. Against Dr. Shimmin there was no charge respecting the temperature chart of any particular patient, but that he failed to notify the district and the county M.O.H.

Dr. R. N. Curnow, M.O.H., Cornwall, testified that in drawing up the rules for the maternity ward he consulted Dr. Blackwood, and later had a conference with the medical staff at which the rules were discussed and agreed. A nurse took the temperatures in the ward and entered them in a book, and a sister afterwards made up the chart from the book. On Dr. Blackwood's charts there was no necessity for notification, but on Dr. Shimmin's charts relating to a Mrs. Cornish, who died in the ward, an inquiry took place, at which Sister Davies made statements in the presence of the two doctors, saying that she had been engaged for some time, with their knowledge, in the falsification of temperature charts. Dr. Blackwood pressed her to say that it was only temperatures under 100° F. which had been affected on two or three occasions, but she would only reply that it might have been so; she could not swear to it. Sister Love also said that the charts had been faked over a considerable period.

Cross-examined by Mr. A. Pereira, counsel, instructed by Messrs. Le Brasseur and Oakley on behalf of the London and Counties Medical Protection Society, who defended, Dr. Curnow agreed that when Drs. Blackwood and Shimmin arrived at the hospital inquiry they had no idea that any suggestion was going to be made against them. Sister Davies said at the inquiry that she had carried on a system which had been in operation for a long time, and was doing what she had been instructed to do by Sister Commerford. She agreed that she never said that either Dr. Blackwood or Dr. Shimmin had told her to alter any chart; she said that it was done with their knowledge, not on their instructions. Another sister at the inquiry had corroborated that the temperature charts were falsified; the system was, she said, that the doctors were to be consulted before the second high temperature was recorded.

It was suggested to Dr. Curnow by counsel that there was not sufficient staff for the number of cases in this busy ward, and that if infectious cases occurred one nurse (out of three) had to be taken off the ward to look after the isolated case.

Miss Margaret Commerford gave evidence that at the time she became sister-in-charge she had a discussion with Dr. Blackwood regarding temperatures. She was told that if patients' temperatures went up she was to notify them, but second high temperatures were not to be charted until the doctors had seen the patient. Temperatures were entered on the chart from the temperature book the following morning by the junior sister. In cross-examination it was put to the witness that Dr. Blackwood had never instructed her at any time to mark any lower temperature than the correct one, but she said that he did so, and that Dr. Shimmin also was present at the conversation. She said that if a patient had a temperature of 99.4° F. they waited until the next morning, and then, if the temperature was still up, the patient was isolated; if the temperature was then down she saw Dr. Blackwood and took his

instructions. Dr. Curnow's rule was that even if the patient had 99.4° F. on one occasion she was to be isolated at once.

If there was a temperature of 100.4° F. in the evening, what instructions had you from Dr. Blackwood?—Not to do anything until the patient was seen next day by Dr. Blackwood or Dr. Shimmin.

Was the temperature charted?—Yes, it was.

So that night there would appear on the chart 100.4° F.?—Yes.

The doctor would come next morning and this would be reported to him. Then what were his instructions?—That if the patient still had the temperature we were to take swabs and isolate her, and if the temperature was up in the evening she would have to be sent to Truro.

If the temperature was normal or below normal in the morning it would be all right.

Sister Esther Davies, who was employed at the hospital until June, 1941, said that if the temperature was 99.4° F. in the evening she did not chart it. If it went down in the morning the temperature was then charted. If it did not go down to normal or below, the doctor was notified. She received instructions that she might have to put wrong temperatures on the chart, but she never actually did so. While she was there as junior sister she knew of one case in which wrong temperatures were put on the chart by Sister Commerford, and of two other cases in which wrong entries were made by Sister Love: she herself had told Sister Love to make them, as instructed by Sister Commerford. The temperature book, in which the original entries had been made in pencil, was altered so as to coincide with the charts, and she agreed that there would be no evidence as to the real temperatures of the patients concerned.

Sister Ena Love, who had been junior sister in this maternity ward, was asked whether the correct temperature was always put upon the charts, and replied "No." Asked in what circumstances a wrong temperature would be put upon a chart, she said that if 99.4° F. occurred twice, and there was nothing else in the patient to suggest anything wrong, the second temperature was not charted: something lower was entered.

When the wrong temperature was put on the chart, who decided the actual temperature to be recorded?—I did.

Why did you do it?—I knew it was wrong in principle, but no harm was being done.

How did you know no harm was being done?—Because the patient was perfectly well.

Mr. Pereira at this point said that so far as the charge of falsifying documents was concerned no evidence had been given by the sisters sufficient to place on him the onus of calling rebutting evidence. Any court would stop the case at this point. The last two witnesses had offered no evidence that the doctors had called on them to falsify, and the first witness had contradicted herself and had said that there was no case she knew of being improperly charted. With regard to failure to notify in accordance with the rules of the hospital, that was a matter between the two doctors and the hospital, and ought not to come before the Council. These doctors were under no penalty for failing to comply with the rules, and he suggested that Dr. Curnow had no authority in this voluntary hospital to impose the rules. The doctors had agreed to comply with the rules, but a breach would render them liable only to civil action. As for the failure of Dr. Shimmin to notify under the Puerperal Pyrexia Regulations, that might be an offence before another court, and then, if a conviction were recorded, might come on to the Council, but it was not a case to be brought before the Council as infamous conduct in a professional respect.

Mr. Howard agreed that as to the first charge there was the evidence of only one witness, Sister Commerford, and the Council might think it not safe or right on the uncorroborated evidence of one witness—a witness, moreover, who was implicated in what was done, to say that this matter was proved beyond reasonable doubt, in which case he would not press the charge. But he suggested that on the further charge against Dr. Shimmin he ought to have notified the case of Mrs. Cornish, even though the only evidence was that of one of the sisters—Sister Love—who was again uncorroborated and implicated.

The Council deliberated *in camera* and found that the facts alleged against Dr. Blackwood had not been proved to its satisfaction. Dr. Blackwood was therefore dismissed from the case. The Council also found that the facts alleged against Dr. Shimmin in respect of falsification of records had not been proved, but desired to hear the defence with regard to failure to notify.

Dr. Shimmin then went to the witness chair, and was examined with regard to the case mentioned. He agreed that, looking at the case now, he ought to have notified it. It was a case

which, by reason of the high temperature, came within the statutory rules and orders, and also, of course, within the rules laid down by Dr. Curnow. He told Dr. Curnow by telephone about the case, but that, of course, did not cover the requirement to comply with the Puerperal Pyrexia Regulations. He thought he had done his duty in notifying Dr. Curnow on his instructions.

The Council again deliberated *in camera*, after which the President addressed Dr. Shimmin as follows:

"The facts alleged against you in paragraphs 3 and 4 of the charge [failure to notify] have been proved to the satisfaction of the Council. The seriousness of the facts in the case of Mrs. Cornish is that you infringed regulations made in the public interest for the protection of women after childbirth, and that in the case of Mrs. Warne and Mrs. Waters you similarly infringed the regulations. Further, you failed in the case of Mrs. Cornish to honour the undertaking you gave to the medical officer of health to acquiesce in the rules drawn up by him, as you must have known, for the sole purpose of preventing maternal mortality and morbidity. The Council takes a grave view of these successive derelictions of duty, both under the statute and in relation to a colleague. They trust that these proceedings will cause you to be more scrupulous in future in the discharge of those obligations. Taking that into account, they have decided not to direct the Registrar to erase your name from the Medical Register."

(To be concluded)

Correspondence

District Medical Officers' Duties

SIR.—I am glad to see, from the *Supplement* of November 15 (p. 92), that district medical officers are waking up to the impositions that are being put upon them. The Old Age Pensions and Widows Act, 1940, laid down that those pensioners who are not entitled to medical attendance under the Insurance Act should have free medical relief provided for them. The onus of arranging this naturally passed to the Ministry of Health, who by the Public Assistance Order (No. 2), 1940, quietly "passed the buck" to the district medical officers.

This Order is the authority under which the inspectors of the Assistance Board, which latter assesses supplementary pensions, inform pensioners that they are entitled to free medical attendance, and that they should apply to the relieving officer of their local public assistance authority, who has now no alternative but to issue a "permanent ticket." In this way the law of this country instituted a new medical service and the Minister of Health quietly passed on the work to the district medical officers without any reference to their contracts and without any consideration of the extra work or of the increased expenditure in providing drugs and in travelling.

Is it not about time that medical representation in Parliament was put upon a firmer basis so that matters which affect the welfare of the profession may come under the consideration of those most intimately concerned with them before they become law?—I am, etc.,

Sudbury, Suffolk, Nov. 19.

J. B. ALEXANDER.

* The effect of the amendment of Article 23 of the Public Assistance Order, 1930, is that a public assistance authority is empowered, on application, to include in the permanent medical relief list the names of supplementary old age pensioners and those of their dependants who are aged, infirm, etc., and whose needs have been taken into account in calculating the supplementary pensions. It would appear that once a pensioner or his dependant is included in the list or receives medical relief during any particular half-year he is automatically included in the succeeding half-years so long as the supplementary pension continues to be paid. Representations have been made by the B.M.A. to the Ministry of Health on the issue of increased work thrown on district medical officers, with particular reference to their remuneration.—ED., *B.M.J.*

Bridging the Gap

SIR.—The pamphlet just issued by the Secretary of the British Medical Association appears to be in the nature of an apology. None the less it is a valuable means of bridging the gap between the Council and general practitioners and is, therefore, to be

welcomed. It brings about a liaison which was shown by the special conference of representatives to be badly needed. It might have been better not to vent antagonisms to kindred organizations, but this is a question of policy and taste. I would make a plea for the sake of the welfare of the nation and the medical profession: co-operation with other medical bodies should be brought about instead of endeavouring to shut the door on those who can help in the great work. At a recent general meeting in this Division I stressed the importance of giving full support to the efforts of the B.M.A. to cope with current and post-war problems, but it would be better to have unity than dissension. With all respect, I would ask if the Council of the Association is not too conservative in its outlook:—I am, etc.,

Nov. 25,

L. S. WOOLF,
Chairman, Hendon Division, B.M.A.

PROTECTION OF CARS AGAINST FROST

The Minister of Transport wishes to call the attention of all users of motor vehicles to the importance of taking the utmost precautions against the danger of damage to their vehicles through freezing. If a vehicle has to stand in the open for any length of time the best antifreeze device is an empty water system. On some motor vehicles two taps are provided for draining, one for the radiator and the other for the cylinder block. When the cooling system is being emptied both taps should, of course, be opened.

There is very little "antifreeze" available in this country for the coming winter, and therefore anyone owning or operating a motor vehicle should, whenever possible, adopt some alternative method of protection. This is particularly important in view of the fact that certain spare parts for motor cars may be in short supply; frost damage may, therefore, immobilize a vehicle whose continued operation is vital for the war effort. The small existing supplies of "antifreeze" available for civilian road transport will be allocated by the Regional Transport Commissioners of the Ministry of War Transport, and any operator of vehicles engaged on essential national work who cannot protect his vehicle in any other way should therefore make application to the appropriate Commissioner, giving full particulars of his demands.

The B.M.A. has represented to the Ministry of War Transport the vitally important nature of the work being performed by medical practitioners, often in circumstances of peculiar difficulty, and the extreme inconvenience of an empty water system, especially when urgent night calls are received. The Ministry does not deny that doctors must be included among those car users who may be regarded as having special claims in this matter, but unfortunately the supplies of "antifreeze" available are such as to meet only a small proportion of the proved demand. Therefore, while doctors are not debarred from making application to the Regional Transport Commissioners, it is to be expected that their applications will be successful only rarely and in quite exceptional circumstances. Car users are warned that certain mixtures purporting to give protection against frost are not fully effective and may even do actual damage, and they should satisfy themselves on these points before relying upon them.

MILK AND EGG CERTIFICATES

General practitioners will have been harassed or overwhelmed during the past two or three weeks by applications from patients for certificates for priority supplies of milk and eggs. In the *Supplement* of October 4 the Council of the B.M.A. expressed appreciation of the way in which the Ministry of Food had met its criticisms of the schedule of conditions for priority milk supplies. The circumstances of the issue of the schedule by the Ministry, however, have caused endless trouble to the profession, and the Association considers it to be its duty to disclaim all responsibility for the deplorable muddle.

First, the schedule of conditions was issued by the Ministry itself to medical practitioners, but many doctors did not receive a copy. Those who inquired at their local Food Offices were incorrectly informed that the British Medical Association was

responsible for the issue, and further delay occurred while applications for the schedule were redirected by the Association to the Ministry. Secondly, the schedule was issued as a confidential document. This was doubtless done with the best intentions, but the result was that doctors' surgeries were filled with patients who thought they might be entitled to extra milk for any kind of illness. The normal work of practices was seriously hampered, and friction between doctor and patient frequently followed refusal of a certificate. Thirdly, some Food Offices, regardless of the confidential nature of the schedule, issued a circular to the public purporting to give the conditions for priority supplies, but as the circulars were incorrect and misleading they only made matters worse. The Association has accordingly urged the Ministry to issue a public announcement through the Press and the B.B.C. stating clearly the conditions for which alone priority certificates may be given.

The arrangements for priority supplies of eggs came into force on November 17, but although local Food Offices sent medical practitioners batches of certificate forms, the schedule of conditions for which the certificates might be given was not issued by the Ministry until a fortnight later. In the meantime Food Offices were informing practitioners that the British Medical Association was responsible for the delay, and the Association had again to redirect inquiries to the Ministry.

The Association has now sent a letter to the Ministry strongly protesting against the unnecessary difficulties placed by both its central and local offices in the way of medical practitioners, who are already sufficiently inconvenienced by the numerous claims for wartime certificates.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily*, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetric and Gynaecological Clinics and Operations. *Daily*, 1.30 p.m., Post-mortem Demonstrations. *Mon.*, Course on War Surgery of the Extremities commences. *Tues.*, 10 a.m., Paediatric Clinic, Dr. Lightwood; 11 a.m., Gynaecological Clinic, Mr. Green-Armytage. *Wed.*, 11.30 a.m., Clinico-pathological Conference (Medical). *Thurs.*, 2 p.m., Dermatological Clinic, Dr. R. T. Brain. *Fri.*, 12.15 p.m., Clinico-pathological Conference (Surgical); 2 p.m., Clinico-pathological Conference (Gynaecological); 3 p.m., Sterility Clinic, Mr. Green-Armytage.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—*West End Hospital for Nervous Diseases*: *Tues.* and *Fri.*, 3 p.m., M.R.C.P. Course in Neurology.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of Comparative Medicine.—*Wed.*, 2.15 p.m. Discussion: Control of Diseases in Cattle inimical to Man: II, Tuberculosis. Openers, Prof. T. Dalling and Dr. S. Roodhouse Gloyne.

Section of Neurology.—*Thurs.*, 2.30 p.m. Discussion: Rehabilitation after Injuries to the Central Nervous System. Openers, Prof. Geoffrey Jefferson, Prof. Hugh Cairns, Dr. W. Russell Brain, and Dr. Ludwig Guttmann.

ROYAL INSTITUTION, 21, Albemarle Street, W.—*Tues.*, 2.30 p.m., Prof. J. C. Drummond: Recent Advances in the Science of Nutrition and their Significance in Wartime.

B.M.A.: Branch and Division Meetings to be Held

METROPOLITAN COUNTIES BRANCH: KENSINGTON DIVISION.—At St. Mary Abbots Hospital, Marloes Road, Kensington, W., *Tuesday*, December 16, 2.30 p.m. Clinical meeting.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTH

VAUGHAN-JONES.—To Maureen (née Cooke), wife of Surgeon Lieutenant R. Vaughan-Jones, Royal Navy, Royal Naval Air Station, Trinidad, B.W.I., on November 28, 1941, a daughter, "Angela Maureen."

DEATH

MONKS.—On November 30, 1941, at "Fair Lawn," Bradford Street, Bolton, Alderman Ernest Monks, M.B., Ch.B., J.P., dearly loved husband of Eliz. H. Monks, aged 70 years. Interred at St. James's Church, Brightmet, Bolton.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 20 1941

BRITISH MEDICAL ASSOCIATION

PROCEEDINGS OF COUNCIL

A meeting of the Council of the Association was held at the House in London on December 10, with Mr. H. S. SOUTTAR in the chair.

The deaths were announced of two former members of Council, Dr. J. C. Loughridge of Belfast and Sir Alfred James Rice-Oxley of Kensington, and resolutions of condolence with the families were passed. Representatives of the Association on outside bodies were reappointed, in some cases with substitutes in the event of the representative being unable to attend. The Journal Board was reappointed in the persons of Prof. R. J. A. Berry, Colonel R. G. Gordon, Dr. J. C. Matthews, Dr. H. Robinson, and Major R. Scott Stevenson. The Treasurer of the Association, in that capacity, was also made a member of the Board.

The Chairman reported that he had led a deputation to the Ministry of Labour in connexion with a number of important problems arising on the report of the Industrial Health Committee—a report which he considered to be one of the most valuable documents ever issued by the Association. A long discussion took place with the Minister and heads of Departments, and he believed that it would bear very good fruit.

It was reported that the income of the Sir Charles Hastings Fund would no longer be subject to income tax. The Chairman said that the Sir Charles Hastings Fund was the one charitable fund which the Association itself controlled, it was used exclusively for the assistance of medical men, and it had always been a sore point that income tax had to be paid upon it.

On the reports of the Executive and the Office Committees, various action which had been taken with regard to the staff and the building was endorsed by the Council. The action initiated on the decisions of the recent Conference of Representatives of Home Divisions was also approved. On the matter of discussion groups a memorandum on the main subjects which had already been before the various committees of the Medical Planning Commission was being issued to Divisional secretaries, with a suggestion that each Division should organize a Study Group to consider this memorandum and to report its findings.

The National Eye Service

Mr. Bishop Harman reported the conclusions of the meeting of the Ophthalmic Group Committee regarding the fee for ophthalmic medical examination, as fully set out in the *Supplement* of November 29. These laid down the following conditions as applying in the National Eye Service:

- (1) Insured persons whose incomes do not exceed £250 per annum, and their dependants, will be accepted for treatment at a fee of 10s. 6d. each.
- (2) Non-insured persons, other than dependants mentioned in (1) above, whose incomes do not exceed £250 per annum may be considered as applicants for treatment at a fee of 10s. 6d. each.
- (3) For all other insured persons (including all manual workers and voluntary contributors with an income exceeding £250) the fee for an ophthalmic medical examination shall be £1 1s. each.
- (4) The fee for all persons who do not fall within the above categories shall be at the discretion of the ophthalmic medical practitioner.

These proposals had been submitted to all practitioners doing National Eye Service work, and of those replying only just over 3% had expressed disagreement. The committee itself was unanimous.

Dr. S. Wand moved the omission of No. 3 of the proposals. He deprecated a sliding scale, which would introduce many difficulties. On the previous day the Public Medical Services Conference had decided that its services should be available only to those with £5 a week or less. Moreover, the profession as a whole had expressed its dissatisfaction at the new inclusion in national health insurance of non-manual workers earning from £250 to £420 a year. Dr. Roper seconded this amendment.

Mr. Bishop Harman hoped that the Council would not agree to omit this paragraph. All the proposals applied only "until further notice," and if they were found to work badly they could be looked into again. This service was not on parallel lines with the others; it was for an ophthalmic examination, not for continued treatment.

Dr. F. Gray said that while the Public Medical Services Conference had agreed that the income limit should be £5 a week, it had also declared that any Service which desired to bring persons of higher income into its contract arrangements might do so by means of an extension, and the equivalent of that in the National Eye Service was set out in paragraph (3).

The amendment to omit paragraph (3) was not accepted, and the four conditions as they stood were endorsed by the Council.

Mr. Bishop Harman said that the number of cases dealt with by the National Eye Service during the past year showed a substantial increase, mainly owing to the examination of Army personnel. The arrangement with the War Office, however, had now been replaced to a large extent by the establishment of War Office refraction centres. The civilian cases showed a steady improvement for the corresponding period of 1940, and the civilian returns for October were the highest received during the twelve years' history of the Service. Unfortunately a number of centres had to be closed owing to the calling up of skilled dispensing opticians.

Increase in Fees in Contract Practice

In presenting for the first time as chairman the report of the General Practice Committee, Dr. Wand paid a graceful tribute to his predecessor, Dr. J. W. Bone, who had rendered exceptional service as chairman of the Medico-Political and General Practice Committees for fifteen years. The principal matter in the report was the recommendation that the 20% increase in fees for general practice should apply not only to private fees but also to colliery and other contract practice arrangements; that a similar increase should be sought, subject to the approval of the practitioners concerned, in the fees of police surgeons; that representations should be made in the proper quarter for an increase of not less than 20% in the fees for medical examination for life assurance; and that similar representations be made to the National Deposit Friendly Society.

Dr. J. B. Miller expressed some misgiving about the reference to colliery practice arrangements. Negotiations were proceeding in Scotland for an increase in medical fees in the mining industry, which had undergone no change for more than twenty years. During those years a great increase of work had devolved upon the colliery surgeon: treatment was more expensive on account of the more costly drugs which had to be provided by the doctor who supplied his own medicines; and, again, miners now lived at a much greater distance from their work than was formerly the case, involving longer journeys for the doctor in paying visits. An increase merely of 20% could hardly be defended in mining practice: it should be much more like 50% or 100%. He hoped the reference to colliery practice would be left out of the recommendations.

Dr. Gray pointed out that the phrase generally used was "at least 20%," and that this was a purely wartime increase; it must not be held to govern the situation where, as in colliery practice, an endeavour was made to get an all-round increase in the basic fee. Dr. Wand also said that Dr. Miller's figures related to fees which were inadequate in the pre-war period and which in fact had not been altered since 1919.

It was agreed to leave out the reference to colliery practice and also to put "wartime" in front of the expression "20% increase."

Salaries of District Medical Officers

One question in this connexion had been left for the consideration of the Public Health Committee, but Prof. Picken, the chairman of that committee, said that he was prepared to take the responsibility of giving assent. The Council thereupon agreed to advise Divisions or Branches to endeavour to secure, first, that as a wartime measure the salaries of district medical officers be readjusted in view of the burden of additional work, the increase in practice expenses, and the inclusion in the permanent medical relief list of supplementary old age pensioners who are entitled to the services of the district medical officer; and, secondly, a wartime percentage increase in the fees of public vaccinators.

Pensions Medical Boards

Dr. Wand said that after discussion with the Ministry of Pensions the following scale had been agreed as sessional payments for members of pensions medical boards:

No. of Weekly Sessions	Specialists £ s. d.	Chairmen £ s. d.	Members £ s. d.
1	3 2 6	2 10 0	2 0 0
2	2 12 6	2 2 6	1 15 0
3	2 2 6	1 15 0	1 10 0

It was also reported that as a result of representations to the Board of Trade the Board had agreed that drugs and medicines, where supplied by a doctor who conducts his own dispensary, are insurable under the business scheme created by Part II of the War Damage Act, 1941, instead of under the Commodities Scheme of the War Risks Insurance Act, 1939. Under the latter scheme, which the Board of Trade at first was of opinion held good in such a case, the doctor would have been required to take stock and work out premiums monthly. The opinion of counsel, which was sought by the Association, was that dispensing practitioners are not "carrying on business" for the purpose of the War Damage Act, and therefore their drugs and medicines are insurable under the Business Scheme.

Insurance Acts Committee

Dr. E. A. Gregg, chairman of the Insurance Acts Committee, presented a report covering most of the matters which were reported in the *Supplement* of December 6, following the meeting of that committee. He said that in spite of somewhat stormy weather the committee had succeeded in riding the seas, and in the recent election of the 26 direct representatives, when the members of the profession engaged in insurance practice had the opportunity, if they so desired, of making drastic changes in personnel, only five such changes were made, and one of those was occasioned by the death of a former member and another by the fact that the sitting member did not seek re-election.

The committee felt that it had now reached a position at which it was possible to make some further move with regard to remuneration. The possibilities of making a claim for an increase on the ground of increased cost of living were being investigated. There was a substantial and growing feeling that the economic position of insurance practitioners justified the granting of a cost-of-living bonus.

It was also proposed to go to the Ministry with a view to seeking firmer assurances that the committee would be consulted before any matter affecting the terms and conditions of service of insurance practitioners was announced. This arose out of the failure of the Government to undertake such consultation before announcing legislation which brought in the new higher-income group of insured persons.

Hospital Policy

Dr. Peter Macdonald brought forward the report of the Hospitals Committee, which embodied the committee's consideration of the resolutions of the Annual Representative Meeting, 1939, on the revised Hospital Policy.

On the question of out-patient departments Prof. Picken mentioned the acuteness of this problem in wartime. Those concerned with the work of the Central Medical War Committee were faced with the task of finding men for the Services, a large number of whom must come from hospitals, and part of the plea of the hospitals for the retention of their staffs was based on the huge growth of the out-patient departments. It was unfortunate at any time, and at the present time particularly unfortunate, that there should be such an influx of out-patients. Could the Association do anything to stay this growth? The departments were to a large extent doing work which the general practitioner was quite prepared and competent to do. It was true that the teaching hospitals were, in a special position, but this growth of out-patients went far beyond them.

Dr. Macdonald said that he was in entire agreement. The difficulty was to cut down the departments in wartime, when there were so many persons who were not able to get the attention they wanted—or thought they wanted—from their ordinary practitioners.

The Council dealt with some other routine business and rose after a sitting of three and a half hours.

MEDICAL PARTNERSHIPS IN WARTIME

[FROM A CORRESPONDENT]

After two years of war lawyers and others interested in medical partnerships have had an opportunity of studying the effect of war conditions upon partnership affairs. By far the most difficult problem is that of the partner absent on war service, and it is proposed to consider only this aspect here.

There were originally, and still are, two main methods of dealing with a situation which bristles with difficulties. The first, which was referred to in these columns on November 11, 1939 (p. 219), has been found to be generally less workable than the second. Shortly the essential difference between the two methods is that in the first the absent partner retains his pay and allowances, while in the second these items (except perhaps certain allowances) are brought into the firm as partnership receipts.

Now it has seemed to those called upon to advise partners—whether the latter are remaining at work or are away serving in the Forces—that any scheme should secure: (a) that so far as possible the partners are left relatively in the same position financially as formerly; (b) that the existing Articles should be altered as little as possible; and (c) that special circumstances in each case should be considered and dealt with.

Where a partner absent on war service retains his pay and allowances, it is, of course, possible by adjustments of his share and of the expenses to carry out the intentions of (a) and (c). But the ordinary provisions of partnership Articles are entirely upset, and adjustments of shares are not too easy to calculate. In fact, under such an arrangement there is very little in the Articles which remains effective, and this, in itself, has a bad effect in cases—only too frequent—in which difficulties and disputes have arisen regarding the absence of one or more partners. If, however, it has been decided that in a particular case pay and allowances shall be retained by the absent partner, the main question to settle is what share of profits shall be paid to him. Fifty per cent. of the share due under the partnership agreement was at one time considered reasonable, based upon the B.M.A. Scheme for the Protection of Practices of Absentee General Practitioners.

Any fixed proportion to apply to cases generally would appear to be wrong, as consideration has to be given to the amount of pay and allowances, the return from the share, and any other relevant matters.

Four Fundamental Principles

Where, however, an absent partner brings into the firm his pay and allowances the partnership Articles are, so far as possible, adhered to, and this method is now most usually and, it is suggested, properly advised. The chief points are as follows:

1.—The absent partner brings into the firm the whole of his pay and family allowances. He usually, but not invariably, retains other allowances, which are in the nature of reimburse-

ments for actual out-of-pocket expenses, and any gratuity, disability pension, and prize money.

2.—The absent partner retains his full share of partnership net profits.

3.—Expenses are adjusted as seems fair and reasonable. For instance, the absent partner, as a rule, has no car expenses, whereas the remaining partner (or partners) is usually put to greater expense in this respect. Again, extra surgery expenses may be placed upon the remaining partner or partners, including cost of heating and lighting, etc. Each item of expense should be considered and settled according to the particular circumstances of the case.

4.—A locumtenent or assistant may be required directly owing to the absence of a partner on war service or indirectly when a remaining partner is obliged to be away or to have help. Such assistance, therefore, as may become necessary should be provided at the partnership expense.

These, it is suggested, should be treated as basic principles, and if they are followed it should be possible for a reasonable arrangement to be arrived at in every case. It must be borne in mind, however, that even if the general scheme is adopted there has to be agreement over details, and such agreement is impossible without good will and consideration on both sides. In this war it is not sufficient for an absent partner to say, "I am serving my country," and let it go at that. The "stay-at-home" doctor not only has to carry on the whole work of the practice but often has to run at least equal risks of death or bodily hurt as a serving partner.

In conclusion it should be pointed out that whatever the basic scheme adopted, partners and their advisers should give some thought to the problems which would arise from retirement or through death, particularly if the remaining or surviving partner is under an obligation to purchase the retiring or deceased partner's share at a fixed price, which may in these times be quite unreasonable.

WEST HAM PRACTITIONERS' MEETING

A meeting of general practitioners of West Ham was held at Forest Gate on November 19 to discuss "the necessity for united and sustained action in making operative the requirements of general practitioners as a body in view of possible alterations in medical practice due to rapidly changing economic conditions." There was a good attendance, eighty-three practitioners being present. In opening the meeting Dr. R. POORS, the chairman, discussed the raising of the income limit for N.H.I.; the urgent problem of the medical care of dependants of members of the Forces; the inadequacy of the recent addition to the N.H.I. capitation fee; the fact that less than 5% of the population earned more than £500 per annum; the effect of increasing income-tax burdens on the individual patient; and how these factors must influence the future of medical practice. Dr. P. INWALD of Islington described what had been done in his district and the City area in organizing the doctors. Dr. H. BOYDE welcomed the meeting as it showed an awakening professional interest in the social and economic problems affecting medical practice. He also drew attention to a suggestion of the B.M.A. as to the desirability of forming discussion and study groups for planning future medical progress.

In the general discussion which followed a number of speakers stressed the need for organization among general practitioners in order to make the wishes of the largest body of medical opinion in the country operative through the leading medical organizations. The following resolution, proposed by Dr. H. HANSON, was carried unanimously:

"That a co-ordinating committee be elected by the general practitioners of West Ham, to link up with other practitioner co-ordinating committees throughout the country, to watch over the interests of general practitioners by every accepted means, and to formulate their requirements and forward them to the Medical Planning Commission."

Doctors from East Ham who were present stated that they wished to associate themselves with the resolution. A committee of twelve was elected, and was instructed to get to work as soon as possible and report progress at the next meeting, which will be held at an early date.

Correspondence

Certificates for Change of Work

SIR,—May I with respect ask practitioners to exercise very great caution in giving certificates in support of application for change of work. There is an immense amount of change from one factory to another or from one occupation to another, especially among younger people, which is entirely unnecessary and frivolous, and wasteful of both the young people's time and energy and of the nation's war effort. In factories producing small parts of hard steel for war purposes, for example, a thick oil, not an emulsified oil, must be used for lubrication. A small factory with a few hundred workers will use many thousands of gallons of such oil in a week. A residual amount of dermatitis is almost unavoidable in such factories, but with care on the part of the workman and the devoted attention of nurses attached to such firms it need not cause incapacity for continued work.

I suggest that practitioners should inquire of an applicant for a medical certificate in order to get out of such work whether he has had any treatment lately for the condition, of what nature, and whether it was shown to the nurse for her to exercise her best efforts upon it. One should beware of the patient who wants only a certificate, not any treatment, for the condition on account of which application for change of work is sought. Sometimes one meets a patient who says quite frankly, "I don't want this condition cured, for then I should have no ground for getting a change"; or "I don't want a job in which I have to be careful not to get dermatitis. I want a job in which I can be careless and not get dermatitis." Responsible practitioners should make the appropriate answer to such talk, and they will also not drag in vague general terms like "general debility" and "debilitating anaemia" (without having the blood examined), or irrelevant facts like defective vision, which can be corrected in the present job or, if not corrected, will be taken to the next one. (I am, of course, not speaking of fatigue, which is a very real and serious condition, but one better corrected, in my experience, by a rest from all work, not a change of job.) One might bear in mind that one settler removed from a factory may stop the work of five or six operatives making small parts.

May I suggest also that it is bad practice to issue a medical certificate in a case of possible industrial disease on the strength of a bare possibility for the sake of fighting for it? Wartime industry cannot stand fights for the sake of a fight. In this connexion, further, it is contrary to public policy to allow an applicant to say or think that after all the examining surgeon of factories, or the medical inspector of factories, is the employer's doctor, with opinions coloured accordingly. The applicant's doctor is his doctor in the sense that with a little trouble the applicant can go to another for his support. But the examining surgeon and the medical inspector of factories are not chosen by any employer, and cannot be got rid of by any employer in order to choose another.—I am, etc.,

London, N 15, Nov. 23.

E. H. STRANGE.

Remedying the "Worst Abuses"

SIR,—Dr. A. Piney (in a letter in the *Journal* of November 22) asks for the causes of the present ills of practice. It would appear that there are remote causes—the influence of politics exerted by the approved societies—and local causes—the administrative financial difficulties which impede the logical development of the N.H.I. system. Only after removal of the basic cause by replacing the approved societies by a State Department can a consideration of the local causes be undertaken impartially.

Whether or not a State service is the requisite remedy for the ills—and it is here submitted that its reception by the public would be hostile, as an interference in what is always a personal matter, compared with other State services, actual or potential, which are of an impersonal nature—all remedies will turn on the available finance and on how this is used to remove the practical basic difficulty of the present system, which is the lack of time at the practitioner's disposal for work and play. This is due to his having to take on more patients than he can cope

with efficiently owing to the small capitation fee, and can only be remedied by so increasing the fee that the restriction of his activities by curtailing his list would be justified.

To increase the money the contributions must be raised. This has been done several times, but the increase has always been for services other than medical. At the moment only 3d. out of the weekly 1s. 10d. is allocated to medical service and drugs, with their administration. An increase in the basic fee would entail no extra charges for administration or drugs, so that an increase of 2d. weekly to the present contribution would more than cover the rise in fee, which, it is suggested, should be to 17s. Surely no one could complain of paying 5d. weekly for medical service and drugs. Tackle the administrative difficulties of including all dependants in the scheme, with perhaps some relief for numbers in families, and the whole could surely be put upon a sound basis.

Once having obtained the necessary finance and cleared away the politician, many ways of reorganizing the present system exhibit themselves without going so far as a State service. As a broad outline it is submitted that there should be three types of practice: the solely private, the solely panel, and the third a mixture of the two. The first needs no discussion, as the practitioner would carry on as now. The second would be limited to 2,500 patients at the proposed fee of 17s., and the third to 1,500 at the same fee.

The above would seem to remove the worst abuses of the present system, which arise from lack of time at the practitioner's disposal, resulting in sweated labour for many doctors, hasty treatment for many patients, and little preventive treatment from the State's viewpoint.—I am, etc.,

Lincoln, Nov. 23.

S. WRAY.

"Present Discontents"

SIR,—A letter signed by Mr. M. Tree, F.R.C.S., of the Birmingham and Midland Eye Hospital was published in the *Supplement* of November 15. As it was addressed from this hospital the Medical Board wish it to be understood that the letter conveys the personal view of the writer, and is not to be regarded as representing the views of the Medical Board or of the honorary staff of the hospital.—I am, etc.,

E. B. ALABASTER.

Chairman of the Medical Board,
Birmingham and Midland Eye Hospital.

Nov. 28.

Medical Services of H.M. Forces Appointments

ROYAL NAVY

Surgeon Captain H. F. Briggs has been placed on the Retired List. Surgeon Lieut.-Commander W. J. M. Sadler to be Surgeon Commander.

Surgeon Lieut. A. P. C. Clark (Emergency) to be Surgeon Lieut.-Commander (Emergency).

Surgeon Lieut. R. W. G. Lancashire, D.S.C., to be Surgeon Lieut.-Commander.

Surgeon Lieut. B. W. Walford has been transferred to the Permanent List. (Substituted for the notification in the *London Gazette* dated October 17, 1941.)

ROYAL NAVAL VOLUNTEER RESERVE

Surgeon Lieut. W. I. D. Scott to be Surgeon Lieut.-Commander.

Acting Surgeon Lieut.-Commander D. R. Maitland to be Surgeon

Lieut. J. Phillips to be Surgeon Lieutenant.

Lieutenants: I. Ashforth and D. Tolmie.

Surgeon Lieuts: J. Watt, M. N. O'Riordan, F. L. Davies, J. R. A. Hall, R. L. Canney, A. R. H. Oakley, W. E. Gill, J. T. Aldren, D. Chisholm, W. Leckie, P. J. McEnroy, A. C. Clark, P. J. Curran, and L. B. Cohen to be

Temporary Surgeon Lieutenants.

ARMY

Major-General W. B. Purdon, D.S.O., O.B.E., M.C., K.H.S., late R.A.M.C., having attained the age for retirement, has retired on retired pay.

Colonels (Temporary Brigadiers) D. T. Richardson, M.C., K.H.S., late R.A.M.C., and L. T. Poole, D.S.O., M.C., K.H.P., late R.A.M.C., to be Major-Generals (superannuated).

Colonel D. C. Monro, K.H.S., late R.A.M.C., to be Major-General (superannuated).

Colonel R. E. Barnsley, M.C., late R.A.M.C., to be Major-General.

Colonel G. A. Blake, late R.A.M.C., has been granted the acting rank of Major-General.

Lieut.-Colonel (Temporary Brigadier) J. Walker, M.C., from R.A.M.C., to be Colonel.

ROYAL ARMY MEDICAL CORPS

Lieut.-Colonel (Temporary Colonel) H. Walker, O.B.E., M.C., having attained the age for retirement, has retired on retired pay and remains employed.

Lieut.-Colonel D. C. G. Ballingall, M.C., has retired on retired pay on account of ill-health, and is granted the rank of Colonel. (Substituted for the notification in the *Supplement* to the *London Gazette* dated June 13, 1941.)

Majors (Temporary Lieut.-Colonels) D. H. Murray and E. Underhill to be Lieutenant-Colonels.

Major E. A. Stroud has relinquished his commission, retaining the rank of Major.

Captains (Temporary Majors) A. P. Trimble and A. D. Low to be Majors.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Lieut.-Colonel E. L. Sandiland, T.D., has relinquished his commission on ceasing to be employed, and has been granted the rank of Lieutenant-Colonel (Brevet Colonel).

Captain G. Morgan has relinquished his commission on account of ill-health, and is granted the rank of Major.

Captain J. A. Blain has relinquished his commission on account of ill-health, and retains his rank.

Superannuary for Service with Liverpool University Senior Training Corps (Medical Unit).—Lieut.-Colonel (Brevet Colonel) A. A. Gemmell, M.C., T.D., to be Lieutenant, and has relinquished the rank of Lieutenant-Colonel (Brevet Colonel).

Superannuary for Service with Liverpool University Senior Training Corps (Medical Unit).—Captain W. J. Dilling, late R.A.M.C., to be Major, and to command the unit. (Substituted for the notification in the *Supplement* to the *London Gazette* dated October 31, 1941.)

Superannuary for Service with Glasgow University Senior Training Corps (Medical Unit).—A. Slessor to be Lieutenant.

ROYAL AIR FORCE

Flying Officer R. Macpherson to be Flight Lieutenant (War Substantive).

Miss M. I. McNaughton-Jones, Mrs. A. L. J. Dovey, and Miss J. H. Morton have been promoted to the relative rank of Flight Lieutenant (War Substantive).

Brenda E. Linek to be Medical Officer (Emergency) for employment with the R.A.F. with the relative rank of Flying Officer.

DENTAL BRANCH

Flying Officer F. S. Krusin, M.R.C.S., L.R.C.P., to be Flight Lieutenant (War Substantive).

T. Dagger, M.R.C.S., L.R.C.P., to be Flying Officer (Emergency).

INDIAN MEDICAL SERVICE

Lieut.-Colonel J. Findlay has retired.

EMERGENCY COMMISSIONS

To be Lieutenants: G. V. Faulkner, T. H. S. Smith, A. D. Dyson, P. Jacobs, W. M. Jones, D. A. Maclean, and F. A. Whittock.

COLONIAL MEDICAL SERVICE

The following appointments are announced: J. H. Pierre, F.R.C.S., Medical Officer, Grade B, Trinidad; W. G. Wickremesinghe, M.R.C.S., L.R.C.P., Assistant Director of Sanitary Services, Ceylon.

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following postgraduate courses: (1) Demonstration on the Fundus Oculi (specially suitable for M.R.C.P. candidates) on Tuesday, January 6, 1942, at 3 p.m., at the out-patient department of the West End Hospital for Nervous Diseases; (2) week-end course on "The Rheumatic Diseases" (suitable for general practitioners and members of H.M. Forces), on Saturday and Sunday, January 10 and 11, 1942, at the Rheumatic Unit, St. Stephen's Hospital (L.C.C.), Fulham Road, S.W.

APPOINTMENTS

EXAMINING FACTORY SURGEONS.—D. Cameron, M.B., Ch.B., for the Plymouth East District (Devonshire); Mrs. Alexandra W. Lloyd, M.B., Ch.B., for the Stewarton District (Ayrshire).

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTHS

BOLAM.—On December 7, at 30, Osbaldeston Gardens, Gosforth, Newcastle-upon-Tyne, to Betty, wife of Mason Bolam, M.D., a daughter.

HOOD.—On November 8, 1941, at Colombo, Ceylon, to Barbara (née Boyle), wife of Surgeon Lieut. Martin C. Hood, R.N.V.R., a son.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 27 1941

WAR NOTICE

Payment for Sessional Attendance at First-aid Posts

As from January 1, 1942, the remuneration of doctors for sessional attendance at first-aid posts and mobile first-aid units will be according to the following scale, which has been agreed with the Central Medical War Committee:

(a) For an attendance for a period not exceeding half an hour: 10s. 6d.

(b) For an attendance for a period exceeding half an hour but not exceeding one hour: £1 1s.

(c) For an attendance for a period exceeding one hour: £1 1s., plus 10s. 6d. for each additional hour or part of an hour.

These payments are not subject to the maximum of £3 3s. per day operating under the existing arrangements.

Circular 2536 of the Ministry of Health states that the new scale should apply in all cases in which sessional fees are payable for the first-aid treatment of casualties, and that local authorities should give notice of the change as soon as possible to all doctors concerned. The new scale corresponds substantially to that adopted for the payment of practitioners called to attend cases of illness or accident in public air-raid shelters or rest centres.

The circular also states that doctors called to their first-aid posts to attend Civil Defence workers injured in the course of their duties will be paid on the same basis as for air-raid casualties, and the above scale will, therefore, apply.

CENTRAL MEDICAL WAR COMMITTEE,
B.M.A. House, Tavistock Square, W.C.1.

GENERAL PRACTICE COMMITTEE OF THE B.M.A.

A full meeting of the General Practice Committee of the British Medical Association was held on November 26. Dr. S. Wand of Birmingham was elected to the chair for the session, and the Committee placed on record its high appreciation of the exceptionally valuable services rendered by Dr. J. W. Bone as chairman of the Medico-Political and General Practice Committees over a period of fifteen years.

Recommended Increase in Professional Fees

The principal matter before the Committee was the various questions which have arisen from the Council's recommendation that fees in private practice should be increased by 20%. That recommendation has been widely adopted by local units of the Association, but it has led to inquiries as to whether it should apply to contract practice arrangements in general, including Public Medical Services. The view of the Committee, as embodied in a recommendation to Council, was that it should so apply, and much of the meeting was occupied by discussing the conditions of various services. On the subject of fees for life assurance examinations, information was received that certain insurance offices have increased the maximum fee for medical examination for life assurance to 25s., which is approximately a 20% increase on the previous fee of one guinea. It was decided to recommend that representations be made to the Life Offices Association that, save in the cases in which similar action had been taken by individual offices, the fees for medical examination should be increased by not less than 20%.

The question of the remuneration of district medical officers and public vaccinators also came up for discussion here. This is a matter in which the Public Health Committee is interested, and, subject to the concurrence of that committee, it was proposed to advise Branches and Divisions to endeavour to secure

readjustment in the salaries of district medical officers in view of the burden of additional work in many areas, increased practice expenses, and the introduction of a new group within the scope of the service—namely, supplementary old age pensioners. A wartime percentage increase in the fees of public vaccinators was also advised.

An application for a 20% increase in the fees of police surgeons was also recommended as a course of action for Branches and Divisions, subject, of course, to the approval of the police surgeons in the locality. A further recommendation was that application be made to the National Deposit Friendly Society for a similar increase in the fees paid for the medical treatment of its members. With regard to Public Medical Services it was reported that a Special Public Medical Services Conference was held on December 9 to consider specifically the question of admission to membership of dependants of the new entrants to National Health Insurance with incomes up to £420 per annum.

A new matter was raised in the remuneration of medical officers to fire brigades, and it was proposed that the matter be taken up centrally with the Ministry of Home Security. The uniform scale suggested was 10s. 6d. as a fee for medical examination of new entrants; 10s. 6d. for rendering first aid to persons injured at fires, if the period of attendance did not exceed half an hour, with suitable additions for longer periods; and a capitation fee of 10s. per annum (without drugs) for attendance on members of the service, and 5s. for each medical report required, or 15s. per annum to cover any necessary reports.

It was reported that a meeting with representatives of the Ministry of Pensions to consider the question of sessional fees for members of medical boards had been arranged for the following day, and that proposals submitted in advance by the Department appeared to offer a favourable scale if assurance was given that there would be regular work on an advance time-table.

Certification

The Secretary reported progress in his efforts to prevent or lessen the demands upon members of the profession for certificates. It had been necessary to approach a number of Government Departments—six or eight—and a little patience was still required before the whole question could be regularized. But he hoped to ensure that practitioners would not be troubled with requests for certificates at least in those cases in which the certificate of another person would serve the same purpose, and also to make it incumbent upon the Departments to consult the Association before any new form of certificate was issued to which the signature of a doctor might be required.

First Aid in Mines: Morphine Administration

A memorandum which had been submitted to the Secretary and was brought by him before the Committee concerned the proposed administration of morphine by first-aid men in mines. It was stated that in the case of severe injuries underground there might be, owing to the difficulty and distance of the working place, delay in obtaining the service of a doctor, and that in such circumstances specially instructed first-aid men should be allowed to administer 3/8 grain morphine in tablet form under the tongue. The Committee concurred in this suggestion.

War Damage Act, 1941.

A matter of considerable importance affecting those members of the profession who dispense medicines has arisen out of the provisions of the War Damage Act, 1941. The question was raised with the Board of Trade as to whether doctors' drugs and medicines are insurable under the Business Scheme created

by Part II of this Act, or under the Commodities Scheme of the War Risks Insurance Act, 1939. The Board has expressed the opinion that if a doctor runs his own dispensary, the drugs and medicines are insurable under the Commodities Scheme, otherwise they are insurable under the Business Scheme. The decision that doctors' drugs and medicines are insurable under the Commodities Scheme as goods supplied means that doctors will be required to stocktake monthly, and to work out and send in their premiums monthly. It is understood that dressings are treated differently and can be insured under the Business and Chattels Section. The importance of the opinion expressed by the Board of Trade lies in the fact that members of the profession who dispense their own medicines are held to be selling medicines and drugs as they are sold in a chemist's establishment. The Committee has obtained the opinion of Counsel, Mr. Gerald Gardiner, on the subject, but Counsel

Counsel's opinion has been forwarded to the Board of Trade. He is of opinion that practitioners who dispense their own medicines are not "carrying on business" for the purpose of the War Damage Act, 1941, and that a practitioner's medicines, drugs, etc., are insurable under the Business Scheme and not under the Commodities Scheme.

Counsel's opinion has been forwarded to the Board of Trade, and the Department has been asked to reconsider in the light of Counsel's opinion its earlier decision that drugs and medicines, where supplied by a doctor who conducted his own dispensary, were insurable under the Commodities Scheme and not the Business Scheme.

GENERAL MEDICAL COUNCIL DISCIPLINARY PROCEEDINGS

(Concluded from p. 107)

Misleading Certificates

The Council considered the case of Alexander Cannon, M.D., registered as of Harley Street, who was summoned on the charge that on July 15 last he signed and sent to Herbert Latreille, a district warden of Beckenham, a certificate or other document stating:

"Mr. Herbert Latreille is under my care and requires an immediate rest owing to the state of his nervous system, and I have ordered him away for a rest from the 19th instant for a period not less than three weeks. In my opinion it would be criminal to allow him to continue his work at present."

whereas he had neither seen nor examined this person at any time during 1941. He was also charged with having on October 22, 1940, sent to the same person a certificate stating that Latreille was

"suffering from nervous exhaustion and sympathetic atonia and urgently requires 14 days' rest from all duties and complete change of air away from England"

whereas he had neither seen nor examined this person since March, 1940.

Dr. Cannon conducted his own defence.

Mr. W. J. Sampson, Mayor of Beckenham and chief warden, gave evidence in support of the complaint. In reply to the Council's solicitor, he said that Latreille applied for sick leave in July, 1941, and produced a certificate from a doctor—not Dr. Cannon—but leave was not granted. He was, however, found to have due to him a certain amount of annual leave. On July 18 Latreille sent a certificate which he said that he had received by registered express mail from Dr. Cannon, who was in the Isle of Man. The certificate read as set out in the charge, and as a result the application for sick leave was granted. He understood the certificate to mean that Latreille was undergoing a course of treatment prescribed or supervised by Dr. Cannon. In reply to Dr. Cannon witness said that he had asked for information as to when the doctor had last seen Latreille. He was also asked why, not being satisfied with this information, as he had stated, he did not communicate with Dr. Cannon himself. The witness replied that he had a duty to perform and that, the certificate having been presented in circumstances which did not appear to be quite in order, he and his colleagues on the committee decided that the certificate should be forwarded to the appropriate authority. In reply to a member of the Council he said that when he saw that the certificate was issued in the Isle of Man he never supposed that the doctor had examined the man before giving the certificate,

though he had an idea that at some previous time Latreille had been Dr. Cannon's patient.

Dr. Cannon, in his defence, called Mr. Herbert Latreille, who said that he telephoned Dr. Cannon in October, 1940, and again in July, 1941, with regard to his condition, and when the Emergency Committee at Beckenham refused to accept the other doctor's certificate, he appealed to Dr. Cannon as his medical attendant for four and a half years to help him. He asked him to make his statement strong so that he could get the necessary leave. In due course he went to the Isle of Man and placed himself under the direct care of Dr. Cannon, from whom he received a proper certificate on August 8.

Dr. Cannon, in evidence on his own behalf, said that for fourteen years he had been practising his specialty, the treatment of mental and nervous diseases. He was going on to mention his method of hypnotic contact and diagnosis at a distance, when the President said that it was not relevant.

The President: Supposing on your certificate you had stated the facts as set out in your letter to the Council, that you had issued the certificate after a hypnotic diagnosis through a third party, from the Isle of Man to Beckenham, do you think that would have had the same weight with the person who read it?

Dr. Cannon: I put it in this way, Sir: If the person who read it had the least doubt, he was in a position to communicate with me; I am quite confident that I did issue that certificate knowing the facts.

The Legal Assessor: You think "supervision," which in your view is the implication of the words "under my care," includes hypnotic contact between the Isle of Man and Beckenham? If you had intended that anyone should understand that you should have put it in your certificate.

Dr. Cannon: I could have done so.

The Legal Assessor: But you did not do it and thus prevent misunderstanding?

Dr. Cannon: The man was coming to see me.

The respondent went on to point out that the certificate showed clearly that it had been issued in the Isle of Man, and he said there could have been no doubt in the minds of those for whom it was intended that it was issued by the doctor without seeing the patient.

After the Council had deliberated *in camera*, the President addressed Dr. Cannon as follows:

I have to announce that the facts alleged against you in the Notice of Inquiry have been proved to the satisfaction of the Council. The Council cannot avoid the conclusion that the certificates signed by you in your professional capacity which form the subject of the charge were certificates of the type stigmatized in paragraph (1) of the Warning Notice as "untrue, misleading, or improper."

This paragraph is presumably within your knowledge, and the attention of the profession was drawn to its special importance under war conditions by an announcement published on behalf of the Council in the professional journals in April, 1941.

The Council regard your action in giving the certificates as a serious breach of the trust which Parliament has confided to the members of the medical profession. They have listened to the description of the circumstances in which these misleading and improper certificates were given by you. They do not regard that as offering any excuse for your laxity in giving them. They take a grave view of carelessness in issuing certificates required by public authorities; but from your statements they are prepared to believe that you signed the certificates not from any perversity or desire to falsify but from a mistaken view of your duty and an error of judgment.

Taking that into account, and believing that the warning you have received will be sufficient, they have not directed the Registrar to erase your name from the Medical Register.

Professional Relationship and Adultery

The Council considered the case of Eric Dickens Spackman, registered as of Shirley Road, Worthing, who appeared on the charge of having committed adultery with Barbara Pepper, a married woman, of which adultery he was found guilty by decree of the Divorce Court dated February 3, 1941, and made absolute on August 26, 1941, in the case of Pepper v. Pepper (Spackman cited), in which he was in the respondent's answer to the petition cited as co-respondent; and that he stood in professional relationship with the said Barbara Pepper at all material times.

Mr. Oswald Hempson, who appeared for Mr. Spackman on behalf of the Medical Defence Union, admitted the professional relationship but disputed the adultery and asked leave to call additional evidence on this point. In answer to the Legal Assessor, he admitted that he was asking the Council to go behind the finding of the Divorce Court, and that the additional

evidence which he wished to call could, with reasonable diligence, have been called in the divorce action.

After a short session *in camera*, the President announced that the Council were not prepared to hear fresh evidence. Mr. Hempton therefore contented himself with commenting on certain passages in the shorthand note of the divorce proceedings, and read a number of testimonials, including one from Sir Walter Langdon-Brown, a former member of the Council, and a petition signed by 526 of Dr. Spackman's patients. He also called Dr. Mackintosh, Dr. Spackman's partner, who gave evidence on his behalf.

The Council found that Dr. Spackman had been guilty of infamous conduct in a professional respect, and directed the erasure of his name.

Alleged Fraud

The Council considered the case of William Allan, registered as of Park Road, Oldham, who was summoned on the charge that as the Sheriff Court, Edinburgh, on January 13 last he was convicted of two charges of fraud, obtaining hoard and lodging to the value of £14 4s. 4d., and sentenced to fourteen days' imprisonment, and at the same court on February 14 of fraud, obtaining £5 by means of a worthless cheque, and sentenced to sixty days' imprisonment.

The Council's solicitor said, in regard to the first conviction that Dr. Allan went into two different hotels in his uniform as captain in the R.A.M.C., said that he was passing through Edinburgh on leave and that he was short of cash, and tendered cheques which were returned marked "R.D." After serving the sentence on this conviction he called at the local bank, told the same story, and cashed a cheque for £5.

Dr. Allan, in reply to questions from the President and members of the Council, said that he did not wittingly cash cheques which he knew were worthless. He had no reason to suppose they would not be cashed, and in fact money had since been paid into his bank exceeding the value of the cheques. His Army pay at the time was still going on, and he had money coming in from his practice under the B.M.A. Protection of Practices Scheme. The money, however, came in irregularly; sometimes he was notified and sometimes not. Although his commission in the Army terminated at the beginning of 1941 he was still receiving dribbles of pay and allowances down to the present November. He never received any passbook or pass-sheets from the bank. He was in a very low and dispirited state at the time of these happenings, and had since spent six months in hospital, from which he was discharged four weeks previously completely cured.

The President announced that the Council did not see fit to direct the Registrar to erase the name.

Drunkenness and Cognate Offences

Several practitioners were summoned before the Council on convictions for drunkenness and cognate offences, but only two names were erased. The first was John Black, registered as of Staley Road, Bootle, who was summoned on two convictions of having been drunk and disorderly, and also one conviction of obtaining credit by means of fraud. His case had been previously twice adjourned owing to his non-appearance. He did not attend on this occasion, and after proof of service of the notice and of the convictions the Council directed the erasure of his name.

The other erasure was that of John Mackay Young, registered as of Albany Street, Regent's Park, who had been convicted of driving a motor car while under the influence of drink to such an extent as to be incapable of having proper control, and had been sentenced to three months' imprisonment with hard labour. Dr. Young had been before the Council on a previous occasion. Mr. Oswald Hempton mentioned certain extenuating circumstances, and expressed his client's sincere regret, but the Council came to the decision stated.

In two other cases the Council found the facts proved, but postponed judgment for twelve months on the usual conditions. The first was that of Jerome Thaddeus O'Leary, registered as of St. Ann's Road, Tottenham, who had been twice convicted of being in charge of a motor car while under the influence of drink. Mr. Oswald Hempton, for the respondent, pointed out that the convictions were in 1938 and 1939. Immediately on outbreak of war he had offered his services and served for a time, but broke down in health and was in hospital from April to November, 1940. Several testimonials were put in as to the entire propriety of his behaviour since the date of these convictions.

The other case in which the Council placed the practitioner on probation for one year was that of Daniel Joseph Purcell, registered as of Nass, Co. Kildare, who appeared on two convictions, one in 1936 and the other in 1941, of being in

charge of a motor-car while under the influence of drink. He was defended by Mr. Alban Gordon, counsel, who mentioned extenuating circumstances.

In three further cases, on similar convictions, the Council did not see fit to direct erasure of the name. Florence Joseph O'Driscoll was summoned on having been convicted, in 1939, of being drunk and disorderly and of wilful damage. Dr. O'Driscoll was at sea, and it was decided to go into his case in his absence as he had submitted testimonials, which were regarded as satisfactory. He had previously been before the Council, which then decided not to erase his name. The second case was that of Frank Fawckner Langridge, registered as of Kenton Road, Kenton, who had been found guilty by a general court-martial of being drunk when on active service and sentenced to be dismissed from His Majesty's Service. In evidence before the Council Dr. Langridge said that from 1928 to 1936 he was practising in India, where he contracted malaria, a condition from which he was suffering at the time of these offences, but which was not taken into account by the court-martial. He admitted that he was drunk on this occasion, having taken alcohol as well as quinine. Testimonials were put in, and the case was dismissed.

The third case in which the Council took this course was that of Eric Llewellyn Williams, registered as of Roath Park, Cardiff, who had been found guilty by a general court-martial of having been unfit for duty by reason of previous indulgence in alcoholic stimulants. The respondent said that on the occasion of the alleged offence he was a sick man, and shortly after the court-martial a medical board recommended his discharge from the Army as medically unfit. He had high blood pressure and symptoms of kidney trouble. Medical evidence to that effect was given to the court-martial, but he did not think sufficient weight was attached to it. Within the last eighteen months alcohol had had an extraordinarily allergic effect upon him, although previously he was able to take normal quantities without ill effects. After the medical board he entered a nursing home for three months' treatment, from which he had derived great benefit, and since that time he had been a teetotaler. In this case also the Council did not see fit to direct erasure.

In three other similar cases the Council postponed the hearing, in two because the practitioners had not been traced, and in the third because the conviction was the subject of a pending appeal.

Correspondence

Democratic Machinery

SIR,—I have read with interest the pamphlet, D-4, issued by the Secretary of the British Medical Association. Its contents have gone some way to reassure me that the opinions of B.M.A. members, expressed either through your columns or at various meetings inside and outside the Divisions, are being considered by the Representative Body and Executive. I have always maintained that the Association is a reasonably democratic body, which desires to serve the interests of its members, and indeed of all the profession, to the utmost of its ability. Nevertheless, from reports and letters published in the *Journal*, it has been obvious that there has been a certain amount of dissatisfaction expressed by its members, many of whom are general practitioners.

I believe that this dissatisfaction can be ascribed to three main reasons:

1. The present system under which a general practitioner has to gain his livelihood, often a precarious one, is so irksome and gives him so little time for relaxation that he is unable to devote his leisure to a consideration of the difficulties and injustices, and to meet his colleagues in order that they may jointly draw up a reasoned statement of their conditions for consideration by the Executive. This is confirmed by the very poor attendances manifest at Branch and Division meetings. There is, I believe, no hope for any improvement in this state of affairs unless members can be made to realize that it is time for them to make a serious and concerted effort to meet and discuss their points of view.

2. Because of the first premise, it follows that the representatives cannot have a comprehensive knowledge of the general practitioner's difficulties. I note that this pamphlet points the way to these discussions, but I believe that they will result in the same lack of interest and enthusiasm until the profession is

confronted with an accomplished fact, such as recently occurred with the capitation fee. Only then will they cry out that their interests have not been adequately considered and safeguarded by the Association.

3. After reading the B.M.A. Year Book, it would be safe to assume that the vast majority of members have not the least idea of the workings of the British Medical Association, such as the election of members to the Representative Body and the various committees, and of their rights for the summoning of meetings, in order that matters of interest can be discussed before they die of inanition and thus give rise to erroneous assumptions by the Executive. With all due deference to our esteemed secretary, I would venture to suggest that this ignorance of the by-laws is the more likely reason why twenty out of twenty-three I.A.C. members were re-elected, rather than that the members were satisfied with its achievements.

All this preamble is set out in the hope that it will throw some light on the causes of the apparent failure of the Executive to represent the wishes of the body, and that some attempt will now be made to make every doctor, both member and non-member, conscious of the fact that if he does not take an active part in the forthcoming discussions he must accept the responsibility for any failure to reach a satisfactory solution. To this end, I believe, the Association should undertake a strong publicity campaign, directed by an experienced publicist, and that one or two pages of the *Journal* each week should have an arresting "set-up" which will bring home to its readers in an unmistakable manner the importance of the campaign.

As a further contribution to the stimulation of interest, it might be considered a good plan to have a weekly article in the *Journal* describing the conditions of medical practice in other countries, together with a statement of their achievements in the reduction of sickness and mortality rates. So many of the Allies have medical and governmental representatives that there should be little difficulty in obtaining suitable contributors. We should then be able to compare those other systems with our own, and extract from them the points which could be usefully applied to improve ours and, what is perhaps more important, to appraise their faults, and be sure that they are not introduced here.

I appreciate that this letter is very superficial in its contents, but if it does no more than indicate lines of thought which have not as yet appeared in the *Journal* it will have achieved its object.—I am, etc.,

WILLIAM W. FOX.

London, N.6. Nov. 30.

The Panel Doctor's Advocates

SIR.—The letter from the Secretary of the B.M.A. is a welcome innovation. It is appreciated evidently that there is a strong undercurrent of criticism among members concerning the scant consideration given to our Association by the Minister of Health in the matter of the new panel patients and milk certification. The Association did not consider it would be in good taste to press for better remuneration in wartime, but the Minister did not consider our feelings in his encroachment on private practice. His promises about full investigation "from the ground" will be repudiated by his successor unless history fails to repeat itself.

It is clear that the Minister regards the Insurance Acts Committee as well-nigh impotent. He should be made to realize that present panel remuneration is being heavily subsidized by private practice. Surely after such setbacks the I.A.C. requires reorganization to give it power and make its influence felt. All praise to the twenty members of the committee who have been re-elected, but when shall we learn that we cannot get efficient representation from hard-working insurance practitioners doing I.A.C. work in their spare time and dashing up to London for brief periods? Release men from the responsibilities of practice, pay them a salary, and then we may get results. We lost our case in 1937 because we had working doctors pleading for us instead of the best advocates that money could obtain.

It has been stated that in order to coerce the Minister we should have had to refuse service, which would be unthinkable in wartime. I do not agree; other methods were available. We could have told the Minister that if he pressed his new panel patients upon us we should demand a surcharge of £1.00.

from each such patient when he presented his card, and repeat the demand each year at his first attendance.

If the Association does not think insurance practitioners are sufficiently solid to enforce such a regulation the sooner a virile campaign is launched the better.—I am, etc.,

Preston, Dec. 1.

ROBERT SLATER, M.B., Ch.B.

Priority Egg Supplies

SIR,—I wish to protest against the extremely unfair discrimination in the matter of egg supplies to the patients of general practitioners. Certificates for extra eggs may only be issued in the case of patients suffering from typhoid (and paratyphoid) and dysentery (amoebic or bacillary) whilst under treatment in a hospital or similar institution. There is no law compelling patients with either typhoid or dysentery to enter a hospital for treatment if they wish to remain at home so long as there are adequate facilities for isolation and nursing at home, although it is a fact that all sanitary inspectors seem to do their best to persuade one's patients that they can be properly treated only in a hospital. I have often treated patients with dysentery at home. On one occasion I had eighteen cases at home at one time as the local isolation hospital was full. (This was in the country.) This refusal to allow extra eggs to such patients unless they are in hospital is another instance of the subtle underhand attempt on the part of "officialdom" to deplete the general practitioner's rightful income and prestige.

In the case of typhoid and dysentery both diseases are notifiable, so that all cases are automatically placed under the supervision of the local health authorities as well as the practitioner attending the case. This fact should be ample and sufficient safeguard for the Ministry of Food and Lord Woolton.—I am, etc.,

London, S.W.1, Dec. 4.

A. GILBY, M.B., B.S., D.P.H.

** The Secretary of the B.M.A. writes: At the request of the Ministry of Food the draft schedule of conditions for priority supplies of eggs was considered by a committee of the Association, and the opinion was submitted to the Ministry of Food that the words "whilst under treatment in a hospital or similar institution" should be deleted. The Ministry, however, has apparently not seen fit to accept our suggestion.

Dr. S. TERRY PYBUS writes: In my letter in the *Supplement* of November 29 (p. 98) I referred to a certificate for clothing for a baby. My attention has been drawn to the fact that I omitted to give the patient's National Registration number on my first certificate, and that it is required on the official form. As this number could have been supplied by the patient herself another certificate seems to be somewhat unnecessary, as the essential part of the certificate is that the woman is expecting to have a baby, and not her National Registration number! However, I shall be glad if the Editor will give space for this correction.

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following postgraduate courses: (1) demonstration on the fundus oculi (especially suitable for M.R.C.P. candidates) on Tuesday, January 6, 1942, at 3 p.m., at the out-patient department, West End Hospital for Nervous Diseases; (2) week-end course on the rheumatic diseases (suitable for general practitioners and members of H.M. Forces) on Saturday and Sunday, January 10 and 11, 1942, at the Rheumatic Unit, St. Stephen's Hospital (L.C.C.), Fulham Road, S.W.

A military hospital medical society has arranged a week-end course in war medicine, to be held on Saturday and Sunday, January 3 and 4, 1942. On January 3 at 1.45 p.m., following an introductory address by the officer commanding, Colonel A. McKie Reid, there will be clinical demonstrations and a discussion on psychological problems. On January 4 at 9.30 a.m. there will be skin demonstrations, and nutrition in war and injuries of the chest will be discussed. The visiting lecturer will be Mr. H. Morrison-Davies.

VACANCIES

EXAMINING FACTORY SURGEON.—The appointment at Chippenham (Wiltshire) is vacant. Applications to the Chief Inspector of Factories, 28, Broadway, S.W.1, by December 30.

B.M.A.: Diary of Central Meetings

JANUARY

Wed. Journal Board, 1.45 p.m.

